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IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT
OF THE STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA) Sub-case No.: 34-04179
)
Case No. 39576)
)
) AFFIDAVIT OF DAVID B. SHAW
)
_____)

STATE OF IDAHO)
) ss.
County of Ada)

A. IDENTIFICATION OF AFFLIANT

My name is David B. Shaw, and I am the adjudication bureau chief for the Idaho Department of Water Resources (IDWR).

1. My work address is Idaho Department of Water Resources (IDWR), 1301 North Orchard Street, Boise, Idaho 83706. I reside in Emmett, Idaho.

2. My educational background includes a bachelor's and master's degree in Agricultural Engineering from the University of Idaho in 1966 and 1972, respectively. I am a registered engineer and land surveyor in the state of Idaho.

3. My work experience includes five years of teaching at the University of Idaho in the College of Engineering from 1968 to 1973. I have been with IDWR and its predecessor agencies since November, 1973. At IDWR, I have served in a number of technical and administrative positions including regional supervisor for IDWR's western region from 1978 to 1985 (except for three months when I served as acting administrator of the resource administration division). During that time, among other responsibilities, I was supervisor of the adjudication effort in IDWR's western region, which included the Payette River Basin Adjudication. Since July of 1985 I have served as IDWR's adjudication bureau chief.

4. As the adjudication bureau chief, I supervise IDWR's adjudication functions in the Snake River Basin Adjudication, including the investigation and reporting of claims to water rights acquired under state law.

B. PURPOSE OF AFFIDAVIT

The purpose of this affidavit is to set forth my written testimony as to the basis for the following portions of the director's recommendation as to claim no. 34-04179:

1. NON-IRRIGATION USES: STOCKWATER; 419 RANGE CATTLE; WILDLIFE: VARIABLE AMOUNT. (Referred to herein as further description of non-irrigation uses.)

2. THIS RIGHT AND OTHER RIGHTS COMMON TO THE SAME GRAZING ALLOTMENT SHALL BE LIMITED TO THE QUANTITY OF WATER BENEFICIALLY USED BY THE NUMBER OF STOCK WITHIN THE ALLOTMENT. (Referred to herein as the combined use limitation.)

C. INVESTIGATION AND RECOMMENDATION OF CLAIM NO. 34-04179

IDWR's methodology for the investigation of claims and recommendation of water rights, particularly the quantification of small domestic and stockwater rights, is described generally in part D below. The application of this methodology to claim no. 34-04179 is discussed in part C.1 below.

1. Further Description of Non-Irrigation Uses

Claim no. 34-04179 is a small instream stockwater claim filed by and recommended to the United States Bureau of Land Management (BLM). The claim is based on beneficial use; there has been no prior administrative or judicial determination of the existence and extent of the claimed water right. IDWR did not conduct a field exam of the claim. (Although IDWR generally conducts a field exam of claims based on beneficial use, to make the most effective and efficient use of available resources, IDWR does not conduct a field exam of claims for domestic and stockwater use up to 0.24 cfs. See part D.1 below.)

Claim no. 34-04179 was claimed and recommended with a **diversion rate** of 0.12 cfs for instream stockwater use for 419 head of range cattle. (See part D.2 as to the distinction between diversion rate in cfs and annual diversion volume in afy, and part D.3 as to quantification by diversion rate generally.) 0.12 cfs is the standard diversion rate for 401-500 head of range cattle using the two-hour method as set forth in the chart in Appendix IV. (See Part D.5 as to quantification of small stockwater uses.)

Claim no. 34-04179 was not claimed and was not recommended with an **annual diversion volume** in afy. (See part D.2 as to the distinction between diversion rate and diversion volume, and part D.3 as to quantification by diversion volume generally.)

A diversion rate of 0.12 cfs, diverted continuously, is sufficient to provide a daily diversion volume of about 77,760 gallons per day. The daily diversion volume reasonably required for 419 range cattle, under standards published by the United States Environmental Protection agency, is 5028 gallons per day. (See part D.5 as to quantification of small stockwater uses.) Quantification solely by diversion rate is insufficient because it could allow an increase in

use more than 15 times the claimed and recommended use without exceeding the diversion rate of the water right.

Description of the number and type of head is the most convenient and effective means to define the water right with sufficient specificity to prevent future expansions in use that would enlarge the water right and cause injury to other water rights. This further description is provided pursuant to Idaho Code §42-1411(2)(f), which provides for IDWR to determine the purpose(s) of use of a water right to the extent the director deems appropriate to define and administer the water right, and 42-1411(2)(k), which further provides for IDWR to include such other matters as the director deems appropriate to define and administer the water right. (See parts D.6 and D.7.)

Claim no. 34-04179 also included a claim to 0.01 cfs for instream wildlife use. Wildlife was not included as a purpose of use in the recommendation of this right, on the basis that water rights acquired under state law require diversion, unless there is a statutory exception to the diversion requirement, and there is no statutory exception to the diversion requirement for wildlife claims by the United States.¹ As a result of discussions with the United States as part of the notice of error process, IDWR included the phrase "wildlife; variable amount" to recognize the use of water by wildlife as incidental to the use of water by livestock.

2. Combined Use Limitation

"Combined use" refers to the use of multiple water rights for the same use. In the case of BLM stockwater rights, combined use occurs where the BLM claims a separate right to each of a number of water sources, each for use by the full number of cattle on the allotment.

¹ An exception to the diversion requirement for domestic livestock is established by Idaho Code §§ 42-113 and 42-114.

For example, assume one BLM allotment that may be used for grazing 500 head of stock. Within that allotment, there are 3 springs and two streams. BLM files five claims, one for each of the springs and each of the streams within the allotment. Each claim sets forth a quantity of 0.12 cfs, for use by 500 head.

Since 0.12 cfs is a reasonable diversion rate for 500 head of cattle under IDWR standards, IDWR would recommend each of the claims for 0.12 cfs for 500 head. This would allow the grazing permittee to take the full amount of water needed from any combination of the sources within the allotment. IDWR would not attempt to divide the total among each of the water rights, for two reasons. First, quantification of the rights in this manner would require an unreasonable amount of effort. More importantly, quantification in this manner would in most instances be inaccurate, since in most instances the cattle would not actually use the sources in accordance with any assumed proportions.

If, however, each water right for an allotment is to be quantified based on the total number of stock within the allotment, the water rights must be limited to prevent an inaccurate "total" of multiple water rights for a single allotment. In the example above, each water right should be limited to clearly establish that the total of the water rights is not .60 cfs (five rights times 0.12 cfs per right) for the use of 2500 head of cattle (five rights times 500 head).

IDWR therefore included a limitation in the recommendation of each BLM stockwater right that multiple rights for the same allotment are limited to the quantity beneficially used by the number of stock in the allotment. This limitation was included pursuant to Idaho Code §42-1411(2)(f), which provides for IDWR to determine the purpose(s) of use of a water right to the extent the director deems appropriate to define and administer the water right, and 42-1411(2)(k),

which further provides for IDWR to include such other matters as the director deems appropriate to define and administer the water right.

IDWR did not require the claimant to identify each water right by the allotment for which it was claimed, on the basis that providing and verifying this information would require an unreasonable effort on the part of the claimant and IDWR, and was not necessary to define or administer the water rights at the present time. Although such information may become necessary in the event of a future change in use of the water right, such information could be provided as to the water rights for which it is necessary at the time it is necessary.

3. Standard Form 5

The special master has requested, when a Standard Form 5 is filed with the court that does not include the signature of an authorized representative of IDWR, that IDWR review the SF5, and when IDWR declines to sign the SF5, to submit a report so stating and briefly describing the reasons why.

BLM filed the sole objection to the recommendation of this claim in the director's report, and objected only to the priority date recommended. The Standard Form 5 submitted by the United States sets forth the claim as recommended by the director, including the recommended priority date, but omits the further description of non-irrigation uses and omits the combined use limitation.² The BLM has filed no notice of error, and no objection, to this or any other water right in the test basins, contesting the inclusion of the further description of non-irrigation uses or the combined use remark. (The BLM has filed objections as to other water rights asserting that

² The SF5 also omits the BLM Record ID number, which was included in the director's report only for informational purposes, and which will be moved to explanatory material when IDWR amends the director's reports for the test basins to conform to the 1994 amendments to the adjudication statute.

the further description was inaccurate, but has not objected to inclusion of the further description generally.) IDWR has not signed the Standard Form 5 filed by the United States, because it omits the further description of non-irrigation uses and the combined use remark, which are necessary to define and/or administer the water right.

The Findings of Fact, Conclusions of Law, and Order Establishing Procedure for Adjudication of Domestic and Stock Water Claims, dated January 17, 1989, provides as follows:

* * * ; provided that if any such change is for the purpose of aggregating more than one individual domestic or stock water claim, the consumptive quantity of such right(s) to be aggregated may not exceed the lesser of that amount historically used or 13,000 gallons per day. There shall be no presumption that either the diversion requirement or the actual consumptive use for the water right to be changed was equal to 13,000 gallons per day or any other quantity greater than actual historical use. [Emphasis added.] Order, pp. 4-5.

This language was taken from the Stipulation for Establishment of Procedure for the Adjudication of Domestic and Stock Water Claims, signed by the United States and the State of Idaho. This language was included in the stipulation at the request of counsel for the United States, to address the United States' concern regarding the need to limit small domestic and stockwater rights to actual historical use to prevent injury to other water rights. I concur with counsel for the United States as to the need to limit small domestic and stockwater rights to their actual and historic use. I conclude that the further description of non-irrigation rights and the combined use limitation are the most appropriate means to achieve this objective, and are therefore necessary to define and administer small domestic and stockwater rights.

D. INVESTIGATION AND RECOMMENDATION OF CLAIMS BY IDWR GENERALLY

1. Level of Investigation

Describing IDWR's investigation of claims in the most general terms, IDWR reviews each claim and the information already available to IDWR, and conducts such further investigation as it finds reasonable to determine whether there is sufficient information to support recommendation of the claimed water right. To make the most effective use of available resources, IDWR has employed two primary mechanisms to identify a reasonable level of further investigation. First, IDWR has developed standards for various types of uses, requiring less information to support a claim to water within those standards and more information to support a claim outside those standards. Standards for recommendation of claims are further discussed in subsequent sections of this affidavit. Second, IDWR has adopted a "tier" approach, identifying classes of claims which for various reasons merit further investigation. These classes are further described as follows:

- a. Generally, with claims based on beneficial use, IDWR conducts a "licensing type" field exam,³ and contacts the claimant to obtain information supporting the priority date claimed. This level of effort is invested because there has been no prior administrative or judicial confirmation of the existence and extent of the water right.⁴
- b. Generally, with water rights that have been previously confirmed by license or decree, IDWR begins its examination by comparing the claim to information already available to IDWR. Other information includes, for example, IDWR's decree files; license, permit and transfer⁵ files; remote sensing, including Landsat Imagery of irrigated acres and aerial photography; water master reports; etc. If there are discrepancies⁶ between the claim and information already available to IDWR, IDWR conducts further

³ A licensing type field exam includes examination/confirmation of the source, point(s) of diversion, purpose(s) of use, place(s) of use, and an examination of the water delivery system. See Idaho Code §42-217.

⁴ A lesser investigation is made of beneficial use claims for D&S use up to 0.24 cfs, as described further below.

⁵ Transfer is a term commonly used to refer to changes in use pursuant to Idaho Code §42-222.

⁶ Typical discrepancies include, for example, an unapproved change in use, evidence of non-use which could give rise to an issue of forfeiture/abandonment, omission of elements in prior decrees or licenses that are required to be determined by the current adjudication statute, etc.

investigation to resolve the discrepancy, which generally includes a field exam and/or contacting the claimant for further information. Thus, where there has been prior judicial or administrative confirmation of the existence and extent of the water rights, IDWR uses information already available to IDWR to limit its review to issues identified by its discrepancy analysis.

c. For domestic and stockwater claims up to 0.24 cfs, IDWR employs a more summary review. Generally, where 1) information is available that confirms the claimed use, 2) the diversion rate claimed is within the range of what constitutes a reasonable diversion rate for the use claimed, and 3) the right is not otherwise inconsistent with information already available to IDWR (for example, licenses, decrees, statutes, etc.), then IDWR recommends the right with the claimed diversion rate. IDWR does not do a field exam including measurement of the diversion rate and evaluation of the delivery system for each D&S claim up to 0.24 cfs. The more summary review of such claims is reasonable because D&S uses are small and numerous, and seldom either contested or administered.⁷

d. Finally, IDWR uses both the court-ordered notice of error process and the statutory objection process to identify claims which merit further review. If this further review yields information that supports a different description of the water right, then IDWR will revise its recommendation (in the case of a notice of error) or enter into a stipulation (in the case of an objection), consistent with the further information.

2. Diversion Rate vs. Diversion Volume

The difference between diversion rate and diversion volume is perhaps best conceptualized by the images of a faucet and a bucket. Assume that you turned your garden faucet half open, let it run for one minute, and filled one ten-gallon bucket with water. The diversion rate, or the measure of the flow of water from the faucet, is ten gallons per minute. The diversion volume is the amount of water in the bucket, which is ten gallons. If you wanted twenty gallons of water, you would have two options. You could double the diversion rate, by turning the faucet wide open, and produce the twenty gallons in the same time of one minute. Or, you could keep the

⁷ Prior to commencement of the adjudication, the legislature devised a fee schedule intended to fund IDWR's services in the adjudication. Idaho Code §42-1414. A more limited review of D&S claims is consistent with this fee schedule, which sets forth a flat \$25 fee for such claims instead of the \$50 flat fee plus variable fee based on purpose of use that is provided for other types of claims.

same diversion rate, by leaving the faucet turned half open, and double the time you leave the faucet running, producing the twenty gallons in two minutes.

IDWR, as well as the corresponding agencies from other states, use the terms "cubic feet per second" (cfs) and/or "acre feet per year" (afy) to quantify water rights.⁸ CFS represents diversion rate, also known as "instantaneous diversion rate." AFY represents annual diversion volume, sometimes simply referred to as "diversion volume" or just "volume."

Both cfs and afy are measurements of the amount of water diverted. They are similar in the sense that both are a unit of volume (cubic foot and acre foot) per unit of time (second and year). Since both are based on a unit of volume, they could both be considered volume measurements;⁹ since both are based on a unit of time, they could both be considered measurements of a rate of flow. There are differences in these measures, however, that are significant for both the quantification of water rights and the distribution of water pursuant to those water rights.

Historically, water rights have been quantified in terms of diversion rate (cfs) because, historically, water right development occurred primarily from streams, and water right administration occurred primarily to resolve conflicts over the distribution of water from streams. Since the flow of water in the stream will likely change the next month, week, or day, the flow of water must be divided among the water users based on what is available "at that instant."

⁸ See Idaho Code §42-102, 42-1409(1)(c), 42-1411(2)(c).

⁹ One acre foot is the volume of water necessary to cover 1 acre of land to a depth of one foot, and equals 43,560 cubic feet.

Although a second is not "instantaneous" for some purposes, it is a sufficiently short period of time to be considered instantaneous for purposes of distribution of water from a public source.

Historically, most water rights have not been quantified in terms of annual diversion volume, because historically, quantification by diversion rate has been sufficient to resolve most conflicts over the distribution of water. Since measurement of annual diversion volume requires measurement over a substantial period of time, effective measurement can generally be accomplished only with the use of continuous recording meters, which require significant financial investment.¹⁰ As long as quantification by diversion rate was sufficient to resolve conflicts over the distribution of water, there was no incentive for the investment in the cost and effort required to quantify water rights and distribute water by annual diversion volume.

Annual diversion volume can nonetheless be an important measurement, for several reasons. First, water supply in Idaho is dependent on an annual cycle, in which winter precipitation provides a large share of both surface water flows and ground water recharge. Water demand is also dependent on an annual cycle, since irrigation is the largest consumptive use of water resources.

The need for quantification of water rights by annual diversion volume occurred initially with the development of surface water storage. Generally, surface water storage development sought to address the divergence between the annual water supply cycle and the annual water demand cycle. Since water supply was highest in the spring, but demand was highest in mid to late summer, surface water storage allowed the excess spring flows to be held for use later in the

¹⁰ Measurement can be made less effectively with repeated "instantaneous" measurements, which are labor intensive and require assumptions as to the diversion rate between measurements. There are also some methods to estimate annual diversion volume instead of measuring it.

year. Quantification by diversion volume was needed to administer storage rights, since the amount of water stored is a volume, like the bucket in the illustration above. Quantification by annual diversion volume is needed since storage of water and its subsequent use is generally based on an annual cycle.

Ground water development has furthered the need to quantify water rights by annual diversion volume. Since ground water exhibits some of the properties of both surface streams (flow) and reservoirs (storage/volume), the modern trend throughout the western states is to quantify ground water rights by both diversion rate (cfs) and annual diversion volume (afy). In addition, increasing competition for water and improvements in the technology available to measure or estimate diversion volume has created greater incentive for the quantification and administration of water rights in terms of annual diversion volume as well as diversion rate.

Diversion rates can be "converted" to diversion volumes by using simple formulas. For example, one cfs of water will produce about 1.984 acre feet of water in 24 hours. Generally, however, the recommended diversion volume for a water right is less than the full volume that can be produced by continuous diversion of the recommended diversion rate throughout the recommended season of use, because most systems are not operated at full capacity all of the time.

For example, a lawn sprinkler system is generally designed with a diversion rate sufficient to irrigate the entire lawn in a few hours. If such a system were operated 24 hours a day every day, it would produce a volume far greater than required to adequately water the lawn. As another example, household plumbing is designed with a diversion rate sufficiently high that showers, washing machines, sinks, etc. can be used at the same time with reasonable water

pressure. Domestic uses, however, do not require the full diversion volume that the domestic diversion rate can produce, because people do not run all their showers, washing machines, sinks, etc. for 24 hours every day.

Representative numbers can be used to further illustrate these examples. A typical domestic well is designed to produce a diversion rate of about 18 gallons per minute, or 0.04 cfs. Continuous diversion would produce about 25,920 gallons per day, or about 28.97 af per year. But the average diversion volume required for a typical single-family domestic use, including lawn and garden, is about 1100 gallons per day, or about 1.2 afy.

3. Quantification of Diversion Rate Generally

IDWR's recommendation of each right includes a diversion rate in cfs for each purpose of use as well as a total diversion rate, except for certain types of storage, which are quantified only by annual diversion volume in afy. IDWR quantifies water rights in this manner pursuant to Idaho Code 42-1411(2), which provides for the director's report of water rights acquired under state law to include a determination of the quantity of water used, describing the rate of diversion in cfs and/or the annual volume of diversion in afy as the director deems appropriate to define and administer the water rights.

Water rights acquired under state law are limited to the amount of water beneficially used.¹¹ Generally, the diversion rate for a water right is determined by either measuring the actual diversion rate, or by applying standards as to the diversion rate required for a particular type of use, or some combination of both.

¹¹ Idaho Code §42-104, §42-1402.

For example, a standard diversion rate of 0.02 cfs per acre for irrigation has been set by statute.¹² Where more than 0.02 cfs per acre is claimed, IDWR will examine conveyance losses between the point of diversion and place of use, the method of irrigation, and field conditions to determine if a greater amount is actually used and reasonably necessary due to those conditions.

IDWR also has guidelines for diversion rates for domestic and stockwater uses. The typical diversion rate for a single-family domestic use is 0.04 cfs, which includes irrigation of up to one-half acre of land. This is a typical diversion rate for a single-family domestic use because it is generally sufficient to meet the instantaneous demand of typical residential plumbing systems. IDWR also has guidelines for multiple unit dwellings. A copy of the guidelines for multiple unit dwellings is included in Appendix IV, which is an appendix to IDWR's Idaho Water Law Handbook, a true and accurate copy of which is attached hereto.¹³ A copy of the typical diversion rates for various types of stock is also included in Appendix IV, which are based on the daily volume requirements for different types of stock. These guidelines are simply that - guidelines. They represent typical diversion rates for these types of uses; higher diversion rates are common and reasonable for some small domestic and stockwater systems. Generally, with respect to small domestic and stockwater claims, IDWR will recommend the diversion rate claimed where it is consistent with the claimed uses and/or common delivery systems for the claimed uses.

¹² Idaho Code §§42-202, 42-220.

¹³ These guidelines include up to one-half acre of irrigation per water right; irrigation in excess of one-half acre is recommended in the director's report as a separate purpose of use for irrigation.

4. Quantification of Diversion Volume Generally

As noted above, water rights are limited to the amount of water beneficially used. Generally, the diversion volume for a water right is determined by either measuring the actual diversion volume, or by applying standards as to the diversion volume required for a particular type of use, or some combination of both. As noted above, however, measurement of diversion volume is more difficult than measurement of diversion rate. Generally, there are few water rights (other than storage rights) for which historic diversion volume measurement data is available.

For example, IDWR has developed standards for annual diversion volume for irrigation for the various regions throughout the state based on climatic and other data, which are expressed in afy per acre. To determine the annual diversion volume for a water right or a portion of a water right used for irrigation, the total number of irrigated acres is multiplied by the standard. Where a diversion rate of more than 0.02 cfs per acre is recommended (due to conveyance losses, method of irrigation, or field conditions), IDWR generally increases the per acre diversion volume proportionately.

IDWR's recommendations of water rights appropriated under state law include diversion volumes for certain types of water rights. IDWR quantifies water rights in this manner pursuant to Idaho Code 42-1411(2), which provides for the director's report of water rights acquired under state law to include a determination of the quantity of water used, describing the rate of diversion in cfs and/or the annual volume of diversion in afy as the director deems appropriate to define and administer the water rights.

Diversion volume is generally stated for rights to ground water. An exception is that diversion volume is generally not stated for domestic and stockwater rights unless the right is based on a license or decree that previously determined the diversion volume of the right. Diversion volume is generally **not** stated for rights to water from surface sources, unless a) the use is for storage, b) diversion volume was previously determined by a decree, license, or order approving an application for change in use, or c) a diversion volume limit is necessary to prevent injury from an accomplished transfer.

IDWR generally does not include diversion volumes on domestic and stockwater rights because the determination of diversion volume for these rights is not reasonably necessary for the distribution of water in accordance with water rights. Since the individual and cumulative impact of such water rights is minimal in comparison to the total water supply, the limited resources available for the regulation of water rights is appropriately spent on the water rights that place substantial demands on the public waters of the state and that give rise to disputes among water users. In addition, quantification of the actual diversion volume for domestic and stockwater rights would be time-consuming and costly. For example, although 1.2 afy is typical for a single-family domestic use, the actual annual diversion volume will vary depending on such minute factors as the number and type of household plumbing fixtures, the number of people in the house, and the usual activities of the occupants. The cost and effort required to determine this element for the multitude of domestic and stockwater claims is unwarranted.

5. Quantification of Small Stockwater Rights

IDWR bases its quantification of water requirements for stockwater use on the gallon per day per head standards published by the United States Environmental Protection Agency.¹⁴ The standard for range cattle, for example, is 12 gallons per day per head. But in both the notices of claims and the director's recommendations, diversion rate is required to be stated in cfs, not gpd.¹⁵ The diversion rate in cfs for stockwater rights is not properly determined by a simple conversion to the lowest diversion rate that is capable of producing 12 gallons per day per head. A higher diversion rate is generally required, due to the following factors.

a. A reasonable diversion rate is one that allows delivery of the required volume in a reasonable period of time. Delivery systems vary from appropriator to appropriator, with the result that either the diversion rate, or the period of time each day that water is "on" will also vary. For example, one appropriator may pump groundwater to stock troughs, diverting water at full capacity to fill the troughs in a short period. Another appropriator might divert water continuously, at the lowest rate necessary to keep water in the troughs. Other appropriators use "demand systems;" water comes on automatically when a float in the trough drops and shuts off automatically when the float rises. In any event, the system must meet the needs of the livestock by providing the volume needed at the time it is needed, and cattle do not obtain their volume requirement by drinking continuously 24 hours a day.

b. A reasonable diversion rate includes reasonable conveyance losses in the delivery of water from the source to the cattle. Conveyance losses will also vary from appropriator to appropriator depending on the water delivery system. For example, an appropriator who pumps water directly from a well to stock troughs will have virtually no conveyance losses. Another appropriator whose stock drink from a ditch a quarter-mile in length may have substantial conveyance losses, and may require continuous diversion at a higher rate to maintain a flow of water in the ditch.

¹⁴ ENVIRONMENTAL PROTECTION AGENCY, U.S. DEPARTMENT OF INTERIOR, PUB. NO. EPA-570/9-82-004, MANUAL OF INDIVIDUAL WATER SUPPLY SYSTEMS 485-487 (1982).

¹⁵ Idaho Code §§ 42-1409(1)(c) and 42-1411(2)(c).

To allow for these differences and to meet the actual water demand for the livestock, IDWR has developed a method for the determining the maximum reasonable diversion rate for a given number of stock, commonly referred to as the "two-hour method." Based on this method, a diversion rate that will produce the daily volume requirement in a two-hour period is considered a reasonable rate of diversion for small domestic and stockwater rights. This method is consistent with the design of small water systems generally, and is reasonable to provide the water user with the flexibility to meet actual historical water demands so long as the use of the right is limited to the actual historical use (in this case, the type and number of livestock).

A sample calculation using this method to determine the diversion rate for 350 head of range cattle is shown below:

$$\frac{350 \text{ HEAD} \times 12 \text{ GPD/HEAD}}{2 \text{ HRS} \times 60 \text{ MIN/HR} \times 450 \text{ GPM/CFS}} = 0.08 \text{ CFS}$$

IDWR has prepared a chart showing diversion rates for range and dairy cattle, based on the number of head and the two-hour method, which shows the diversion rate rounded up to the nearest one-hundredth cfs. A copy of the chart is included in Appendix IV, which is an appendix to IDWR's Idaho Water Law Handbook and is attached hereto.

As noted above, this formula establishes a standard for determining a maximum reasonable diversion rate in cfs for a given number of stock. If the claimed diversion rate is within the maximum for the claimed use, then IDWR does not require further information to show the reasonableness of the diversion rate claimed. IDWR applies these same standards to instream stockwater rights based upon the premise that, if the diversion rate provides a reasonable flow of water for cattle to drink from a ditch or other structure, the same amount provides a reasonable

flow of water for cattle to drink from a stream. As noted in the previous section, IDWR generally does not include an annual diversion volume for domestic and stockwater rights up to 0.24 cfs (small D&S).¹⁶ Instead, IDWR further describes the use by identifying the number and type of stock.

6. Further Description of Non-Irrigation Uses

Rather than determine annual diversion volume in afy for small D&S rights, IDWR includes a further description of non-irrigation uses in the director's report. For domestic rights, this includes the number of dwellings; for stockwater rights, it includes the type of stock and number of head. This further description is provided pursuant to Idaho Code §42-1411(2)(f), which provides for IDWR to determine the purpose(s) of use of a water right to the extent the director deems appropriate to define and administer the water right, and 42-1411(2)(k), which further provides for IDWR to include such other matters as the director deems appropriate to define and administer the water right.

The further description of non-irrigation uses defines the water right by describing the purpose of use with sufficient specificity to prevent future expansions in use that would enlarge the water right and cause injury to other water rights. This is particularly true with respect to water rights for which no diversion volume is specified.

For example, as noted above, the standard rate of diversion for a single family dwelling is 0.04 cfs, and the annual diversion volume typically required for a single family dwelling is

¹⁶ 0.24 cfs is the diversion rate that will produce 13,000 gallons per day in two hours. 13,000 gallons per day is the limit for small domestic and stockwater rights that meet the definitions of Idaho Code §42-111(1) and 42-1401A(12). See IDWR's Brief Re: Elements of Small Domestic and Stockwater Rights, and IDWR's Second Brief Re: Elements of Small Domestic and Stockwater Rights, Subcase Nos. 34-10807, 34-10717, 34-12425, 34-12429.

about 1.2 afy, but continuous diversion of 0.04 cfs would produce an annual diversion volume of about 28.97 afy. If a water right were recommended for one single-family dwelling, with a diversion rate of 0.04 cfs, and no diversion volume, the water right owner could provide water to another home from the same system without increasing the rate of diversion. However, adding the second home would cause the annual diversion volume to approximately double. Specifying that the right is for one home will prevent expansions in use that would increase the annual diversion volume beyond the original appropriation.

Specifying the number of dwellings or the number and type of stock is a more convenient means to quantify diversion volume of domestic and stockwater uses, both for purposes of adjudication of water rights and distribution of water. It is much easier to measure the number of dwellings and the number and type of stock than to try to measure or estimate diversion volume in afy for these uses.

7. Appropriateness of Further Description of Stockwater Rights by Number and Type of Head

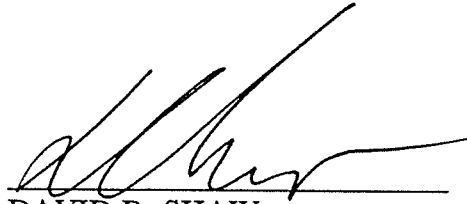
The director of IDWR has, pursuant to Idaho Code §42-1411, deemed the further description of small stockwater rights by type and number of head appropriate and proper to define and administer water rights, for the reasons summarized below and more fully explained in the preceding sections.

- a. Water rights are limited to the amount of water beneficially used. The quantity of water beneficially used is the amount that is both actually used and is reasonably required for the purpose for which water is appropriated. Determination of the quantity reasonably required for stockwater use depends on the type and number of stock.
- b. To make the most effective and efficient use of the resources available for the investigation of claims, IDWR does not conduct a field examination to verify the actual diversion rate or annual diversion volume of claims for D&S use up to 0.24 cfs.

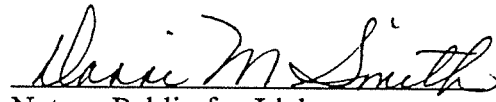
c. A reasonable diversion rate for stockwater use is capable of producing an annual diversion volume that is significantly greater than the annual diversion volume reasonably required for that use. Quantification by diversion rate alone could therefore allow enlargements in use that would significantly increase annual diversion volume, resulting in expansion of the right and injury to other water users.

d. Description of small stockwater rights by the type and number of head is the most convenient and effective means to define and administer water rights with sufficient specificity to prevent future expansions in use that would enlarge the water right and cause injury to other water rights.

DATED this 2 day of January, 1996


DAVID B. SHAW

SUBSCRIBED AND SWORN before me, a notary public in and for the state of Idaho, this
2nd day of January, 1996.


Notary Public for Idaho,
residing in Boise, Idaho.
My commission expires:

APPENDIX IV

TYPICAL AMOUNTS OF WATER FOR TYPICAL USES OF WATER

DOMESTIC

The following table shows diversion rates based on number of households served. The figure for one household includes domestic stockwater and irrigation of up to 1/2 acre of land. The figures for multiple households do not, and any water for irrigation or stock watering in connection therewith should be claimed in addition to the domestic use. The following table was prepared based upon the graph set forth at the end of this appendix.

Households Served	C.F.S.
1	0.04
2	0.06
3	0.08
4	0.10
5-6	0.11
7	0.12
8	0.13
9	0.14
10	0.15
15	0.18
20	0.20
30	0.25
40	0.30
50	0.33

IRRIGATION

0.02 c.f.s. per acre (See Idaho Code § 42-202.)

APPENDIX IV (cont.)

OTHER USES	Gallons per day*
Camps:	
Construction, semipermanent (per worker)	50
Day, with no meals served (per camper)	15
Luxury (per camper)	100-150
Resorts, day and night, with limited plumbing (per camper)	50
Tourist with central bath and toilet facilities (per person)	35
Picnic grounds:	
With bathhouses, showers and flush toilets (per person)	20
With toilet facilities only	10
Parks:	
Overnight with flush toilets (per camper)	25
Trailers with individual bath units, no sewer connection (per trailer)	25
Trailers with individual bath units, connected to sewer (per person)	50
Highway rest area (per person)	5
Hotel - with private bath (two persons per room)	60
without private bath (per person)	50
Motel - with bath and kitchenette (per bed space)	50
with bath (per bed space)	40
Boardinghouse (per resident)	50
- additional use for nonresident boarders (per person)	10
Roominghouse (per resident)	60
Restaurants:	
With toilet facilities (per patron)	7-10
Without toilet facilities (per patron)	2 1/2-3
With bar/lounge (additional quantity per patron)	2
Schools:	
Boarding (per student)	75-100
Day with cafeteria, gym and showers (per student)	25
Day with cafeteria, without gym and showers (per student)	20
Day without cafeteria, gym or showers (per student)	15
Hospitals (per bed)	250-400
Other Institutions (per person)	75-125
Airports (per passenger)	3-5
Churches (per person)	5
Laundries, self-service (per customer)	50
Service stations (per vehicle)	10
Stores (per restroom)	400
Swimming pools (per swimmer)	10
Theatres - drive in (per car space)	5
- movie (per seat)	5

APPENDIX IV

MAXIMUM
INSTANTANEOUS
WATER REQUIREMENTS
FOR
DOMESTIC USE

