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ATTORNEYS FOR THE CITY OF POCATELLO

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE STATE OF IDAHO

IN THE MATTER OF DISTRIBUTION OF WATER TO VARIOUS WATER RIGHTS HELD BY OR FOR THE BENEFIT OF A&B IRRIGATION DISTRICT, AMERICAN FALLS RESERVOIR DISTRICT #2, BURLEY IRRIGATION DISTRICT, MILNER IRRIGATION DISTRICT, MINIDOKA IRRIGATION DISTRICT, NORTH SIDE CANAL COMPANY, AND TWIN FALLS CANAL COMPANY	)	**POCATELLO'S PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW AND RULING**

I. PARTIES AND PRE-TRIAL RULINGS:

A. Initiation of the delivery call:

1. On January 14, 2005, the Surface Water Coalition ("SWC") delivered a letter to the IDWR demanding curtailment of ground water users to satisfy the demands of their water rights. This is the first delivery call made by SWC against junior ground water users. It is also the first delivery call made under the Conjunctive Management Rules ("CMR")

2. In its February 14, 2005 Order, the Department responded by requesting further information from the SWC within 30 days including diversion, storage, crop, and irrigation information from each of the SWC members; the names, addresses, and description of the water rights of the ground water users who the Surface Water Coalition alleged were causing material injury; declared a contested case and proposed a hearing in April 2005; denied the SWC's request to designate the Eastern Snake Plain Aquifer ("ESPA") as a ground water management area; and granted the Idaho Ground Water Appropriators, Inc. ("IGWA") motion to intervene.

3. On May 2, 2005, pursuant to the Department's authority (under Idaho Code section 67-5247) to act in an emergency without a hearing, the Department issued the initial Order in this matter ("May 2 Order" or "Order").

4. After noting that none of the SWC members identified any actual injury to crops or fallowed land the Director determined that any amount of water less than that diverted in 1995 would constitute a shortage. *May 2, 2005 Order* at 25, finding 115. The Director then made the following findings:

    a. Reasonably likely shortages would be estimated by subtracting the reasonably likely total supplies of natural flow and storage for each member (detailed in finding 106), from the minimum amounts needed by each member for full deliveries based on 1995 diversions. *Id.* at 25-26, finding 116.

    b. Based on this estimate, the reasonably likely shortages for 2005 would be 27,700 acre-feet, despite the fact that 4 out of 7 members would have carry-over in 2005 totaling 329,700 acre-feet. *Id.* at 26, finding 117.

    c. Members are entitled to a reasonable amount of carry-over determined by averaging the amounts of carry-over storage

required for full supplies in 2006 if divertible natural flow and storage is the same as 2002 and amount of carry-over storage required for full supply in 2006 if divertible natural flow and storage is the same as 2004. *Id.* at 26, findings 118-19.

d. Reasonably likely material injury for 2005 is the sum of the 27,700 acre-feet shortages plus any shortages in reasonable carry-over, which amounts to a total of 133,400 acre-feet. This was an amount of shortage attributable to the SWC collectively[1]. *Id*. at 27, finding 120.

e. The Director determined a curtailment date for junior wells based on the following:

   i. Determine the curtailment date based on the amount of ground water curtailment necessary to produce increased steady state gains to the near Blackfoot to Minidoka reach in the amount of the shortage to the SWC members;

   ii. Require mitigation water necessary in 2005 based on the amount that would accrue to the subject reaches in the first year of curtailment;

   iii. Require that the remainder of the shortage from 2005 would still be due, except that it does not have to be provided until subsequent years (at the amounts that would have accrued through curtailment). These future obligations were specifically subject to cancellation if the reservoirs filled. *May 2, 2005 Order*, at ¶¶ 123-131.

f. If material injury is actually greater or lesser, more mitigation water or credits for surplus will be required. *Id.* at 27, finding 122.

g. The Director also provided that adjustments would be made in the "minimum full supply" and injury evaluations based on actual climate conditions that effect crop irrigation water requirements.

h. The Director also ordered curtailment of junior priority ground water rights junior to February 27, 1979 in order to produce during the 2005 irrigation season sufficient water

[1] Specifically, the Order found that A&B, AFRD #2, MID, North Side and Twin Falls were likely to suffer material injury either to their water rights in 2005 or to their right to "reasonable carry-over" amounts.

to avoid injury to the SWC. *Id.* at 27-31, findings 123-131. Alternatively, juniors were authorized to provide replacement water to avoid curtailment. *Id.* at 44, finding 53.

5. Within the required time limit under the IDAPA, the following parties contested the ruling, and/or were allowed to intervene:

   a. SWC

   b. IGWA

   c. Idaho Dairymen's Association ("IDA")

   d. United States Bureau of Reclamation ("USBR")

   e. Idaho Power Company [although its motion was denied, and it was later permitted to participate as a "public witness" instead]

   f. City of Pocatello ("Pocatello")

   g. State Agency Ground Water Users ("SAGWU")

6. Discovery proceeded during 2005 and early 2006; however, proceedings were stayed first at the request of the litigants for purposes of settlement discussions during the spring of 2006, and then at the initiation of the Department during the pendency of appeal from the Gooding County decision that resulted in *American Falls Reservoir Dist. No. 2 ("AFRD #2") v. IDWR*, 143 Idaho 862, 154 P.3d 433 (2007).

7. During that time Supplemental Orders were issued to adjust or otherwise revise the determinations made in the May 2, 2005 Order (the 2nd, 3rd and 4th Supplemental Orders).

8. In early 2007, Mr. Tuthill took over the Director's position from Mr. Dreher. He issued the 5th, 6th and 7th Supplemental Orders to the May 2, 2005 Order.

9. With the Supreme Court's denial of various Motions for Re-Hearing in the *AFRD #2* decision, the IDWR restarted the proceedings in this matter via an August 1, 2007 Scheduling Order.

10. Discovery was conducted throughout the autumn of 2007, via depositions, disclosure of written direct testimony, exhibits, and rebuttal testimony and exhibits. The following parties actively litigated the case by pre-filing reports, testimony and exhibits:

a. SWC

b. IGWA

c. Pocatello

d. Bureau of Reclamation

11. On October 10, 2007, the Hearing Officer, Gerald Schroeder, issued the Status Conference Minutes wherein he determined that the scope of the record is defined by Idaho Code Section 67-5249 and IDWR Procedural Rule 650; the admission of additional evidence is addressed by Idaho Code Section 67-5251 and IDWR Procedural Rules 600 and 602; and the burdens of proof and presumptions are defined by *AFRD #2 v. IDWR*, 143 Idaho 862, 154 P.3d 433 (2007).

12. A Motion for Summary Judgment was filed by Pocatello and IGWA in December of 2007 alleging that SWC had not met their burden of proof that the May 2, 2005 Order and subsequent orders were erroneous because they had failed to provide testimony regarding what constituted injury to water rights.

13. Argument was had on the motion on January 4, 2008, at the Pre-Hearing Conference in this matter. The Hearing Officer denied the motion for summary judgment finding:

a. The seniors must make a showing they have senior water rights;

b. That they have suffered a shortage that prevented them from receiving decreed amounts of water under those rights;

c. That there is a connection between junior ground water pumping and the shortages of water identified;

d. The burden then shifts to the juniors to show that such water, had it been available, would not have been put to beneficial use.

B. Trial in this matter.

1. A hearing in this matter was conducted at IDWR from January 16, 2008 through February 5, 2008. The purpose of the hearing conducted in this matter was to determine whether the Director's May 2, 2005 Order (and Supplemental Orders) are proper as a matter of fact and as a matter of law.

2. The SWC appeared in this case to defend their delivery call. Appearing on behalf of the SWC were attorneys:

   a. Travis Thompson

   b. Kent Fletcher

   c. Tom Arkoosh

   d. John Simpson

3. IGWA appeared in this case to defend the ground water rights of their members. Appearing on behalf of IGWA were attorneys:

   a. Randall C. Budge

   b. Candice McHugh

4. Pocatello appeared in this case to defend and protect its junior ground water rights. Appearing on behalf of Pocatello were attorneys:

   a. Sarah Klahn

   b. Kelly Snodgrass

5. The USBR appeared in this case to assist its contractors in their delivery call. Appearing on behalf of USBR was:

   a. Kathleen Marion Carr

II. FINDINGS OF FACT BASED ON MAY 2, 2005 ORDER

The Director made numerous findings in his May 2, 2005 Order that remain applicable. Rather than reproduce them here, the following paragraphs are incorporated here by reference:

A. Eastern Snake River Plain Aquifer and Department's Ground Water Model.

[Paragraphs 19-33]

B. Creation and Operation of Water Districts Nos. 120 and 130 and Status of American Falls Ground Water Management Area.

[Paragraphs 34-40]

C. Conjunctive Management Rules.

[Paragraphs 41-45]

D. Letter filed by SWC.

[Paragraphs 46-50]

E. Water Rights Held by or for the Benefit of Members of the SWC.

[Paragraphs 54-72]

F. General Findings in Response to Letter and Petition Filed by SWC.

[Paragraphs 73-87]

III. LAW RELATED TO CONJUNCTIVE MANAGEMENT OF GROUND AND SURFACE WATER SOURCES IN IDAHO

A. Idaho water law requires that administration of delivery calls be interpreted by reference to the same constitutional provisions, case law and statutes that condition the appropriation of water in the first place.

1. The SWC has alleged injury to various senior water rights. Those water rights are referenced in the portions of the May 2, 2005 Order incorporated by reference above. The SWC may have valid senior water rights, but it is not necessarily entitled to delivery of the amounts of water specified on the face of its decrees or licenses. The constitutional right to appropriate water under Idaho law has long been defined and qualified by reference to other constitutional principles. Scrutiny of the water right does not end at the time a license or decree is entered. *AFRD #2 v. IDWR*, 154 P.3d at 447.[2]

2. Beneficial use. The SWC's right to appropriate water is conditioned by its ability to put the water to beneficial use. Administration of such water rights is also subject to a determination of whether the amount of water sought through a delivery call is necessary in light of the principles of beneficial use. *AFRD #2 v. IDWR*, 143 Idaho 862, 154 P.3d 433 (2007).

    a. Beneficial use is the measure of the water right, and thus the measure of what must be delivered in the case of a delivery call. *Farmers' Co-operative Ditch Co. v. Riverside Irrigation Dist.*, 16 Idaho 525, 535-36, 102 P. 481, 483-84 (1909) (requiring an adjudication court to decree only

[2] "Specifically, the Director 'has the duty and authority' to consider circumstances when the water user is not irrigating the full number of acres decreed under the water right. If this Court were to rule the Director lacks the power in a delivery call to evaluate whether the senior is putting the water to beneficial use, we would be ignoring the constitutional requirement that priority over water be extended only to those using the water."

that amount of water necessary); *Abbott v. Reedy*, 9 Idaho 577, 581, 75 P. 764, 765 (1904) ("the law only allows the appropriator the amount actually necessary for the useful or beneficial purpose for which he applies it.").

b. Beneficial use is the measure and limit of a water right in Idaho. *See* Idaho Const. art. 15, § 3, *AFRD #2 v. IDWR*, 143 Idaho 862, 154 P.3d 433 (2007). *A&B Irrigation Dist v. Aberdeen-American Falls Ground Water Dist.*, 141 Idaho 746, 118 P.3d 78 (2005).

c. When a senior water right holder makes a delivery call against junior ground water pumpers, the Department must consider and impose administration that takes into account concepts of optimum use and "maximum beneficial use" and "full economic development" as set for the below.

d. This is not a re-adjudication of the SWC water rights (or re-determination of their licenses) it is a valid exercise of IDWR's discretion to administer delivery calls under the CMR. *See* Conjunctive Management Rules, IDAPA 37.03.11; *AFRD #2 v. IDWR*, 143 Idaho 862, 154 P.3d 433 (2007).

3. Prohibition on waste. Further, IDWR is required to exercise its discretion consistent with the constitutional prohibition on waste. *Mountain Home Irrigation Dist. v. Duffy*, 79 Idaho 435, 319 P.2d 365 (1957). Whatever the Department's discretion, it does not extend to ordering curtailment of ground water users if the water to be delivered to seniors cannot be demonstrably put to beneficial uses. *See also Poole v. Olaveson*, 82 Idaho 496, 502-03, 356 P.2d 61, 65 (1960).

4. Optimum development. IDWR's response to any delivery call must incorporate the principle of "optimum development" of the State's waters. This requirement is found in the Idaho constitution, Article 15, section 7, requiring a state water plan to effectuate "optimum development of water resources in the public interest." In this case, the requirement to respect optimum development means that the Department must consider applicable principles in the State Water Plan, including its "zero flow at Milner" provisions, in the context of answering the SWC's delivery call. *See also Nettleton v. Higginson*, 98 Idaho 87, 90-91, 558 P.2d 1048, 1051-52 (1977) ("The governmental function in enacting . . . the entire water distribution system under Title 42 of the Idaho Code is to further the state policy of securing the maximum use and benefit of its water resources.")

5. Reasonable use. This requirement is incorporated through Article 15, section 5 of the Idaho constitution. "[P]riority of right shall be subject to such reasonable limitations as to the quantity of water used and times of use as the legislature, having due regard both to such priority of right and the necessities of those subsequent in time of settlement or improvement, may by law prescribe." *See*

also AFRD #2 v. IDWR, 143 Idaho 862, 154 P.3d 433, 447 (2007)(reasonableness of use is essential to the lawful administration of Idaho's water resources); *Schodde v. Twin Falls Land & Water Co.*, 224 U.S. 107, 118-21 (1912),[3]

6. In the public interest. "The use of all waters now appropriated, or that may hereafter be appropriated . . . is hereby declared to be a public use, and subject to the regulations and control of the state in the manner prescribed by law." Idaho Const. art. 15, § 1. The right of appropriation "must be exercised with some regard to the rights of the public. It is not an unrestricted right." *Schodde v. Twin Falls Land & Water Co.*, 224 U.S. at 120.

7. License or partial decree reflects a maximum amount of water, not a guaranteed amount during a delivery call. Material injury cannot be proven solely because a party did not receive their decreed amount of water. BLUE LAKES AND CLEAR SPRINGS DELIVERY CALL, ORDER GRANTING IN PART AND DENYING IN PART JOINT MOTION FOR SUMMARY JUDGMENT AND MOTION FOR PARTIAL SUMMARY JUDGMENT, November 14, 2007, at 13 ("The partial decrees define the amount of water that a water user is entitled to when available and can be applied to a beneficial use. It is a maximum amount, not a guaranteed amount."). *See also Nettleton v. Higginson*, 98 Idaho at 93, 558 P.2d at 1054 ("The right of appropriation does not carry with it an unconditional guarantee of water regardless of supply of water available.").

8. Conjunctive Management Rules: IDWR has adopted the CMR to use in responding to a delivery call. Interpretation of the CMR and the Department's obligations are qualified by the above-stated principles of law.

    a. The CMR incorporate by reference principles of Idaho law, and thus incorporate the foundational principles identified above. In addition, the following CMR—and legal principles incorporated through such rules by reference—are applicable to this proceeding:

    b. Rule 20. This rule incorporates by reference the constitutional principles described above.

    c. Rule 40. Rule 40 provides the procedures associated with a delivery call. Under Rule 40.03 the Department is required to determine whether the petitioner "is suffering material injury to a senior-priority right and is diverting and using water efficiently and without waste, and in a manner consistent with the goal of reasonable use of surface and ground water as described in Rule 42."

[3] The right of appropriation "must be exercised with some regard to the rights of the public. It is not an unrestricted right. . . . . [A water right] must be exercised with reference to the general condition of the country and the necessities of the people, and not so as to deprive a whole neighborhood or community of its use, and vest an absolute monopoly in a single individual."

i. Upon a determination of material injury, the Director orders the watermaster of the relevant water district to effectuate the Department's response to the delivery call consistent with his findings. Rule 40.01 and 40.02.

d. Rule 42. Rule 42 provides a non-exclusive list of the substantive factual inquiries which the Director may consider in determining whether a petitioner is suffering material injury. These standards are also applicable in this proceeding, as described in further detail below.

e. The Director must fashion a response to a delivery call in a timely fashion. *AFRD #2 v. IDWR*, 143 Idaho 862, 154 P.3d 433 (2007). The Hearing Officer finds that, in the case of the 2005 SWC delivery call, the Department timely responded. Further, the Department's actions in issuing supplemental orders during the pendency of this action have been timely made.

IV. LEGAL FRAMEWORK FOR DECIDING WHETHER THE DIRECTOR'S MAY 2 ORDER SHOULD BE MODIFIED OR REPLACED

A. Procedurally: Idaho Administrative Procedures Act ("IDAPA") and IDWR's procedural rules.

1. The Director's Orders are being contested by the parties to this case under the IDWR Rules of Procedure ("IDWR Rules"). IDAPA 37.01.01. Under IDWR Rule 150, the SWC is an appellant of the Director's orders; other parties, including Pocatello and IGWA, are Petitioners. IDAPA 37.01.01.150.

2. While the titles applied to the various parties may differ, all parties bear the same burden: to demonstrate to the Hearing Officer through substantial and competent evidence that their claims regarding the problems with (or virtues of) the IDWR Orders in this matter should be sustained. *Fremont-Madison Irrigation Dist. & Mitigation Group v. IGWA*, 121 Idaho 454, 926 P.2d 1301 (1996).

3. Substantively, the Hearing Officer is applying the CMR. The burdens of proof as to injury in a contested case involving IDWR Orders are incorporated into the CMR by reference to the Idaho constitution, statutes, and state law. *AFRD #2 v. IDWR*, 143 Idaho 862,, 154 P.3d 433, 444 (2007). To the extent the CMR control the outcome of this hearing, the incorporation by reference of Idaho statutes would include the IDAPA. I.C. §§ 67-5201 through 5292.

4. The IDAPA indicates that injury is a question of fact which must be proven by the petitioner and supported by substantial and competent evidence. I.C. § 67-5279; *Barron v. IDWR*, 135 Idaho

414, 417, 18 P.3d 219, 222 (2001) ("[u]nder the IAPA, the IDWR's decision may be overturned only where its findings: . . . (d) are not supported by substantial evidence in the record . . . ."); *Fremont-Madison Irrigation Dist. & Mitigation Group v. IGWA*, 129 Idaho at 462, 926 P.2d at 1309 ("the party asserting a claim is in the best position to establish the existence of a controverted fact, and must, therefore, bear the burden of proving the existence of that fact."). Accordingly, in a contested case under the CMR, where the senior calling for water appeals the Director's determination, the burden is on the appellant to provide an evidentiary basis that he or she was (or is) suffering injury caused by junior groundwater users by showing that material injury resulted from junior ground water pumping and that the senior legitimately required the water it was (and is) calling for to satisfy beneficial use.

5. The Hearing Officer has modified this standard slightly in the context of this case.

    a. First, the decision-making of the Director was necessarily without the benefit of a contested case hearing. So the question of the sufficiency of the evidence upon which IDWR relied is being tested for the first time in this case.

    b. Second, as decided in my oral ruling on January 4, 2008 denying IGWA and Pocatello's Motion for Summary Judgment, the question of injury in Idaho should be divided into two parts: "injury" which may be alleged or proven based on shortages of water compared to the amount authorized on the face of the decree; and, second, "material injury" which is a showing that the amount of water available was insufficient to meet beneficial uses.[4]

6. The SWC has previously argued that the *AFRD #2 v. IDWR*, 143 Idaho 862, 154 P. 3d 433 (2007) determines burdens of proof in this matter. *See* SWC's Response to Pocatello's Motion for Hearing Efficiencies, filed October 9, 2007.

    a. However, in *AFRD #2 v. IDWR* the question presented was whether the burden on the senior to provide factual material at the time of a delivery call was facially unconstitutional. *Id*. at 444-45, 449. *AFRD #2 v. IDWR* did not involve the question of distribution of the burdens of proof at the time that IDWR's Order was challenged.

[4] Transcript, January 4, 2008, pages 41-42.

b. Based on existing case law interpreting the IDAPA, it appears that any appellant to an IDWR Order bears a burden to show by competent and substantial evidence that the Order was erroneous. Any other result is nonsensical. Put another way, even if the CMR somehow provide the SWC an exception to the burden of proof placed on appellants of IDWR Orders by the IDAPA, the Hearing Officer's decision will only be sustained on appeal if based on competent evidence in the record.

B. Substantively: how the Department must interpret the legal framework together with the CMR.

1. The Department has broad discretion to administer and regulate the waters of the state of Idaho.

2. "[T]he State Water Resource Agency shall have power to formulate and implement a state water plan for optimum development of water resources in the public interest." Idaho Const. art., 15, § 7.

3. The Department is also authorized to conjunctively manage the ground and surface waters. IDAPA § 37.03.11.00; I.C. § 42-603.

4. The Department adopted the CMR in 1994, on the heels of *Musser v. Higginson*, 125 Idaho 392, 871 P.2d 809 (1994) (IDWR issued a notice of intent to promulgate the CMR after a writ of mandate was sought and granted against the Director of IDWR for refusing a demand to deliver water to surface water users by conjunctively administering ground and surface water before a hydrologic determination was made that such administration was appropriate in that water district.).

5. The CMR were challenged by certain members of the SWC and certain of the spring users in *AFRD #2 v. IDWR*. The Supreme Court found the rules to be facially constitutional.

6. As such, the Department's determinations regarding conjunctive management are to be substantively guided by the CMR, together with consideration of the legal principles described above.

7. The critical evaluation is the factual inquiry made by the Director under Rule 42.01. The factors identified under Rule 42.01 are demonstrative of (although not limited to) the types of investigations the Director may make when he receives a delivery call.

8. For purposes of this matter, the Hearing Officer finds that Rules 42.01.d. and g. are of particular importance in evaluating claims of material injury by the SWC herein.

V. MAY 2, 2005 ORDER AND THE METHODS FOR DETERMINING EXPECTED SUPPLIES AND SWC DEMAND

As the former Director of IDWR, and the person responsible for the initial orders, Karl Dreher provided a great deal of useful testimony regarding the facts behind the May 2, 2005 Order and the application of the CMR in developing the May 2, 2005 Order. Mr. Dreher testified, and indeed the findings of fact in the May 2, 2005 Order establish, that Mr. Dreher responded to the SWC's delivery call by evaluating both the forecasted supply of water to be available, and the demand as measured by the "minimum full supply" required by the SWC to satisfy beneficial uses. The parties to this matter disputed, to varying degrees, the methods for forecasting supplies as well as the methods for determining the SWC's demand for water.

Many of the issues in this case are dependent upon an understanding of the geography of the Upper Snake above Milner Dam. Exhibit 3002 and 3003 are attached as illustrative of relevant features referred to during the testimony.

A. Director's methods to forecast available natural flow and storage supplies.

Mr. Dreher summarized his reliance on the Heise Gage flows to forecast the supplies of natural flow water that might be available to the SWC.[5] He testified that the Heise Gage, located at the upper end of the Snake River in eastern Idaho and just below Palisades Reservoir, was a benchmark for water administration, and had been long-used by IDWR, the USBR and the Corps of Engineers. In addition to being a reliable gage with a long period of record, he testified that it was the best gage to forecast unregulated inflows. In order to ensure that the Heise Gage forecast was consistent with actual natural flow supplies that had been available to the SWC, Mr. Dreher prepared a regression analysis for each canal company, which compared the April 1 Heise Gage forecast with actual natural flow diversions for each entity. These were contained in Attachments J-P to the May 2, 2005 Order. Although Mr. Dreher did not use these regression analyses in developing his natural flow forecast, he testified they were reliable enough to be used for administration purposes.

In addition, Mr. Dreher testified that the forecasted storage amounts for the SWC were based on actual reservoir contents as of April 1, 2005, added to projected storage amounts based on 2002 and 2004 storage. He selected these years for purposes of comparison because they were relatively dry years.[6]

Finally, with regard to projected supplies, Mr. Dreher testified that his supplemental orders in 2005 and 2006 were all intended to provide a basis to revisit the

[5] Transcript, January 16, 2008, pages 55-58 and 61-67.
[6] Transcript, January 16, 2008, page 72.

issue of forecasted supplies. If the water year was better than forecast, any injury might be reduced and replacement amounts reduced accordingly; by the same token, if the water year was worse than forecast, injury might be greater than originally projected and replacement water amounts might increase.[7]

B. Director's determination of demand: "minimum full supply."

The May 2, 2005 Order also evaluated the SWC's projected demand for irrigation water. The May 2 Order established the concept of "minimum full supply" as a means to resolve the question of whether forecasted water supplies are adequate to satisfy calling senior water rights in times of shortage. Mr. Dreher's methods compared the SWC's historic water demands against the SWC's claims about the amounts of water that satisfied their water rights.[8] For example, Mr. Dreher accepted Twin Falls Canal Company's claim[9] that each of their shares are entitled to ¾ inch at the headgate, and then looked at the total deliveries between 1990-2004 to determine: 1) during which years they delivered ¾ inch; and of those years 2) which year had the lowest deliveries made. Mr. Dreher reasoned that the lowest year of total deliveries at ¾ inch/share could serve as a stand-in for a more detailed analysis of the amount necessary for beneficial use.[10] The diversion data showed that 1993 was the year that Twin Falls made deliveries at ¾ inch/share; and that for the other SWC members 1995 was the year of lowest total diversions in which they delivered a "full supply." Eventually, because the difference between Twin Falls 1993 and 1995 deliveries was relatively small (ca. 20,000 af)[11] he settled on 1995 as the appropriate year in the historic record in which "minimum full supply" had been diverted by the SWC members. In making this evaluation, Mr. Dreher looked at total diversions, rather than only natural flow or storage diversions. *May 2, 2005 Order* at 23-24, finding 106.

In addition, Mr. Dreher made a determination of the amount of carry-over storage that was "reasonable," as called for under Rule 42.01.g., in order to ensure that the SWC would have a "minimum full supply" in the following irrigation season. *May 2, 2005 Order* at 26-27, findings 119 and 120. In testimony, Mr. Dreher explained that he had looked at how much storage would be needed if 2006 was a repeat of 2004 or 2002. Then he averaged the amount of storage from the recent dry years of 2002 and 2004 to develop a "reasonable carry-over" value.[12] He reasoned that 2002 and 2004 were adequate years for comparison because the SWC storage accounts had received relatively limited fill due to dry conditions. He also explained that the SWC's licensed or decreed rates of diversion are maximum amounts that were intended to allow SWC flexibility to return to gravity irrigation methods. Thus, their crop requirements are usually less than the rates reflected in their decrees and licenses due to the widespread use of sprinklers.[13]

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[7] Transcript, January 16, 2008, pages 73-74.
[8] Transcript, January 16, 2008, pages 47-52.
[9] *See* Exhibit 1004.
[10] Transcript, January 16, 2008, pages 48-49.
[11] Transcript, January 16, 2008, page 49, lines 1-6.
[12] Transcript, January 16, 2008, page 43, lines 23-25 through page 44, lines 1-20.
[13] Transcript, January 16, 2008, page 24-25.

Mr. Dreher justified his reliance on a "minimum full supply" by reference to the amount of water needed for beneficial use.[14] In Mr. Dreher's estimation, the decrees establish the amount a senior user is authorized to take, but a failure to satisfy the quantity authorized by the decree does not establish that the senior has been injured. Transcript, January 16, 2008, page 47, lines 10-25 and page 48, lines 1-8. Mr. Dreher further characterized, on cross-examination, the diversion of amounts of water above his "minimum full supply" not as waste but rather as water that was "not necessarily needed" to grow a crop.[15] In Mr. Dreher's words:

> We're not saying that -- at least I'm not proposing that a surface water rightholder can't divert that water if it's there. The point is I don't think they can seek curtailment of junior-priority rights to provide that amount of water that's not necessarily needed. That's the distinction.

Transcript, January 17, 2008, page 437, lines 14-20.

C. Director's reliance on "minimum full supply" instead of the amount of water on the face of the decree.

The legal issues inherent in the SWC position that they are entitled to delivery of the amounts of water on the face of their decrees, without regard to beneficial use, is discussed elsewhere in this Order. Mr. Dreher was cross-examined at length on the factual differences between his interim "minimum full supply" demand values and the amounts of water which the SWC are authorized to divert under their decrees. In order to understand the factual basis for Mr. Dreher's rejection of delivery of the authorized decreed amounts, we must first examine the physical operation of the SWC water rights in Water District 01 ("WD01").

Much testimony was elicited from Mr. Dreher, Mr. Burrell (the IDWR staff member who assisted Mr. Tuthill with the 5th, 6th and 7th Supplemental Orders) and others regarding the physical administration of the SWC's surface water rights. At the beginning of the year, the SWC members set an allocation of water to be made available at the farm headgates of their patrons during the irrigation season. This allocation is specified by certain SWC members as a rate of flow (continuous flow system) or as an annual allotment (allotment system). The annual allocation may be modified during the year as conditions change. At various times each entity may be diverting natural flow; at other times entities may be diverting storage water. The water accounting performed by WD01 is "after the fact," so that at any given time a surface user cannot be certain which source of supply[16] he is diverting. Further, when an SWC member's natural flow supply is curtailed, it does not result in the watermaster shutting the headgate. Water continues to be diverted by the SWC member, but under its storage supply.

To some extent the nature of these relationships is determined by the nature of the water rights held by each SWC member. The SWC, despite its coalition status, is not

[14] Transcript, January 16, 2008, pages 47, lines 10-25 through page 48, lines 1-8.
[15] Transcript, January 17, 2008, page 437, lines 1-20.
[16] Transcript, January 17, 2008, page 478, lines 3-21.

monolithic with regard to its water rights. Twin Falls has the most senior and largest natural flow right. North Side shares Twin Falls senior natural flow right, but relies mainly on storage. For the most part, the remaining SWC members rely on natural flow only during the early part of the season, when snow melt and run-off are a substantial portion of the stream. After the run-off ebbs and there is no longer natural flow passing Blackfoot, with the exception of Twin Falls, the SWC entities mainly rely on storage. However, a mid-summer rain storm can cause an increase in natural flow that allows certain of the SWC members to begin taking natural flow again. As for Twin Falls, Mr. Alberdi testified that the Twin Falls system relies on natural flow until sometime in June or July and then goes onto storage; in late summer its natural flow right is again available, due mainly to return flows from upstream irrigation operations.[17]

Until this delivery call, WD01 dealt only with water rights administration between surface water rights. Mr. Dreher testified that his approach to determining demand for conjunctive management was similar to what happens in delivery calls between surface water rights.

> Q [by Mr. Arkoosh]. Let me finish the question and we'll move on. There would be less risk for the senior [if the "minimum full supply" value in the May 2 Order was replaced with the decreed amount] and more risk for the junior; is that correct?
>
> A. I guess that's potentially correct, but two problems with it. No. 1 -- I mean, I don't care which of the entities you want to use. Take their natural flow right as a maximum diversion rate in cfs. What quantity would you have me use in this column? How many days do I assume they diverted to full quantity of the water right? They don't do it now in the surface water system. They divert what they need.
>
> And it can be less and often is less than the maximum quantity authorized under the water right and yet, apparently, you would have me treat ground water folks differently and assume that I should administer to the maximum quantity authorized, whether it's needed or not. That is not how it's done in the surface water system, and yet that apparently is what you think I should be doing here.
>
> Secondly, to do as you suggest would result in waste, because a significant amount of the resource that could be used, wouldn't be used in the interest of trying to -- what shall we say -- zero the risk on the senior. And the senior is always going to have risk that there won't be enough water. The presumption in the west under the prior appropriation system is there will be times when there is insufficient water to fill all rights.[18]

This understanding of SWC operations provides additional bases supporting the Director's interim administration of this delivery call using "minimum full supply."

[17] Transcript, January 29, 2008, pages 1825-26.
[18] Transcript, January 16, 2008, page 188, lines 13-25 through page 189, lines 1-18.

There is no practice in WD01—as indeed there could not be under Idaho law—of answering a delivery call with the full decreed amount of the water right without regard to beneficial uses.

D. Findings related to the Director's reliance on the Heise gage and the "minimum full supply method" to forecast supply and demand.

The May 2 Order appropriately relied on the April 1 forecast of Heise gage flows during the upcoming irrigation season as a means to forecast the irrigation water supplies of the SWC members. This is a sound means to forecast supplies. As Mr. Dreher testified, a variety of agencies, including IDWR, have long relied on the April 1 Heise gage forecast as an indicator of natural flow available during the irrigation season. With regard to the May 2 Order, that reliance is reinforced by Mr. Dreher's analysis of the April 1 Heise gage forecast by reference to actual natural flow supplies available to the SWC members as shown in Attachments J-P.

Mr. Dreher's distinction between water that might be diverted by the SWC if available and the amount needed by the SWC, as a technical matter, is important and it is the primary basis for finding that the May 2, 2005 Order and the Supplemental Orders are not arbitrary for estimating and attempting to make delivery of the "minimum full supply" necessary to satisfy the SWC's water rights. However, neither the parties to the contested case nor the State attempted to defend the "minimum full supply" methodology as a continuing method for administering this delivery call. As such, and based on the evidence, a more refined approach is appropriate to consider the shortcomings in Mr. Dreher's methods reflected in the May 2, 2005 Order and the supplemental orders.

E. Findings related to the Director's "reasonable carry-over" storage evaluation.

Mr. Dreher described his theory that "reasonable carry-over" should be defined by reference to historical reservoir carry-over in other dry years. He developed a table of "reasonable carry-over" based on this historical data. In that analysis, he concluded that two of the SWC entities had such reliable storage that he did not have to provide for minimum "reasonable carry-over." Although he determined that the reasonable carry-over for Minidoka Irrigation District ("MID") and Burley Irrigation District ("BID") was 0, as his cross-examination testimony showed, that was not intended to suggest that these entities were not entitled to carry-over water in their storage accounts. Instead, the determination was made, based on the facts, that no well curtailment was required to ensure reasonable carry-over, due to the reliability of these entities' storage rights. Mr. Dreher also testified that the proper time to require delivery of "reasonable carry-over" amounts was during the current irrigation season.

The testimony of Steve Burrell established that Mr. Tuthill has modified the "reasonable carry-over" requirement to some extent, by not requiring delivery of the "reasonable carry-over" requirement until the following irrigation season. Essentially, the risk is on the ground water users to come up with any amount of "reasonable carry-

over," as well as the amount of water necessary to avoid injury in the 2008 irrigation season. Failure to do so will likely result in curtailment.

F. Director's determination regarding replacement water.

Mr. Dreher testified that after determining 133,000 af of injury to SWC in 2005, his staff used the Eastern Snake Plain Aquifer Groundwater Model to determine the proper curtailment date for junior ground water to be February 27, 1979. He then required that juniors provide replacement water in the amount that would accrue to the stream during 2005 from curtailment.[19] That meant that less than the full 133,000 af of water was required to be provided during 2005, although the juniors had the option of providing it all up front.[20]

Based on Mr. Burrell's testimony, and a review of the 5th[21], 6th[22] and 7th[23] Supplemental Orders, it appears that Mr. Tuthill requires all replacement water to be provided during the year the injury is calculated (less carry-over storage, as described below), rather than only the amount that would accrue from curtailment.

G. The methodology proposed for determining minimum full supply by SWC and Pocatello.

Mr. Dreher testified during the hearing that he had fully expected that the "minimum full supply" method would undergo modifications as a result of the hearing in this matter.[24] Mr. Dreher's determinations in the May 2 Order were not arbitrary, given that they were made under the Department's emergency powers and in order to expedite a decision responding to the delivery call. However, no party presented evidence that supports a continued reliance on the interim methods adopted for purposes of the May 2 Order and supplemental orders. Among the problems—and as acknowledged by Mr. Dreher[25]—was the problem of using as a demand standard a year of low irrigation deliveries without adjusting for the differences in crop demands caused by changes in weather conditions.

To deal with the inadequacies of the "minimum full supply" methods reflected in the May 2 Order, both SWC and Pocatello proposed an "irrigation diversion requirements" analysis that would provide a means to determine "minimum full supply" in a more robust manner, and by taking into account the climatic factors. Generally, the "requirements" methods include inputs related to crop ET, acreage, crop mix, efficiency of application at the field headgate, and conveyance losses between the river headgate and the field.

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[19] Transcript, January 16, 2008, pages 99-100.
[20] Transcript, January 16, 2008, pages 100-101.
[21] Exhibit 3014.
[22] Exhibit 3015.
[23] Exhibit 4600.
[24] Transcript, January 16, 2008, page 52.
[25] *See* Exhibit 3009, *May 2, 2005 Order* at finding 115.

However, it is important to distinguish the purposes for which the parties offered this methodology. Pocatello proposed using the irrigation diversion requirements methodology for conjunctively administering SWC's water rights, and provided testimony that SWC could avoid injury through administration using these methods. SWC, by contrast, provided an irrigation diversion requirements analysis, but provided no testimony or evidence that their calculated irrigation diversion requirements are required to avoid injury to their water rights. Instead, as Dr. Brockway testified, the SWC-preferred approach to administration would be to make available to the SWC their decreed amounts at the start of the irrigation season and adjust from there.[26] Thus, although SWC has presented an irrigation diversion requirements analysis, it apparently does not replace their primary goal which is to achieve an administrative condition under which their decreed amounts of water are available at their headgates throughout the irrigation season.[27]

The "irrigation diversion requirements" analysis presented by Pocatello and SWC differed in certain of its specifics, and the issues related to those differences are discussed in greater detail within. As an initial matter, the Hearing Officer finds that the evidence supports the Director employing an "irrigation diversion requirements" analysis of the sort proposed by Pocatello to determine "minimum full supply," so long as that analysis satisfies certain minimum standards as described within.

Both SWC and Pocatello presented evidence related to the use of an "irrigation diversion requirements" analysis to determine amounts of water necessary to satisfy beneficial uses of SWC during years of shortage. In addition, testimony was elicited from Mr. Dreher on cross-examination that the concept of "irrigation diversion requirements" was an appropriate means to determine "minimum full supply" for purposes of conjunctive administration. In addition, during cross-examination of Dr. Brockway, Mr. Sullivan, and Mr. Franzoy, the testimony established that this engineering analysis, "irrigation diversion requirements" was widely accepted.

Dr. Brockway testified that his analysis relied on an IDWR Report, Exhibit 3040 ("hereinafter, "Dreher-Tuthill Report") as a basis for endorsing this approach. From the testimony, it is clear that the IDWR has expertise and experience in utilizing this type of analysis. It can be inferred that the reason Mr. Dreher did not undertake such an analysis in his initial response to the delivery call was due primarily to the time he had to develop his order—approximately 1 month after he received the information from the SWC in March of 2005—as well as to the nature of the data available to him.

[26] Transcript, January 31, 2008, pages 2374-76.

[27] This position was articulated most clearly by Dr. Brockway, who said that "you are going to need that [full amount of the water right] during the season, and you better plan for it." Transcript, January 31, 2008, page 2375. This position was also articulated by Mr. Norm Young in his written testimony and report. When questioned about this during the trial, Mr. Young admitted during his testimony that his version of administration, which requires curtailment of wells at the time of a delivery call, was not reflected in any decision or policy of IDWR. Transcript, January 29, 2008, pages 2000-01.

H. General summary of evidence regarding irrigation diversion requirements.

1. Inputs to irrigation diversion requirements analysis.

Acreage. Pocatello and SWC used different acreage numbers in their irrigation diversion requirements analysis. However, there was no dispute that it was preferable to use actual acreage under irrigation as an input to the requirements analysis.[28] Both the SWC and Pocatello agreed that the most recent data on crop types in each SWC service area should be used in determining crop water requirements in the current year.

Crop type: For its data inputs, SWC relied on crop reports filed by the various SWC entities with the USBR in the recent past. Pocatello relied on similar data. There was no dispute about the mix of crop types used in either Pocatello or SWC's analysis.

Crop Irrigation Requirements ("CIR"): CIR is a number calculated by reference to "potential evapotranspiration" ("PET") minus effective precipitation. Both Pocatello and SWC used CIR as a starting point for their irrigation requirements analysis.

Farm Efficiency: The percentage of water that is effectively applied to the crop rootzone based on farm headgate deliveries is another component of the irrigation diversion requirements analysis. In general a sprinkler irrigation system is capable of more efficient delivery of water to the irrigated crops than gravity irrigation systems (furrow or flood systems). There was a substantial dispute between Pocatello and SWC about the proper farm efficiency inputs to the irrigation diversion requirements analysis.

Conveyance losses: Surface water irrigators routinely lose water through their surface delivery systems, whether from canal seepage or from other operational losses. No evidence was presented that the conveyance losses associated with SWC operations were unreasonable. However, there was also substantial disagreement between the Pocatello and SWC witnesses about the methods that should be used to develop conveyance losses, as well as the appropriate conveyance loss values.

Summary: Based on the reports filed in this matter as well as the testimony presented, the Hearing Officer understands that to compute irrigation diversion requirements the above-referenced data are combined in the following fashion:

[28] *See, e.g.*, Transcript (Brockway), January 31, 2008, pages 2280-81.

Figure 3

Flow Chart of
Water Budget Analyses
Surface Water Coalition

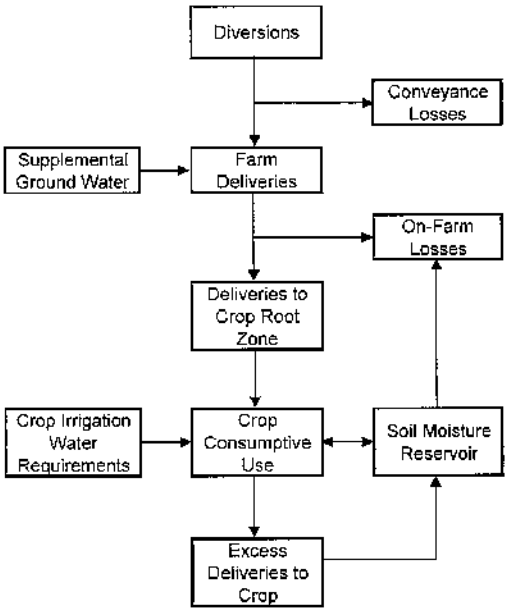

Exhibit 3007A, Figure 3.

I. Summary of SWC's evidence regarding disputed portions of the irrigation diversion requirements analysis.

The SWC expert witnesses Mr. Thurin and Dr. Brockway presented testimony generally regarding the SWC's "irrigation diversion requirements." The analysis conducted by these witnesses can be summarized by reference to the flow chart on Exhibit 8071. As that exhibit indicates, the amount of water necessary to meet irrigation requirements of the crops grown by SWC can be determined using certain data inputs: 1) acreage and crop type; 2) evapotranspiration; 3) the efficiency of delivery at the farm headgate; and 4) conveyance losses. While the data inputs described in Exhibit 8071 are conceptually accurate, the SWC analysis excludes soil moisture as a source of supply for crops.

These data inputs were then used to compute the irrigation diversion requirements for the SWC over the historic period, 1990-2006. In addition, Mr. Thurin conducted an analysis (reflected in Chapter 10 of the SWC's September 26, 2007 report, Exhibit 8000) that compared the computed irrigation diversion requirements with actual diversions.

1. Farm efficiency inputs.

A summary of Dr. Brockway's efficiency inputs is attached as Exhibit 3058. The far right column contains the "Sullivan-Franzoy" efficiency values. The differences between the two sets of experts inputs are not huge, but as Exhibit 3061 showed, the differences are important in terms of the final irrigation diversion requirements analysis.

One item of dispute between the parties was whether the "achievable efficiency" values developed by Pocatello were appropriate for these methods or whether Dr. Brockway's efficiency analyses, variously described as "actual efficiency" or "operational farm efficiency" were more appropriate. While Dr. Brockway's efficiency analysis was described in the September 26, 2007 SWC Report as "actual efficiency," the most cogent summary of his efficiency analysis was included in his rebuttal report where his analysis was described as "operational on-farm efficiency."[29] The rebuttal report further asserted that "[t]he efficiency standard for the irrigation industry is farm irrigation efficiencies obtainable with the present available application equipment, conveyance infrastructure, soils, topography, crop types, labor, and application methodology using management skills adapted to the local setting."

Under cross-examination, Dr. Brockway testified that "actual efficiency" is the efficiency of delivery, based on the amount of water delivered at the field headgate divided into the crop requirements. So if a crop requires 100 af of water, and 150 af of water are delivered at the field headgate, the "actual efficiency" is 66.6%. By the same token, if the crop requires 100 af of water, and 200 af of water are delivered at the field headgate, the "actual efficiency" is 50%. Actual efficiency thus varies by the amount of water delivered. Given that Dr. Brockway developed efficiency numbers that he applied throughout the season in his analyses, rather than efficiency numbers that varied with availability of water at the field headgate, the Hearing Officer finds that Dr. Brockway's efficiency values cannot be described as "actual efficiency" numbers.

With regard to this analysis, Dr. Brockway testified at length about the various considerations he'd made in developing his efficiency numbers. He developed weighted averages, ostensibly relying on specific percentages of sprinklers in the various projects. He then took a look at the soils and topography of the various districts and then adjusted those averages based on his experience and judgment. As such, Dr. Brockway's goals in performing his efficiency evaluations seemed to be the same as those that Mr. Franzoy was attempting to reach in his analysis. However, Dr. Brockway was unable to identify specific reasons for his adjustments.[30]

To the extent that counsel have argued that "actual efficiencies" are the appropriate inputs to this analysis, that argument fails based on the evidence received in this matter. Dr. Brockway agreed that, in exchange for curtailment to receive water

[29] *See* Exhibit 8192 , Rebuttal Report of Direct Testimony and Expert Report of Gregory Sullivan and Eugene Franzoy, bottom of page 2.
[30] Transcript, January 31, 2008, pages 2297-98 and 2304-05.

necessary to grow their crops, irrigators should be required to reasonably manage their systems.[31]

Testimony showed that the concept of "achievable efficiency" is well established in the engineering literature and has been widely used in other water disputes around the west. For example, Dr. Brockway testified that he has developed achievable or "attainable" efficiency in the course of his career. Further, as the evidence demonstrated, the considerations employed by Dr. Brockway, including incorporating management considerations, are all important to determining the amount of water that can be beneficially used by seniors, the limit for purposes of conjunctive administration. The achievable farm efficiency is appropriate to use when determining how much water is needed at the farm headgate. However, Dr. Brockway's evaluations were insufficiently objective to make them a reliable basis for administration.

2. Conveyance losses.

Dr. Brockway calculated canal seepage losses using the Worstell equation. He did not calculate total operational losses, nor did he attempt to determine whether there were any inflows into SWC canals. His conveyance losses are not reported in the SWC materials, but they can be seen on Exhibit 3061 prepared by Pocatello. In general, the conveyance losses are extremely high in comparison to those developed by Pocatello's experts.

The Worstell equation calculates canal seepage in cfs/mile. Dr. Worstell correlated measured seepage rates with soil types in canal prisms by integrating geometry, canal depths, soil characteristics, and other variables.[32] Because Dr. Brockway's conveyance loss values are not reported in his written materials, during cross-examination he was asked to produce the conveyance loss values—both in cfs and af—from the spreadsheets he had previously provided to opposing parties. Then Dr. Brockway was asked to compare his conveyance losses calculated in this case with the conveyance losses determined by other methods in earlier work he had performed on some of the same SWC entities.[33] In all cases, the conveyance losses he determined for inputs to this case were different from those previously determined. In most cases, the conveyance losses were lower, although in one case the losses were higher. This prior work about which he was questioned during cross-examination provides an additional basis to find that his determinations of conveyance loss in this case are unreliable.

Dr. Brockway did agree that conveyance losses can be determined, and that most procedures result in estimates of conveyance loss.[34] He also agreed, based on Exhibit 3040, that IDWR's reports endorse a variety of methods to determine conveyance losses, including methods other than the Worstell method.[35]

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[31] Transcript, January 31, 2008, pages 2315 and 2317.
[32] Transcript, January 31, 2008, pages 2334-35.
[33] Transcript, January 31, 2008, pages 2339-55.
[34] Transcript, January 31, 2008, page 2355.
[35] Transcript, January 31, 2008, page 2336.

3. Adjustments to SWC's irrigation diversion requirements and shortage calculations.

Mr. Thurin testified that he used the irrigation diversion requirements developed by Dr. Brockway and used them in a separate analysis to determine whether the SWC had experienced shortages during the study period of 1990 to 2006. In order to make this determination, Mr. Thurin did not simply compare the SWC's irrigation diversion requirements with actual physical diversions. Instead, he made two adjustments: first, he reduced the SWC's irrigation diversion requirements because the irrigation diversion requirements were larger than the capacity of certain of the SWC's canals; second, excluded from the comparison quantities of water diverted by SWC during certain portions of the irrigation season if they were in excess of the amount required by crops.

The canal capacity adjustments were not made for all SWC members. However, the fact that the adjustment had to be made at all shows the general unreliability of the SWC's diversion requirements. One can infer that the canal systems were developed with the goal of delivering water to the lands under the canal using furrow irrigation methods. Today, when the vast majority of SWC lands are served by sprinkler, it is unreasonable to expect that the SWC members have irrigation diversion requirements that are larger than their canals can carry.

The exclusion of diversion amounts was generally applied against all SWC members' actual diversions, and resulted in creating shortages, or inflating existing shortages.[36] In fact, irrigation water applied in excess of crop demand would have gone into the soil moisture profile and been available for use by the crops in subsequent months. The exclusion of actual physical diversions from the SWC irrigation diversion requirements analysis makes their analyses and conclusions generally unreliable.

4. Carry-over storage.

Beyond objecting to the quantities of "reasonable carry-over" storage provided for in the May 2, 2005 Order as insufficient, the SWC's experts did not specifically suggest amounts of "reasonable carry-over storage."

J. Summary of Pocatello's evidence regarding irrigation diversion requirements.

Pocatello's expert witnesses, Mr. Sullivan and Mr. Franzoy, also presented testimony regarding the SWC's "irrigation diversion requirements." The analysis they endorsed included the same inputs as those described by Mr. Thurin and Dr. Brockway. The primary source of disputes regard input data centered on the proper assumptions and analyses to develop the efficiency input and the conveyance loss input.

[36] Transcript, January 31, 2008, page 2271.

1. Farm Efficiencies.

The efficiency values used by Mr. Franzoy are also reported on Exhibit 3058 and Exhibit 3061. The methods employed by Mr. Franzoy and Mr. Sullivan to develop an efficiency analysis are not dissimilar from those employed by Dr. Brockway. Mr. Franzoy's written direct testimony includes a description of the factors involved in developing efficiency values: "given the existing on-farm factors, such as soils, topography, crop root depth, and water application systems, what percentage of the water that reaches the farm headgate can be used by the crops?" Direct Testimony of C. Eugene Franzoy, P.E., pages 13-14. Mr. Franzoy went on to say that, in addition to these considerations, "achievable farm efficiency is a measure of what the irrigation system is capable of achieving given the existing physical conditions." *Id*. at page 14; see also *id*. at page 16. Mr. Franzoy also described his particular analyses to determine efficiency relying on objective data during his redirect testimony.[37] There was no dispute that Pocatello's experts did not employ an "actual efficiency" of the sort described by Dr. Brockway during his cross-examination. However, it is worthy of note that both sets of experts developed an efficiency analysis that assumes that farmers are attempting to do the best job possible at irrigating their lands.

Achievable efficiency is well regarded as a method for determining irrigation demand. Mr Sullivan explained that the concept of "achievable efficiency" was first applied in the Quantification phase of the case against the upstream state of Colorado to determine the consumptive use of irrigation water in Colorado. This included determination of the consumptive use of post-compact water uses in Colorado that were determined to have increased depletions of usable stateline flow in violation of the Arkansas River Compact. Then, the achievable farm efficiency concept was applied against Kansas in limiting the quantification of damages to Kansas as a result of Colorado's compact violations. It was determined that only a portion of the water that would have made it to the ditches in Kansas without Colorado's violations would have increased crop ET and crop production in Kansas. That portion was limited by the acheivable farm efficiencies under the irrigation systems of the Kansas ditches.[38]

Mr. Franzoy testified on re-direct examination about his rebuttal opinions which examined Dr. Brockway's efficiency analysis from the standpoint of what Dr. Brockway testified he had considered and relied upon during his deposition. Table 2 in Exhibit 3036 summarized the comparison between Dr. Brockway's efficiency analysis as reported at his deposition, Dr. Brockway's efficiency analysis as re-examined by Mr. Franzoy relying on the information and assumptions Dr. Brockway allegedly used, and Mr. Franzoy's analyses. As Mr. Franzoy pointed out, Dr. Brockway used the wrong set of sprinkler efficiency values from Exhibit 3040, and as a result, his determinations are not credible.

The farm efficiency input is important to the irrigation diversion requirements analysis, because it is the term used to translate the irrigation water requirements of the

[37] Transcript, February 4, 2008, pages 2695-97.
[38] Transcript, February 5, 2008, pages 2911-17.

crops into the farm headgate delivery requirement. Adding this to the conveyance losses results in the diversion requirement at the river headgate. The goal of the irrigation diversion requirements methods in the context of conjunctive administration is to provide an objective basis to forecast water demands to meet beneficial uses. As such, the efficiency values determined by Franzoy are reliable because of his vast experience in design, operation, and analysis of irrigation systems throughout the western United States, and his application of this experience to his objective analysis of the delivery systems, soils, and topography of the SWC member systems.

Further indication of the reasonableness of the Pocatello farm efficiency values is the fact that analyses of the irrigation systems of A&B, AFRD #2, MID and BID showed little or no irrigation water shortages during recent years, consistent with the testimony of the SWC managers. If lower farm efficiencies were used in the analyses, then larger and more frequent shortages would be computed and this would be inconsistent with the testimony of the managers. Indication that the A&B, AFRD #2, BID and MID are reaching the total system efficiencies (farm efficiency x conveyance efficiency) assumed by the Pocatello experts is shown in the boxes in the lower right hand corner of Tables 6, 7, 8, and 10, respectively, of Exhibit 3007A. The actual computed system efficiencies for Milner, North Side and Twin Falls are lower than the achievable system efficiencies because these users historically divert more water than is necessary (see Tables 9, 11 and 12 of Exhibit 3007A).

2. Conveyance losses.

The conveyance losses developed by Mr. Sullivan are reported on Exhibit 3061. Mr. Sullivan's analysis relied on conveyance loss values that were developed based on review of the SWC's operational data and deposition testimony of the SWC managers. During his testimony Mr. Sullivan stated that in his professional opinion, it was preferable to rely on operational information rather than an equation to calculate conveyance losses.[39] He also gave testimony in re-direct that the Worstell method relied upon by Dr. Brockway had the potential for a great many errors. For example, the Worstell seepage coefficients are based on the average of values derived from seepage tests performed across the western United States. The variability evident in the seepage coeffiicients from these tests renders the seepage estimates derived using the Worstell method only a rough approximation of the seepage that actually occurs from the SWC delivery systems. The actual seepage could easily be one-half or less than the amounts computed by Dr. Brockway and still be well within the range of the seepage tests compiled by Worstell.[40] Mr. Sullivan's concern for errors associated with Worstell analyses appears to have some foundation in fact as there is an appendix in his rebuttal report that shows that Dr. Brockway's Worstell method calculated conveyance losses larger than actual diversions during certain months of the historic period.[41]

[39] Transcript, February 5, 2008, pages 2910-11.
[40] Transcript, February 5, 2008, pages 2907-10.
[41] Exhibit 3035A, Appendix C.

3. Pocatello's computation of material injury using irrigation diversion requirements.

A comprehensive review of Mr. Sullivan's analysis of material injury using irrigation diversion requirements was described through his cross-examination testimony, as well as through the written direct testimony and reports filed by Pocatello. Mr. Sullivan's irrigation diversion requirements analysis, reflected in his written submissions including Tables 6-12 of Exhibit 3007A, included additional considerations that were not part of Mr. Thurin and Dr. Brockway's analysis. Mr. Sullivan considered soil moisture as part of the water supply available to the crops. This reliance was corroborated by Mr. Alberdi and Mr. Diehl, both of whom testified about reliance on soil moisture as a part of routine operations of their systems. Like Mr. Thurin and Dr. Brockway's analysis, Mr. Sullivan compared the irrigation diversion requirements to actual diversions. In certain instances he determined that there were "surplus" diversions—i.e., diversions in excess of the amount necessary to serve the crop. He assumed these surplus diverisons would be stored in the soil moisture reservoir underlying the irrigated fields up to the moisture holding capacity of the soils within the crop root zone. Conversely, the SWC experts ignored soil moisture storage, and simply excluded the surplus diversions from their anlaysis as if they had not occurred. Mr. Sullivan also used the amount of carry-over storage left at the end of the season to reduce the amount of shortage calculated, on the assumption that if there was water left in storage at the end of the season, the SWC had additional supplies they could have diverted, and that no injury could be determined if they weren't physically short of water. This adjustment for carry-over storage remaining at the end of the season is conceptually similar to the adjustment performed by Mr. Thurin to reduce the shortages computed by SWC experts. Table 13 of Exhibit 3007A summarizes the relationships between the columns of Tables 6-12.

4. Carry-over storage.

Pocatello's experts did not propose a specific amount of "reasonable carry-over" storage. Rather, Mr. Sullivan proposed a logical framework for the treatment of carry-over storage in the context of conjunctive administration.[42] Like Director Tuthill in the 6th and 7th Supplemental Orders, Mr. Sullivan proposed that "reasonable carry-over"—whatever the amount—be provided in the next irrigation season, rather than in the season for which a shortage is computed. Through his written direct and cross-examination testimony, Mr. Sullivan demonstrated how the junior ground water user's obligation to provide carry-over storage was simply a re-timing of obligations that may accrue if injury is determined for seniors in the subsequent irrigation season. According to Mr. Sullivan, either juniors can provide an amount of water as "carry-over" storage during the current irrigation season, thereby reducing any replacement water obligation in the following irrigation season, or an equivalent amount of replacement water can be provided as replacement water in the following irrigation season.

[42] Transcript, February 5, 2008, pages 2859-68, *see also* Exhibit 3007A, Appendix C.

K. Hearing Officer's conclusions regarding the proper methods and data inputs for determining "minimum full supply."

As a threshold matter, the Hearing Officer concludes that development of a "minimum full supply" is consistent with Idaho law as set forth in preceding sections of this Order. The "minimum full supply" is that amount of water required for beneficial use, and may be an amount that is exceeded during years of more plentiful water supply. However, it is an appropriate benchmark for determining when curtailment is appropriate. To require that ground water users curtail in order to deliver the amount of water that the SWC would prefer to have versus the amount that their crops actually need would be contrary to Idaho law regarding beneficial use.

As such, the determinations made through the May 2, 2005 Order regarding injury, and the subsequent adjustments to those determinations made by the Director during the course of the 2005 and 2006 irrigation seasons are sound. As conditions developed, Twin Falls was injured in 2005 by approximately 27,000 af, but due to confusion over how delivery of replacement water was to be made, IGWA did not make deliveries of replacement water for Twin Falls' benefit until 2006. In 2006, the reservoirs filled and the Director determined that the remainder of the 133,000 af of shortage calculated in the May 2, 2005 Order was eliminated. Based on the evidence presented, these orders were not arbitrary.

Beginning with the 5th Supplemental Order, the evidence presented by Mr. Burrell showed that Mr. Tuthill made minor modifications to the Director's methods. The only substantive one of concern here was the determination to delay the provision of "carry-over" water. Because the juniors still bear the burden of curtailment if insufficient replacement water is available to satisfy the "carry-over" amounts required in the 7th Supplemental Order, the Hearing Officer finds that this modification is proper.

No party proposed carrying forward the "minimum full supply" methods relied upon by the Department in the May 2, 2005 Order and supplemental orders. Rather, the experts for SWC and Pocatello both testified that the "irrigation diversion requirements" or "water budget" analyses they used were consistent with Rule 42.01.d. and g. of the CMR. Mr. Dreher agreed that this type of engineering analysis was consistent with the CMR.

The "irrigation diversion requirements" method is conceptually consistent with, although a more refined version of, the "minimum full supply" methods used by the Department. There was no dispute that the requirements method takes into account climatological factors, and that for purposes of administration, the data inputs necessary to forecast demand for water in order to make an injury determination are knowable at the start of the irrigation season. The details, however, are important to a determination of true need. The primary differences between the inputs used by Pocatello's experts and those used by the SWC's experts were the efficiencies and conveyance loss values.[43]

[43] Transcript, January 31, 2008, 2291-92; Exhibit 3061.

The Director should adopt the irrigation diversion requirements methods identified through the testimony in this hearing as a means to conjunctively administer ground and surface water sources. As to the specific inputs:

1. Crop mix. The testimony established that there was no dispute over either the source of data or crop mix adopted by the experts as a data input. The Director should proceed to develop reliable crop mix data, with the assistance of the SWC by requiring that they collect crop type data of the sort that has been collected in previous years by these entities.

2. Irrigated acreage. Testimony established that there was a dispute over which number to use in the context of the irrigation diversion requirements analysis. Testimony established that there are certain lands that are no longer being irrigated within certain of the canal companies. Further, the SWC relied on irrigated acreage numbers that were at odds with the estimates made by the IDWR in the course of the SRBA recommendations, thus likely overstating the acreage amounts. It is fundamental that forecasting the amount of water required to irrigate crops in a given year should be based on the actual lands upon which crops are being grown. Testimony showed that there was no dispute that actual irrigated acreage associated with the place of use of calling senior water rights should be used as a data input.[44] The Hearing Officer finds that using any other value would over-estimate the amount of water required for each SWC member.

3. CIR. There was no dispute that crop ET should be obtained from the USBR Agrimet network.

4. Farm Efficiency. There was substantial dispute over the proper assumptions to be made in the context of an efficiency analysis. The organizing principle is the CMR, and Rule 42.01.g. appears to require an analysis of whether irrigators could do a good job with existing facilities and operations to maximize water use. This sub-section of Rule 42 supports the use of efficiencies that are consistent with "careful water management" as Mr. Dreher described it in his testimony. Further, the concept of "achievable efficiencies" is well accepted in both the professional community and has been recognized by the United States Supreme Court as a means to both calculate damages and, by the same token, reduce damages in an interstate compact dispute. Evidence also was presented that IDWR has used efficiency analyses in the context of its work in the adjudication. Using achievable efficiency values results in reasonable estimates of the diversion requirements of the

[44] Transcript, January 31, 2008, pages 2280-81.

SWC members, and will ensure that curtailment or mitigation by junior ground water rights occurs only when material injury to the SWC members would otherwise occur.

5. As a practical matter, despite all of the dispute over whether the efficiency inputs should proceed from Pocatello's assumptions or SWC's assumptions, the testimony established, that the considerations used by both Pocatello's experts and SWC's experts were similar. Neither side used "actual efficiency" and, the Hearing Officer finds, that "actual efficiency" would not be proper in the context of this analysis because it would not serve the purpose of assisting in developing the "minimum supply" necessary for a given irrigation season.

6. As such, the Hearing Officer finds that the Director should employ the following considerations in developing efficiency inputs to an "irrigation diversion requirements" analysis:

    a. Percentage of sprinklers in each district. Because the achievable farm efficiencies vary with the method of irrigation application and the type of sprinkler, the Department should perform the same analysis performed by Mr Franzoy to determine a weighted average farm efficiency for each SWC member based on the acreage served by various types of distribution systems (e.g., gravity, center pivot sprinklers, other sprinklers, etc.). This analysis should be updated periodically as the irrigation application methods change within each district.

    b. Evaluation of topography in light of the predominant delivery systems in a district or company.

    c. Predominant soil types that may result in greater or lesser retention of water—or even water logging—that may impact crops.

    d. In making these determinations, assume that the SWC farmers practice careful water management, which undoubtedly they do. In making these determinations, the IDWR shall be guided by its own reference document, Exhibit 3040, which requires assuming the "optimum" farm application efficiency for purposes of determining irrigation requirements. That means that the higher end of the application efficiency values found on page 37 of Exhibit 3040 should be assumed when determining farm efficiencies.

e. By using these inputs, along with the guidance provided from the data and reports received in this case, the Department should be able to develop an efficiency number that is sufficiently protective of the senior's right to receive water necessary to grow its crop and the protection the juniors are entitled to from curtailment in excess of that amount required for beneficial uses.

7. Conveyance loss. There was also substantial dispute over the proper methods to determine the losses from seepage or other operational losses between the river headgate and the fields. Dr. Brockway's methods only calculated ditch seepage, and did not consider various inflows to the canal; Mr. Sullivan's methods determined all losses and gains to the canal between the river headgate and the farm headgates, As a threshold matter, Dr. Brockway's seepage losses were generally quite large—over 50% losses for the North Side Canal Company. And these losses did not even include other legitimate operational losses. Further, Exhibit 3035A, Appendix C, demonstrated that some of Dr. Brockway's calculated losses were actually larger than the diversions made by a particular entity. Finally, Mr. Sullivan's testimony established that calculating ditch seepage using the Worstell method employed by Dr. Brockway was likely unrealiable because of certain simplifying assumptions made by Dr. Worstell in the course of developing his methods.

a. The sum total of this evidence demonstrates that Dr. Brockway's conveyance loss values are unrealiable. Although Mr. Sullivan's reliance on the manager's deposition testimony and other operational data may have its drawbacks, it seems highly unlikely, for example, that Mr. Ted Diehl, North Side's manager, would be unaware of losses in excess of 50% associated with the operation of his system; nor would Mr. Diehl be unaware of diversions for irrigation that failed to reach the fields because of conveyance losses.

b. The Department should develop conveyance loss values for the SWC that are consistent with the understanding of the managers operating the systems, as well as available operational data that assists in understanding the net losses between the river and the fields. The conveyance loss values should be based on actual measurements of conveyance losses based on the difference between river diversions and farm headgate deliveries. The resulting conveyance loss should not include excessive operational spills.

8. Soil Moisture Storage. The Department should also incorporate a soil moisture value into the irrigation diversion requirements analysis. The failure of the SWC experts to consider soil moisture is at odds with the actual operations of these systems as testified to by Mr. Diehl and Mr. Alberdi.

9. Adjustments to computed shortages. Any computed shortage to a SWC member should be reduced by the water remaining in storage in that user's storage account(s) at the end of the irrigation season, and by any leases of water to others during the year. These adjustments shall accumulate from year to year until such times as storage account(s) fills, at which time any accumulated adjustments are cancelled.

10. Reasonable carry-over storage. As Mr. Dreher described during his testimony at the hearing, the question with regard to "reasonable carry-over" storage is what amount of water should be guaranteed by the threat of curtailment of ground water users.

    a. The USBR planning documents referred to by various witnesses in this case establish that the USBR planned that during severe drought periods, such as that which occurred in the 1930's, the Snake River reservoir system would empty. There was no anticipation that users of USBR facilities would be able to maintain reservoir accounts as for purposes of "insurance," rather than for purposes of use.

    b. Maintaining completely full reservoirs as an "insurance" policy for senior surface users is not consistent with the concepts of "maximum utilization" and "optimum use." The Director has discretion to determine "reasonable carry-over" by reference to the reliability of various SWC members' storage water rights. Based on the evidence received, it was appropriate for the Director to assume that for some of the SWC members the "reasonable carry-over" value was 0. As Mr. Dreher testified, this finding of "reasonable carry-over" is not a determination that these users are not entitled to any carry-over storage, rather that in the context of conjunctive administration the facts did not support the Department exercising its authority to curtail junior wells to guarantee an amount of carry-over storage to these users when, historically, these users had ample carry-over storage even in the driest of years.

11. Neither SWC nor Pocatello provided testimony regarding appropriate amounts of "reasonable carry-over" to substitute for the decision-making reflected in the May 2, 2005 Order. Until the

Department can determine how much injury may accrue to SWC during the following irrigation season, to require junior ground water users to acquire and provide an amount of storage to remedy a shortage that has not even been forecast is in excess of the Department's authority.

12. The Hearing Officer finds that the juniors bear the burden of providing reasonable carry-over storage whether such water is earmarked as "carry-over" during the current irrigation season for assignment to SWC storage accounts in order to satisfy any shortages in the following irrigation season, or whether juniors are required to provide all of the replacement water to avoid shortages to seniors in the following irrigation season.

    a. The total amount of replacement water is the same, the only difference is the timing when it must be provided.

    b. This is consistent with the Director's 6th and 7th Supplemental Orders, which calculate "reasonable carry-over storage" for the 2007 irrigation season, but do not impose an obligation on juniors to provide such replacement water until after the April 1, 2008 supply forecast. The Department has discretion to determine the timing of the "reasonable carry-over" obligation, and the juniors bear the risk of curtailment if the quantity of the obligation that comes due in the following irrigation season is larger than the amount of water available to lease for replacement supplies. Thus, in the context of the evidence presented, "reasonable carry-over" is an obligation on the juniors that can be forecast in the current irrigation season, but does not come due and owing until the following season if and when injury is forecast.

L. Effect of curtailment on SWC supplies.

The parties offered evidence of the effects on SWC supplies from curtailment of junior ground water rights. The context of this part of the dispute involves the question of whether the junior ground water users can provide adequate replacement water via leases from the WD01 Rental Pool, or whether curtailment is the only option to avoid material injury to SWC's water rights. The evidence was of two types: engineering analyses that examined the effect of curtailment and regulatory analyses, based on what the witness believed to be the proper interpretation of IDWR's authorities and rules.

1. The engineering analyses were insufficient to support a finding that curtailment is preferable to replacement water.

Mr. Shaw performed an analysis of the impact on gains to the Snake River from curtailment of all wells. The purpose of his analysis was to demonstrate that curtailment of junior wells would result in usable or storable water to satisfy the SWC's water rights. However, Mr. Shaw admitted that his assessment had assumed no ground water pumping, and then assumed 2003 reservoir fill conditions to determine, after 38 years, how much space would be available to store the gains to the stream. The trouble was that the 2003 reservoir levels were the result of ground water pumping, so whether or not the reservoirs could have stored water during the 2003-2004 season isn't clear from his hypothetical.[45] Further, that curtailment would have resulted in reach gains during times when there was no reservoir storage space, and more water would have flowed past Milner.[46]

By contrast, Mr. Sullivan presented testimony and evidence that curtailment was not an efficient way to manage water resources. In his revised September 26, 2007 Report (Exhibit 3007A), he describes numerous examples of the inefficiencies associated with curtailment. Specifically, he describes ESPAM results which would require curtailment of 1.1 maf of junior pumping to offset the 127,900 af of injury determined by IDWR in 2005.[47] During his testimony he was questioned about his management framework, provided as Appendix C to Exhibit 3007A. He admitted that, if no replacement water was available, curtailment of juniors would be a "last resort" for IDWR to administer to avoid injury to SWC water rights.[48]

2. The administrative interpretation that curtailment is the appropriate remedy is not supported by IDWR's interpretation of its own rules.

Mr. Young is a former administrator with IDWR. He expressed opinions about the interpretation of the CMR, and IDWR's authorities when faced with a delivery call. His written report (Chapter 4) reflects his opinion that curtailment at the time of a delivery call is the appropriate course of action for IDWR. However, during cross-examination he admitted that his opinions expressed through his written materials had not been adopted by IDWR, nor had he had the opportunity during his years at IDWR to administer any delivery calls like the one filed by SWC.[49]

3. Findings related to curtailment versus replacement water.

There was little dispute that the 2007 irrigation season presented the greatest challenge for providing water supplies to avoid injury to the SWC. However, the testimony and evidence demonstrated that IGWA was able to produce replacement water during 2007, even as late in the year as December to respond to the Department's 7th Supplemental Order which required an adjustment in the replacement amounts. Thus,

[45] Transcript, January 29, 2008, pages 1942-45.
[46] Transcript, January 29, 2008, pages 1961-62.
[47] September 26, 2007 Revised Report at pages 29-31.
[48] Transcript, February 5, 2008, pages 2865-69.
[49] Transcript, January 29, 2008, pages 2000-01.

although IDWR has the discretion to order curtailment, it does not appear based on the testimony and evidence that it will be required to order curtailment. The experience of 2007 demonstrates that water is likely to always be available for rent at some price, and that ground water users can continue to pump out of priority if their injurious impacts are replaced via replacement water supplies.

M. Summary of testimony from lay witnesses.

1. The SWC provided written lay testimony for numerous lay witnesses. By and large, their testimony can be summarized under the following category headings: operations, water supply, and allegations of crop loss or monetary impacts.

2. Operations: The SWC's lay testimony confirms that in many cases, the SWC farmers have made improvements to their operations to more effectively use the water diverted into the canals. *See, e.g.*, Testimony of Albert Lockwood, page 4, line 16 through page 7, line 7. In addition, several testified that more sprinklers were in use on the SWC lands and that sprinklers require less water to grow a better crop. *See, e.g.*, Testimony of Randy Bingham, page 16, line 15 through page 17, line 4.

3. Water supply: The SWC's lay testimony confirms the allegations of SWC: that in certain instances, and during certain years, they have not received the authorized amount of water consistent with their licenses and decrees. Concerns were expressed about the amount of carry-over storage, and that without sufficient carry-over storage, the Nez Perce Agreement may be jeopardized. *See, e.g.*, Testimony of Billy Thompson, page 13, line 13 through page 15, line 4.

4. Crop loss or monetary impacts. Numerous witnesses provided testimony regarding crop losses or monetary impacts to their farming operations which they alleged were related to reductions in supply. *See, e.g.*, Testimony of Greg Garatea, page 3, line 20 through page 5, line 8.

5. Findings related to written direct lay witness testimony: As indicated during the January 18, 2008 oral argument on Pocatello and IGWA's Motion to Strike Testimony, the Hearing Officer is unpersuaded by the lay witness testimony regarding specific crop loss or other substantive impacts to particular farming operations, and will not rely on this as a basis to find for the SWC in this matter. Further, the lay witness testimony generally provides a context for the allegations of the SWC generally in this case, and confirms other evidence in the case regarding the relationship between the actual diversions and the diversions authorized under

the decrees. However, the lay witness testimony in and of itself is not the basis for any particular findings of injury or non-injury to the SWC's water rights.

VI. SUMMARY OF USBR'S EVIDENCE.

The USBR was the federal agency that developed the storage reservoirs in the Upper Snake River in which SWC holds storage contracts. The SWC holds storage contracts in Jackson, Palisades, Lake Walcott, and American Falls. Storage in certain other reservoirs in the Upper Snake system was incorporated into the analyses of SWC and USBR experts in this case; however, as Mr. McGrane, one of the USBR's experts admitted, the SWC neither has storage contracts nor could it physically store in Ririe or Grassy Lake Reservoirs. Transcript, January 25, 2008, pages 1489-91. There does not seem to be any dispute that for purposes of resolving this matter that the only USBR reservoirs that are at issue are the ones in which the SWC either has storage contracts or in which these contract rights may be stored.

The SWC's storage in these reservoirs are among the sources of water the Director examined in determining "minimum full supply" and considerations related to storage in these reservoirs have been expressly incorporated into the analyses of the experts in this case. The USBR holds state law issued licenses for the reservoirs on the Upper Snake River, but the USBR has not made a delivery call in this case. Instead, the USBR (as well as the SWC) are signatories to the Nez Perce Agreement which requires, *inter alia*, an effort on the part of the USBR to lease storage water from the Upper Snake River reservoirs for "flow augmentation" to satisfy Endangered Species Act concerns on the Lower Snake River and Columbia River. The Nez Perce Agreement, then, creates an obligation on the USBR to draw on reservoir contents for purposes (i.e., flow augmentation) that were unrecognized by Congress at the time of the authorization of these reservoirs.

To the extent that this represents additional evidence that may require alteration of reservoir operations either to the detriment of seniors or juniors, the Hearing Officer denied IGWA's Motion to Exclude all of the USBR's witnesses and evidence on the grounds of relevance. However, after full consideration of that evidence, the Hearing Officer finds (based on the summary of testimony below and conclusions of law within) that the USBR's evidence was instructive for context only, and not dispositive of any of the issues in this case.

A. Testimony of Jerrold Gregg:

Mr. Gregg is the Area Manager for the USBR's Snake River Area Office. He testified generally about the physical operation of the USBR's reservoirs, as well as the considerations that his agency has in operations to accomplish flood control, hydropower production and flow augmentation. During cross-examination he was questioned about the USBR's concerns associated with providing flow augmentation in conformance with the Nez Perce Agreement. He testified first that the USBR was not under any impending threat of litigation with regard to its compliance with the terms of the Nez Perce

Agreement, although he did allude to the federal litigation on-going in the Federal District Court in Washington regarding the USBR's compliance with the Endangered Species Act ("ESA"). He described the concern that if the USBR failed to comply with the ESA to the satisfaction of the environmental plaintiffs in that case, they might be in a situation "similar to the Klamath" in which the USBR was required to release water from Klamath Lake to satisfy ESA requirements, and thus foreclosed from making a portion of its deliveries to its contract holders. However, he acknowledged that if the USBR successfully obtained curtailment of junior ground water users in order to fill its reservoirs—increasing both reservoir storage and natural flow water supplies—it would merely be shifting the curtailment of deliveries from its contractors to the junior ground water users[50].

B. Testimony of Pat McGrane:

Mr. McGrane is a supervisory hydraulic engineer and program manager for the USBR's river and reservoir operations group.[51] Mr. McGrane offered opinions about the effect on winter-time reservoir storage if ground water rights junior to 1949 were curtailed for the period 2001-2005. His opinion was that there would have been additional reservoir storage based on curtailment for that time period. He also said that if there had been curtailment over a wetter period, from 1995-1997, that the reservoirs would not have been adequate to hold the amount of water accruing to the river from curtailment. He testified that during that period of years the amounts of water would have been released from the reservoirs, possibly for flood control, hydropower or flow augmentation.[52]

Mr. McGrane's opinions developed the amounts of water that the USBR could store in the event of a repeat of the drought period of 2001-2005. However, the USBR is not placing a delivery call. To the extent that his testimony goes to the point that if more water is available, Reclamation would store it and more natural flow would be available to the SWC, this is a foregone conclusion. Massive curtailment of junior wells would undoubtedly introduce more water into the Snake River, and some of it could be stored and some used for irrigation. It does not answer the question of whether any of that water would have been needed to satisfy irrigation diversion requirements. As such, Mr. McGrane's opinions are of little relevance to resolving the dispute in this matter.

C. Testimony of David Raff:

Mr. Raff works for the USBR as a hydraulic engineer. He offered opinions about the increase in risk to water users associated with reducing carry-over storage. He also offered the opinion that flow variability is increasing and that, if such variability persists, it will impose a greater risk on future shortages.[53] He was unable to give an opinion

[50] *See generally*, Transcript, January 24, 2008.
[51] Transcript, January 25, 2008, page 1400, lines 5-16.
[52] Transcript, January 25, 2008, page 1443, lines 5-24.
[53] Transcript, January 25, 2008, page 1542, lines 10-25 through page 1543, lines 1-13.

about the source of variability or the chances that such variability would occur into the future.[54]

Mr. Raff indicated he was unfamiliar with the CMR,[55] and appeared to be under a misperception about the nature of Mr. Dreher's "reasonable carry-over storage" assigned in the May 2, 2005 Order.[56] In any event, Mr. Raff's opinions appear to reflect the concept that if there is any reduction in carry-over storage—even if the storage is diverted by a contract-holder—that increases the "risk" to water users. This is self-evident. However, his analyses do not directly address any of the elements of Rule 42 of the CMR, and the USBR has not identified a statutory or regulatory provision that calls for determining the "risk" on water users from administration of rights. The dispute in this case is designed to apportion risk between senior surface rights and junior ground water users by reference to the doctrine of "maximum utilization" and "optimum use," and by the terms provided for in the CMR. In that regard, Mr. Raff's opinions are not helpful in resolving the dispute in this case as they merely state the obvious: more carry-over storage reduces the "risk" to seniors of having an inadequate water supply.

D. Findings related to USBR's evidence presented in this case.

As a practical matter, the Hearing Officer is sympathetic to the conflicting obligations of the USBR in delivering water to its contractors, as well as in operating its system for flood control, hydropower, and flow augmentation. However, the Hearing Officer is also mindful of the limitations of the Department in ordering curtailment of junior ground water users to satisfy senior surface rights. The senior surface rights placing the delivery call in this case—SWC do not have a decreed or licensed right for flow augmentation water. The USBR is obligated, under federal and state law, to satisfy its obligations under the Nez Perce Agreement. However, this without more, does not establish a basis for the Department to act to curtail junior ground water users.

It is undisputed that the flow augmentation deliveries are not decreed water rights. Mr. Gregg testified[57] that the USBR's efforts to get a water right for the flow augmentation water were rebuffed in the early 1990's, and that they have not pursued decrees for this use. Furthermore, the use of water for flow augmentation is not, in and of itself, a beneficial use under Idaho law. I.C. § 42-1763B(4). Flow augmentation uses appear to occupy a gray area so far as the legislature is concerned, as they are not prohibited but, by the same token, cannot become vested uses without additional legislation. Thus, to the extent the USBR's participation is designed to obtain curtailment for additional storage in the reservoirs, the Department is without authority to take such action.

[54] Transcript, January 25, 2008, page 1537, lines 21-25 through page 1538, lines 1-12.
[55] Transcript, January 25, 2008, page 1523, line 25 through page 1524, lines 1-3.
[56] Transcript, January 25, 2008, page 1529, lines 7-18.
[57] Transcript, January 24, 2008, page 1278.

VII. MIXED FINDINGS OF FACT AND CONCLUSIONS OF LAW.

A. Organizing legal principles:

1. As the May 2 Order puts it:

> The issue of how to integrate the administration of surface and ground water rights diverting from a common water source in the Eastern Snake Plain are has been a continuing point of debate for more than two decades. To date, no court has directly and fully addressed the issue of how to integrate the administration of the surface and ground water rights that were historically administered as separate sources. The progress made in adjudicating the ground water rights in the Snake River Basin Adjudication and the development of the reformulated ground water model for the ESAP used by the Department to simulate the effects of ground water depletions on hydraulically-connected tributaries and reaches of the Snake River now allow for the State to address this issue during this period of unprecedented drought.
>
> May 2 Order, page 35, Conclusion of Law ¶ 19.

2. The Department must balance two principles of Idaho law: the prior appropriation doctrine (Art. XV, section 3, Idaho Constitution), and the principle of optimum use of Idaho's water (I.C. § 42-226). These principles are further qualified by the doctrine of reasonable use. May 2 Order, Conclusion of Law ¶ 20-22.

3. Through its delivery call, the SWC asked the IDWR to exercise its authority under the CMR to curtail junior ground water users in favor of deliveries to the SWC in amounts authorized under their decrees and licenses.

4. The Department, for its part, is required to administer water rights by reference to I.C. § 42-101, which requires that the Department exercise its duties by "equally guarding" all interests involved. In the context of this dispute, "equally guarding" means adopting methods for administration that are non-arbitrary to ensure that curtailment of junior ground water rights is required to avoid material injury to the SWC.

5. The Department is required to apply the CMR in answering a delivery call. Applicable here are the following rules:

   a. Rule 10.07 promoting the goal of full economic development of underground water resources in a manner that does not result in material injury to senior surface rights and that furthers the principle of reasonable use of surface and ground water as set forth in Rule 42.

   b. Rule 10.14 defining material injury as "hindrance or impact upon the exercise of a water right caused by the use of water by another person as determined in accordance with Idaho Law, as set forth in Rule 42."

c. Rule 20.03, integrating the policy of reasonable use as provided in Article XV, section 5 of the Idaho Constitution, and optimum development of water resources in the public interest as required under Article XV, section 7 of the Idaho Constitution, and full economic development as defined by Idaho law. An appropriator may not command the entirety of large volumes of surface or ground water to support his appropriation contrary to the public policy of reasonable use.

d. Rule 40.03 vesting in the Director authority to determine whether the diversion and use of water regulated under Rules 40.01a and 40.01.b. is causing material injury to a senior-priority water ight that is diverting and using the water efficiently and without waste, and in a manner consistent with the goal of reasonable use as described in Rule 42.

e. Rule 42.01 which prescribes a non-exclusive list of factors the Director may consider in the context of an allegation of material injury. Pertinent here are section 42.01.a., -.d, and -.g.

6. In this context of this case, there is no dispute that pumping of junior ground water rights in Idaho depletes the surface flows of the Snake River. The nub of the instant dispute, however, is to what degree the depletions are injurious.

7. A decree or license is a maximum authorized amount, not an amount to which a user is entitled absent a showing of beneficial use. *AFRD #2 v. IDWR*, 143 Idaho 862, 154 P.3d 433 (2007). *A&B Irrigation Dist v. Aberdeen-American Falls Ground Water Dist.*, 141 Idaho 746, 118 P.3d 78 (2005). *See also Abbot v. Reedy*, 9 Idaho 577, 581, 75 P. 764, 765 (1904 ("the law only allows the appropriator the amount actually necessary for the useful or beneficial purpose for which he applies it.") These limitations on water rights are important in considering the question of material injury.

8. The Department properly incorporated the beneficial use limitation when it adopted a "minimum full supply" approach to determining demand. The "minimum full supply" approach sought to determine, by reference to past historic diversions, the amount required by SWC users for beneficial uses. When forecasted amounts of water supply were inconsistent with these demands, the Department found material injury and ordered replacement water or curtailment.

9. The concept of "minimum full supply" is consistent with Idaho law, because it brings together a number of principles: 1) the limitation that all water rights are limited to deliveries sufficient to satisfy beneficial use; 2) the state policy of "optimum use" which requires seeking ways to optimize the use of the state's water resources; and 3) the constitutional and statutory concepts of "reasonable use" which, by its terms, is inconsistent with finding material injury if the senior had sufficient water to make a crop.

B. The Department's response to a delivery call must be determined by reference to factual showings related to crop requirements, rather than by merely presuming that water diverted in prior seasons was necessary for beneficial use.

1. Because Idaho law limits water rights to the amount necessary for beneficial use, as described in ¶ A.7 above, the Director should not assume that historically diverted amounts reflect "minimum full supply." In his testimony, Mr. Dreher identified a two types of beneficial use—that required for crops and the larger amount that might be diverted because it was available. He properly distinguished the first as the amount of beneficial use that could be guaranteed by threat of curtailment. Thus, the methods he developed in reliance on Rule 42, while adequate for the emergency order time-frame in which his initial orders and supplemental orders were issued, were insufficiently precise to allow the Department to continue to rely upon them for surface-to-ground water delivery calls.

2. Although the Department's concept of "minimum full supply" is consistent with Idaho law, the methods employed by the Director to timely respond to the January 14, 2005 delivery call letter are not sufficient for future administration.

   a. Instead, Idaho law requires a method that takes into account actual crop demand. The "irrigation diversion requirements" method which was advanced conceptually by both SWC and Pocatello, incorporates the proper elements to allow a forecasting of demand based on actual acreage, crop mix, crop water demand, farm efficiency, soil moisture reservoir, and conveyance loss.

   b. Idaho law demands that administration of water rights be limited to actual irrigated acres identified as the place of use of the senior water right. *AFRD #2 v. IDWR*, 143 Idaho 862, 154 P.3d 433 at 447 (2007). In addition, as the evidence in this case demonstrates, the other considerations that are part and parcel of the irrigation diversion requirements analysis are also mandatory inputs to avoid curtailment of juniors without benefit to seniors. As described in the findings, conveyance loss and farm efficiency were the two areas of data over which there was the most dispute. Idaho law supports assumptions regarding those data inputs that are consistent with the "beneficial use" limitations described above. *See Vineyard Land & Stock Co. v. Twin Falls Salmon River Land & Water Co.*, 245 F. 9, 23 (9th Cir. 1917) (whether the application of water to certain lands was beneficial use, the 9th Circuit recited Idaho law: "[e]conomy must be required and demanded in the use and application of water."); *Briggs v. Golden Valley Land & Cattle Co.*, 97 Idaho 427, 435, n. 5, 546 P.2d 382, 390 n.5 (1976); *Schodde v. Twin Falls Land & Water Co.*, 224 U.S. 107, 120 (1912). *See also* Exhibit 3040.

C. Timing of replacement water supplies or curtailment.

1. Idaho law does not authorize IDWR to order replacement water (or curtailment to provide accretions to the stream) prior to the irrigation season. WD01 does "after the fact" accounting and the SWC members divert water at their headgates throughout the irrigation season. The evidence demonstrated that because of this, no "up front" replacement water or curtailment was required in advance of the Department's in-season forecasts. Adjustments to the forecasted demand or forecasted supplies of water are appropriate during the irrigation season, and juniors bear the risk of obtaining replacement water or curtailment at that time. This does not present an undue risk to the SWC, because the evidence showed that even in 2007, the year of most serious water shortages to date, there was water available for lease by IGWA. Had they been unable to obtain replacement water, the junior ground water users would have been curtailed.

D. Carry-over storage.

1. Idaho law is consistent with the concept of "reasonable carry-over" storage reflected in Rule 42.01.g. *AFRD #2 v. IDWR*. However, there was no dispute that storage in and of itself is not "beneficial use." Instead, a right to store water is conditioned on a plan and intent to use the water for some beneficial use. Thus water users may not place a delivery call to maintain a particular reservoir level and neither the USBR nor the SWC may demand that their reservoirs be kept full for purposes of "insurance."

2. "Reasonable carry-over" storage is another component of the forecasted demand analysis. This is provided for in Rule 42.01.g., but the actual methods for developing "reasonable carry-over" are left to the discretion of the Department.

    a. Storage is not a beneficial use. In Idaho, storage may be made only *for* a future beneficial use. *United State of America v. Pioneer Irrigation Dist.*, 144 Idaho 106 (175 P.3d 600 (2007). However, the ability to store for a future use is not unlimited—rather it is qualified by principles of "optimum use" and "reasonable use" as described elsewhere in these paragraphs.

    b. The Director's determinations regarding quantities of "reasonable carry-over storage" for the SWC are consistent with Idaho law insofar as they reflect an evaluation of available facts regarding reliability of SWC member storage accounts and the varying importance of storage to SWC members' water uses.

    c. The Director has the discretion to determine, based on findings of fact, that an amount of 0 af is "reasonable carry-over."

    d. The Department is not authorized, however, to require ground water users to supply "reasonable carry-over" during the current irrigation season. If the Director finds some level of "reasonable carry-over" to be appropriate,

ordering such an amount would be to benefit the SWC in the subsequent irrigation season, and it is appropriate to require provision of that amount during the subsequent season.

e. Because storage is not in and of itself a beneficial use, the Department is not authorized to require juniors to obtain and supply carry-over water unless and until, in the following irrigation season, the demand forecast suggests that the amount is required. Juniors are not foreclosed from obtaining such water during the prior season or over the winter, but the Department may not order it because it falls afoul of Idaho law under which storage is made for a particular beneficial use.

E. "Material injury."

1. At the outset of this hearing, the parties briefed and argued a motion for summary judgment on whether or not the SWC had met its burden to establish material injury. The Hearing Officer's verbal ruling at that argument at that time distinguished between "injury," which was described as a failure to have available the decreed amount of water, and "material injury" which was described as a failure to have available the amount of water necessary to grow a crop due to interference from juniors.

   a. The verbal order denying the motion set forth that the burden of proof was initially on the SWC to show they had senior water rights and in what amounts, IGWA and Pocatello to show that the amounts of water authorized on the face of the SWC's water rights were not necessary to make beneficial use of the water.

   b. Within this framework, the SWC could (and did) anticipate rebuttal by attempting to show that it did require particular amounts of water for beneficial use through its irrigation diversion requirements analysis.

2. The Hearing Officer finds that the SWC met its burden to show it had senior water rights, but that it failed to refute the showing made by Pocatello that it did not require the amounts that its members are authorized to divert under their decrees. Pocatello met its burden, as a junior municipal ground water user, to show that the amounts SWC required can be determined by reference to Pocatello's irrigation diversion requirements analysis.

F. USBR's positions are not remediable in this case.

1. The Reclamation Act provides: "The right to the use of water acquired under the provisions of this Act shall be appurtenant to the land irrigated, and beneficial use shall be the basis, the measure, and the limit of the right." 43 USC 372. By its terms, Reclamation's operations with regard to its resevoirs—and its contractors use of water stored in those reservoirs—are subject to the same limitations on beneficial use described elsewhere. This is not disputed by Reclamation, based on testimony received in this case.

2. The USBR did not place its own delivery call, and so has no independent basis for seeking redress under state law. However, as a practical matter, the USBR's entitlement to relief if it *had* placed a delivery call would involve questions of law and fact conterminous with those of SWC contract-holders. Thus, its failure to make a delivery call in this matter does not leave open any questions of law or fact regarding what the USBR would be entitled to had it placed a call—it is entitled to precisely what the SWC contract-holders are entitled to. Under state law, SWC-contract holders are entitled to store water in USBR reservoirs and, for purposes of conjunctive management, they are also entitled to "reasonable carry-over" as that term has been defined (and limited) by state administrative actions or under state law.

3. At trial, the USBR argued that its obligations under the Nez Perce Agreement formed an additional and independent basis for conjunctive administration—including curtailment of wells—in the context of this case. This is incorrect as a matter of law. Under I.C. § 42-1763B, the legislature made provision for the rental of "flow augmentation" water through water banks. However, the legislature also stated:

> Nothing in this section shall be construed to alter, or authorize the U.S. bureau of reclamation [sic] to modify in any way its existing contractual obligations, or to constitute a finding by the legislature that the rental or use of storage water or natural flow water rights for flow augmentation for listed anadromous fish or any other species is a beneficial use of water, that it is in the public interest, or whether such use injures existing water rights.

I.C. § 42-1763B(4). Even if "flow augmentation" water were a decreed beneficial use, it would be junior in time to the SWC water rights and likely be subject to curtailment as part of conjunctive management. Testimony established that the earliest deliveries of flow augmentation water were in the early 1990's; the May 2, 2005 Order ordered curtailment of rights junior to 1979. Neither Idaho statutes nor the Department's own regulatory authorities regarding conjunctive management establish a basis upon which the Department may curtail wells to protect or guarantee "flow augmentation" water.

4. With that said, obviously SWC or other contract holders are entitled to lease their water to the USBR under the "willing buyer-willing seller" strategies announced in the Nez Perce Agreement. However, such leasing of water may well implicate carry-over amounts available to the SWC. Ground water users are not responsible for mitigating any such reduction in carry-over. Plainly put, the additional obligation imposed on the Upper Snake Reservoirs by "flow augmentation" uses, while potentially complicating the conjunctive management scheme, is a burden to the uses of the senior surface rights, and does not form a basis to restrict the operations of junior ground water rights.

VIII. JUDGMENT AND DECREE

Based on the foregoing findings of fact and conclusions of law, which the Hearing Officer incorporates in total into this Judgment and Decree, the Hearing Officer finds that:

1. the SWC is not injured if they do not receive the amount of water on the face of their decrees;

2. the Department must respond to SWC's claims of injury by determining the amount of water necessary for SWC members to make beneficial use of that water;

3. beneficial use is the amount of water *needed* not the amount of water senior water users are authorized to divert under their decrees and licenses;

4. the Department's "minimum full supply" methods for determining material injury in response to the SWC delivery call are not arbitrary for purposes of their use during the interim period between the placement of the delivery call and this hearing;

5. to forecast the water supplies likely to be available, the Department's reliance on the Heise gage to forecast natural flow water available to SWC is appropriate and consistent with Idaho law, including the CMR;

6. for purposes of continuing administration, the appropriate conceptual methodology for IDWR to use to forecast SWC's demand for water in conjunctive administration is that endorsed Pocatello's experts in their water budget analyses, but as modified by the Findings of Fact herein "Hearing Officer's conclusions regarding the proper methods and data inputs for determining 'minimum full supply'" (*infra* ¶ V.K.) setting out the specific considerations for data inputs to that analysis;

7. "reasonable carry-over" is an obligation on the juniors that can be forecast in the current irrigation season, but does not come due and owing until the following season if and when injury is forecast by the Department.

8. replacement water is an appropriate administrative response to a finding of material injury. Curtailment should be required of juniors only in the absence of available replacement water.

Signed this ___ day of _____, 2008.

_____
Gerald Schroeder, Hearing Officer

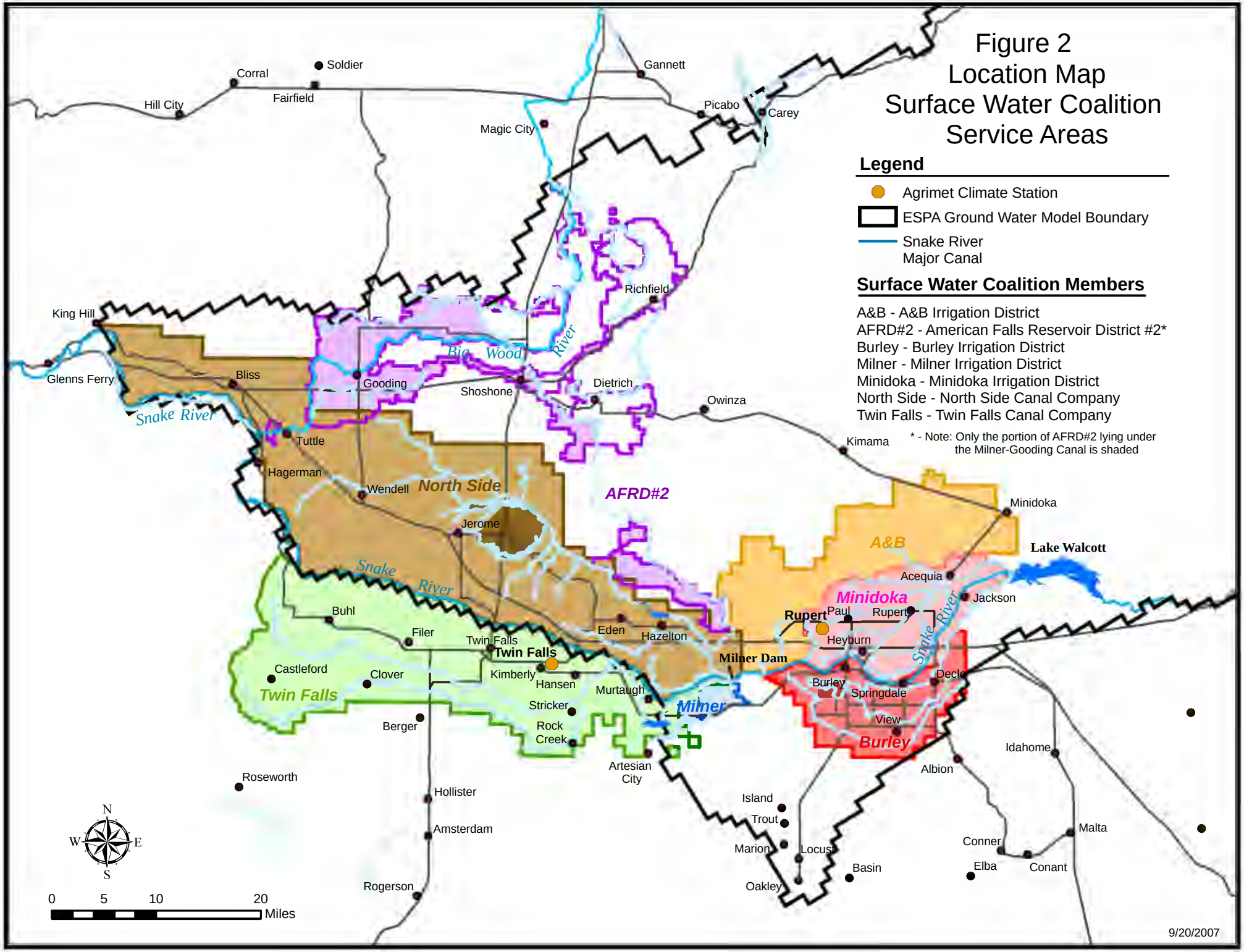
Figure 2
Location Map
Surface Water Coalition
Service Areas
Legend
Agrimet Climate Station
ESPA Ground Water Model Boundary
Snake River
Major Canal
Surface Water Coalition Members
A&B - A&B Irrigation District
AFRD#2 - American Falls Reservoir District #2*
Burley - Burley Irrigation District
Milner - Milner Irrigation District
Minidoka - Minidoka Irrigation District
North Side - North Side Canal Company
Twin Falls - Twin Falls Canal Company
* - Note: Only the portion of AFRD#2 lying under the Milner-Gooding Canal is shaded
Soldier
Corral
Fairfield
Hill City
Gannett
Picabo
Carey
Magic City
Richfield
King Hill
Glenns Ferry
Bliss
Gooding
Shoshone
Dietrich
Owinza
Big Wood River
Snake River
Tuttle
Hagerman
Wendell
North Side
AFRD#2
Kimama
Minidoka
Jerome
A&B
Lake Walcott
Acequia
Jackson
Minidoka
Rupert
Paul
Rupert
Heyburn
Snake River
Buhl
Filer
Twin Falls
Twin Falls
Eden
Hazelton
Milner Dam
Castleford
Clover
Kimberly
Hansen
Murtaugh
Twin Falls
Stricker
Rock Creek
Berger
Milner
Burley
Springdale
Declo
View
Burley
Idahome
Albion
Artesian City
Roseworth
Hollister
Amsterdam
Rogerson
Island
Trout
Marion
Locust
Basin
Oakley
Conner
Elba
Conant
Malta
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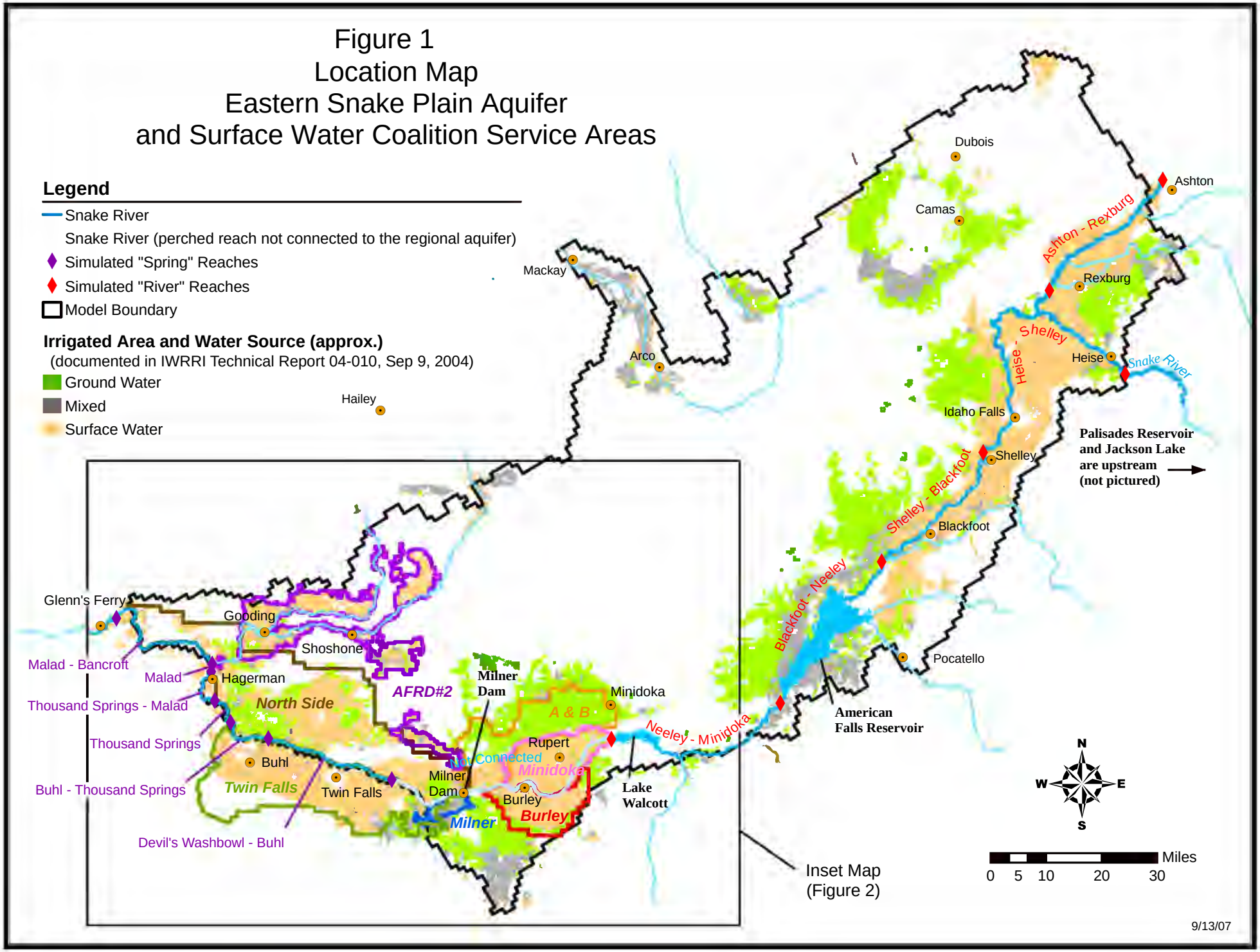
Miles
9/20/2007

Figure 1
Location Map
Eastern Snake Plain Aquifer
and Surface Water Coalition Service Areas



Comparison of Field Efficiencies SWC

Report Regarding Evaluation of Irrigation Diversion Rates IDWR August 15, 1996 Dreher and Tuthill

	Low	High	Average
Range of Furrow Irrigation FAE	30	80	55
Range of Sprinkler Irrig. FAE	50	87	68.5

SWC Member Furrow and Sprinkler Irrigation Percentages FAE

	Furrow	Sprinkler	Weighted Low	Weighted High	Weighted Avg	Brockway max Max	Brockway max Avg	
FRD2	35	65	43.0	84.6	63.8	70	65	78
A&B	27	73	44.6	85.1	64.9	80	73	73
ML	25	75	45.0	85.3	65.1	60	57	75
MD	19	81	46.2	85.7	65.9	60	56	74
BID	26	74	44.8	85.2	65.0	67	63	71
TFDC	75	25	35.0	81.8	58.4	62	59	62
MSCC	12	88	47.6	86.2	66.9	72	67	78

EXH 6

EXHIBIT 3058