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Attorneys for Idaho Ground Water Appropriators, Inc.

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE STATE OF IDAHO

IN THE MATTER OF THE REQUEST FOR ADMINISTRATION IN WATER DISTRICT 120 AND THE REQUEST FOR DELIVERY OF WATER TO SENIOR SURFACE WATER RIGHTS BY 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 ("WD 120 DELIVERY CALL")	**IGWA'S MOTION TO REDUCE REPLACEMENT WATER OBLIGATION**

Idaho Ground Water Appropriators, Inc. ("IGWA"), through its counsel, Givens Pursley LLP, and on behalf of its ground water district members, Aberdeen-American Falls Ground Water District, Magic Valley Ground Water District, Bingham Ground Water District, North Snake Ground Water District, Bonneville-Jefferson Ground Water District, Southwest Irrigation District, and Madison Ground Water District (the "Ground Water Districts"), and pursuant to IDAPA 37.01.01.260.02 and Paragraph 10, Page 47 of

the Director's May 2, 2005 Amended Order in this matter ("May 2 Order"), and hereby moves for an order further amending the May 2 Order to reflect the fact that above-normal amounts of precipitation in April and May, 2005 have significantly improved the water supply situation for Surface Water Coalition members ("SWC").

Statement of Reasons

IGWA's *Initial Plan for Providing Replacement Water* ("Replacement Water Plan") was filed in response to the May 2 Order, and then was supplemented, to provide additional documentation, in response to the Director's May 6, 2005 *Order Regarding IGWA Replacement Water Plan.* IGWA is moving forward to implement the measures described in the Replacement Water Plan. However, IGWA believes the recent above-normal precipitation justifies changes to the May 2 Order's calculations of "reasonably likely material injury" to SWC and thus reduces the amount of 2005 replacement water for the American Falls Reach required from IGWA's member ground water users. The May 2 Order should be amended to reflect this, and to allow IGWA to amend the Replacement Water Plan to reduce the amount of replacement water provided to SWC in 2005.

Doing so will allow IGWA to apply its replacement water in other ways, or store it for the future, so that waste will be avoided and water supplies will be maximized for the benefit of Idaho's water users, including IGWA's members, SWC, other water users in Water District 120, and potentially those in other water districts.

These points are supported by the Affidavit of Charles M. Brendecke, attached hereto as Exhibit A. For example, Dr. Brendecke notes that the American Falls storage space held under contract by American Falls Reservoir District No. 2 ("AFRD#2") has

completely filled this spring, and that AFRD#2's natural flow diversions in April and May exceeded their April-May natural flow diversions of 1988, 1991 and 2001, all years of full supply according to the criteria stated in the May 2 Order. The May 2 Order predicts AFRD#2's 2005 material injury, in terms of a storage water deficit, at 68,700 acre-feet. May 2 Order at p. 27, par. 120. It appears that this deficit has been nearly, or perhaps completely, eliminated by the recent wet weather and the filling of American Falls Reservoir.

The May 2 Order states that if predicted material injury is greater than what is later determined to be actual injury, a means can be devised to recognize "credits against future mitigation requirements." *Id.* at par. 122. IGWA believes that simply recognizing a credit may not provide maximum use of available water.

IGWA requests that the Director issue a supplemental order reducing the May 2 Order's replacement water requirements, providing IGWA a reasonable time to amend its Replacement Water Plan to conform to the new requirements, and recognizing that some of the water or other measures planned for replacement in WD 120 could be used in WD 130 or held in storage to maximize the use of the resource.

RESPECTFULLY SUBMITTED this 13th day of June 2005.

GIVENS PURSLEY LLP

Jeffrey C. Fereday
Michael C. Creamer

Attorneys for Idaho Ground Water Appropriators, Inc.

CERTIFICATE OF SERVICE

I hereby certify that on this 13th day of June 2005, I served a true and correct copy of the foregoing by delivering it to the following individuals by the method indicated below, addressed as stated.

Mr. Karl J. Dreher Director Idaho Department of Water Resources 322 East Front Street P.O. Box 83720 Boise, ID 83720-0098	✓ U.S. Mail ____ Facsimile ____ Overnight Mail ____ Hand Delivery X E-mail
C. Tom Arkoosh, Esq. Arkoosh Law Offices, Chtd. 301 Main Street P.O Box 32 Gooding, ID 83330	X U.S. Mail ____ Facsimile ____ Overnight Mail ____ Hand Delivery ✓ E-mail
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John A. Rosholt, Esq. John K. Simpson, Esq. Travis L. Thompson, Esq. Barker, Rosholt & Simpson 113 Main Avenue West, Ste. 303 Twin Falls, ID 83301-6167	X U.S. Mail ____ Facsimile ____ Overnight Mail ____ Hand Delivery ✓ E-mail
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BEFORE THE DEPARTMENT OF WATER RESOURCES

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CHARLES M. BRENDECKE, Ph.D., P.E. being first duly sworn on oath, deposes and says:

1. I am President of Hydrosphere Resource Consultants, 1002 Walnut, Suite 200, Boulder, Colorado 80302. I am a licensed professional engineer in Colorado, Wyoming and Oklahoma. I have a Bachelor of Science degree in civil engineering from the University of Colorado and Master of Science and Doctor of Philosophy degrees in civil engineering from Stanford University.

2. My educational and professional experience is summarized in Exhibit A, which is attached hereto, and incorporated herein by this reference. I have over 30 years of experience in hydrology, water resources engineering and water resources planning and management. I have directed or contributed to several river-basin water management studies that involved detailed inventories of basin hydrology and water demands, as well as development of planning models to investigate implications of changes in hydrology, systems operations and growth in basin water demands. My experience includes historical consumptive use analysis, evaluation of surface and ground water interactions, development of protective terms and conditions for water users, settlement negotiations and expert witness testimony.

3. I have specific experience with modeling hydrologic interconnections between ground and surface water systems in the context of water administration. The following are some representative examples:

- Hydrologic analysis and review of ground water models simulating effects of specific ground water withdrawals on reach gains on the Pecos River, New Mexico in connection with satisfying New Mexico's interstate surface water delivery obligations to Texas.
- Hydrologic analysis of natural flow, storage and ground water supplies in the North Platte River Basin in Colorado, Wyoming and Nebraska with emphasis on the effects of ground water withdrawals and changes in irrigation methods on return flows and reach gains in surface streams.
- Consultant to ground water users concerning development of plans of augmentation (similar to mitigation plans) pursuant to Colorado

administrative rules concerning the maintenance of certain Arkansas River flows under the interstate compact between Colorado and Kansas for the Arkansas River.

4. My professional experience also includes study and modeling in the Snake River basin. I served as consultant to National Marine Fisheries Service on a study analyzing alternative water supplies in the Snake River Basin above Lower Granite Dam to promote juvenile anadromous fish migration. My study included review of water use in the Snake River basin and computer model evaluation of potential water management strategies. I have served as a technical advisor to ground water users on Idaho's Eastern Snake River Plain in various matters, including studies of historical irrigation practices and modeling of surface and ground water interactions on the eastern Snake River Plain, since 1998. For the last several years I have participated in technical review of the development, by the Idaho Department of Water Resources, of a new ground water model (the "ESPA Model") of the Eastern Snake Plain Aquifer ("ESPA") that was completed in early 2004. The ESPA Model represents a refinement and recalibration of a prior ESPA model that was calibrated only to one year—1980 (the "1980 ESPA Model").

5. I have evaluated the Director's Amended Order of May 2, 2005 in this matter (May 2 Order), and have provided technical advice to the Idaho Ground Water Appropriators, Inc. (IGWA) concerning their plan to provide replacement water in response to it.

6. In the May 2 Order:

   a. The Director found the reasonably likely material injury to the American Falls Reservoir District No. 2 (AFRD#2) in 2005 to be 68,700 acre-feet. This consists of an anticipated shortfall of 17,500 acre-feet during the 2005

irrigation season plus an anticipated shortfall of 51,200 acre-feet in end-of-2005 carryover storage. The reasonably likely material injury the May 2 Order anticipated for AFRD#2 was the largest of any of the individual members of the Surface Water Coalition (SWC).

b. The Director concluded that AFRD#2's minimum full irrigation season supply is 406,500 acre-feet, and its reasonable carryover storage is 51,200 acre-feet. The sum of these is 456,800 acre-feet.

c. The Director relied upon correlations (based on regression equations) relating measured April-July Heise gauge natural flow and natural flow diversions by the individual members of the Surface Water Coalition. Attachment K to the Order presents the equation for AFRD#2.

7. The April 1, 2005 NRCS water supply forecast of April-July Heise natural flow was 2.18 million acre-feet (maf). The preliminary June 1 NRCS forecast of June-July Heise natural flow is 1.25 maf. Actual April-May natural flow at Heise (observed flow plus observed storage increase in Jackson Lake and Palisades) was 1.34 maf. Adding the latter two quantities provides a June 1, 2005 water supply forecast of April-July Heise natural flow of 2.59 maf. This suggests that the 2005 water supply originating above Heise will be about 410,000 acre-feet greater than anticipated on April 1.

8. Inserting the June 1 forecast of April-July Heise natural flow described in the previous paragraph into May 2 Order's regression equation for AFRD#2 suggests that the natural flow diversion of AFRD#2 in 2005 will be 42,800 acre-feet.

9. Based on my review of preliminary accounting data obtained from Water District 1, it appears that AFRD#2's natural flow diversions in April and May, 2005 totaled 51,745 af.

10. American Falls Reservoir achieved fill on May 1, 2005, thus completely filling AFRD#2's 393,500 acre-foot storage space.

11. With a full storage supply and an anticipated natural flow supply of at least 51,745 acre-feet, AFRD#2 reasonably can be expected to have a water supply of at least 445,200 acre-feet in 2005. Using the Department's method of analysis, the reasonably likely material injury to AFRD#2 in 2005 would be, at most, only 11,600 acre-feet, compared to the 68,700 acre-feet anticipated by the May 2 Order. In other words, AFRD#2 appears to have, at most, 11,600 acre-feet less than what would be needed to provide the full irrigation season supply and reasonable carryover identified by the Director. It may be even less, and possibly zero, given the precipitation this year.

12. The April-May natural flow diversion of AFRD#2 in 2005 is more than twice their combined April-May natural flow diversions over the entire 2002-2004 period. It exceeds their April-May natural flow diversions of 1988, 1991 and 2001, all of which were years of full supply according to the criteria stated in the May 2 Order.

13. Based on data from Allen and Brockway (1983), the average April evapotranspiration (ET) requirement of alfalfa at Twin Falls is 3.4 inches. The average May requirement is 7.1 inches. Based on data I have reviewed from the U.S. Bureau of Reclamation's AgriMet website, the corresponding values of alfalfa ET for these two months in 2005 were 2.4 inches and 5.6 inches, respectively. Precipitation at Twin Falls in April and May of 2005 was 2.94 inches and 3.13 inches, respectively. Thus, natural precipitation in April was more than enough to completely satisfy alfalfa ET requirements at Twin Falls. May precipitation was enough to satisfy more than half of the alfalfa ET requirement. This suggests that the cool wet weather that began in April of

this year and persisted at least through May has dramatically decreased the demand for irrigation water by the SWC and allowed their reservoir space to accumulate more storage than anticipated in the May 2 Order. It has also significantly reduced pumping by ground water users.

Dated: June 13, 2005

Charles M. Brendecke, Ph.D., P.E.

SUBSCRIBED AND SWORN to before me on this 13th day of June, 2000.

Notary Public for Colorado
Residing at Arvada, Colorado

My commission expires: 12/2/2008

HYDROSPHERE
Resource Consultants

Charles M. Brendecke, Ph.D., P.E.

Education:

Ph.D., Civil Engineering, Stanford University, 1979.

M.S., Civil Engineering, Stanford University, 1976.

B.S., Civil Engineering, University of Colorado, 1971.

Public Policy Mediation Training – CDR Associates, 2004.

Years Experience:

With this Firm: 19
With Other Firms: 15

Registration(s) and Membership(s):

Registered Professional Engineer:

State of Colorado, #17578

State of Wyoming, #6960

State of Oklahoma, #21265

American Society of Civil Engineers

American Water Resources Association

American Geophysical Union

American Society of Agricultural Engineers

Soil and Water Conservation Society

EXPERIENCE NARRATIVE

Dr. Brendecke has more than 30 years of diverse experience in hydrology, water resources engineering and water resources planning and management. He has directed or contributed to several river-basin water management studies that involved detailed inventories of basin hydrology and water demands, as well as development of planning models to investigate implications of reservoir systems operations and growth in basin water demands. Several of these studies have involved instream flow and endangered species issues. His work as the project manager and lead expert in a variety of water rights proceedings has included historical consumptive use analysis, evaluation of surface/groundwater interactions, stream depletion analysis, development of protective terms and conditions, settlement negotiations, and expert witness testimony.

As a researcher, he has supervised investigations of rainfall and snowmelt frequency in alpine watersheds, comparative applications of rainfall/runoff models, and hydraulic evaluations of stream habitat enhancement measures. Dr. Brendecke was the project manager and principal author for the development of *Achieving Efficient Water Management, A Guidebook for Preparing Agricultural Water Conservation Plans,* for the U.S. Bureau of Reclamation. Dr. Brendecke has recently served as a testifying expert for water resources analyses in *Nebraska v. Wyoming,* and *Kansas v. Colorado,* before the U.S. Supreme Court.

RECENT PROJECT EXPERIENCE

Conjunctive Management of the Eastern Snake Plain Aquifer. Project manager for development of conjunctive use agreements and mitigation plans for ground water districts encompassing 700,000 acres in Idaho.

Columbia River Basin Reservoir Operations. Project manager for studies of the impact of modified reservoir operations on agricultural interests.

New Mexico Surface Water Studies. Project manager for a program of surface and ground water studies on the Pecos and Rio Grande Rivers in support of State initiatives.

Interstate Compact Litigation. Expert witness in litigation between Kansas and Colorado regarding Arkansas River water users.

Snake River Water Rights. Project manager for studies of historical irrigation practices and modeling of surface/ground water interaction on the eastern Snake River Plain, Idaho.

Rio Grande Decision Support System. Quality assurance officer on development of comprehensive surface water model of the Rio Grande River basin in Colorado.

Agricultural Water Conservation. Project manager for development of a water conservation guidebook for use by irrigation districts. The guidebook describes planning approaches and methods for evaluating specific conservation measures.

Colorado City Metropolitan District. Project manager for water supply planning studies and water rights litigation support for municipal water provider.

Interstate Water Litigation. Project manager and expert witness in litigation between Nebraska and Wyoming regarding storage project operations and water deliveries to agricultural users.

Gunnison Basin Planning Model. Project manager for development of an interactive PC-based computer model of the Gunnison River basin. The model uses a network solution algorithm and incorporates a Windows™-based interface.

Boulder Creek Water Rights. Lead expert in a variety of water rights proceedings for the City of Boulder related to applications, changes, and transfers of agricultural rights in the Boulder Creek basin.

Yampa River Basin Planning Studies. Project manager for comprehensive water supply planning study that included demand forecasting, development of a basin computer model, and evaluation of potential water storage project operations.

Snake River Basin Water Supply Study. Project manager for a comprehensive review of water use in the Snake River basin and computer model evaluation of potential water management strategies, including agricultural water conservation, to enhance anadromous fisheries.

Columbus Ditch Transfer. Performed engineering analysis of the historical use of irrigation rights located on the Blue River, determining the portion of consumptive use made possible by Green Mountain Reservoir releases.

Muddy Creek Water Rights. Analyzed the historical consumptive use of the irrigation water rights associated with the Gary Hill Ranch on Muddy Creek, in support of water rights acquisition associated with the construction of Muddy Creek Reservoir.

Summit County Small Reservoir Study. Project manager for a Blue River basin water management study involving development of a hydrologic model and evaluation of new storage facilities for instream flow maintenance.

Gunnison Basin Planning Study. Project manager for development of a detailed hydrology and water rights model of the 8000 square mile Gunnison River basin as part of a comprehensive river basin planning study.

Windy Gap Delivery Study. Developed detailed computer models of Colorado-Big Thompson Project operations to support analysis of the yields of the Windy Gap Project, which shares common facilities.

Superconducting Super Collider Water Supply. Determined industrial water needs and developed the water supply strategy for a proposed Department of Energy physics research facility.

Boulder Raw Water Master Plan. Prepared a comprehensive report concerning water rights holdings and water supply system operating policies for a Front Range municipality of 100,000 persons.

Standley Lake Pollutant Loading. Developed hydrologic and pollutant loading model of Standley Lake to assess relative effects of non-point sources and a proposed effluent exchange by a major industrial water user.

Pecos River Compact. Consultant to the Special Master of the U.S. Supreme Court on technical issues in a lawsuit between Texas and New Mexico concerning river depletions and water deliveries.

Rocky Ford Ditch Transfer. Performed engineering analyses of historic irrigation practices and Arkansas River depletions associated with a 4100-acre tract in southeastern Colorado.

Buena Vista Water Rights. Analysis of the historic use of irrigation water rights and development of engineering data supporting their transfer to municipal use.

Dillon Clean Lakes Study. Development of a comprehensive hydrologic monitoring network to determine lake inflow patterns and non-point source pollutant loadings from various land uses.

Restoration of West Tenmile Creek. Performed hydrologic and hydraulic analysis and design of comprehensive stream habitat improvements at Copper Mountain ski area.

EMPLOYMENT HISTORY

1986-present	Principal and President (1990 to present), Hydrosphere Resource Consultants, Inc. Responsible for management of engineering studies, company development and management, consultant on water rights and water resources planning projects.
1985-1986	Senior Project Engineer, Wright Water Engineers Inc. Responsible for engineering analysis and report preparation on water rights and hydrologic studies.
1979-1985	Assistant Professor of Civil Engineering, University of Colorado. Responsible for teaching and research in areas of water resources and systems analysis.
	Faculty Research Associate, Institute for Arctic and Alpine Research. Directed various research studies in alpine hydrology and meteorology.
	Consultant, U.S. Army Corps of Engineers; Western Environmental Analysts, Inc.; Dietze & Davis, P.C.; Copper Mountain, Inc.; Hydrologic Consulting Engineers, Inc.; Westfork Investments, Ltd.
1975-1979	Research Assistant and Lecturer, Stanford University. Responsible for conducting research and lecturing for undergraduate courses in civil engineering.
1973-1975	Design Engineer, Wright-McLaughlin Engineers, Inc. Performed engineering design of water supply and wastewater collection systems.
1971-1973	Design Engineer, Ministry of Agriculture, Government of Kenya (U.S. Peace Corps). Performed planning and design of rural and domestic water supply systems.

REPORTS AND PUBLICATIONS

Brendecke, C., 2004, "Toward Conjunctive Management of the Eastern Snake Plain Aquifer," poster presentation at Natural Resources Law Center 25th Summer Conference Groundwater in the West, June 16-18, Boulder, CO.

Brendecke, C., 2004, "Interstate Water Conflict: Compacts, Adjudications and Decrees," presentation at Water Policy Seminar: Freshwater Conflicts in the United States, May 19, Stanford, CA.

Brendecke, C., and R.D.Tenney, 2001, "Water Rights, Compact Entitlements and Endangered Fishes of the Yampa River Basin," Proceedings of the Annual Water Resources Conference, American Water Resources Association, November 12-15, Albuquerque, NM.

Brendecke, Charles M., 2001, "Conjunctive Management: Science or Fiction?" presentation to Idaho Water Users Association 18th Annual Water Law and Resource Issues Seminar, November 8-9, Boise, ID.

Tenney, Ray D., and C.M. Brendecke, 1998, "Planning for Water Development and Endangered Species Recovery in the Yampa River Basin." Proceedings of the Wetlands Engineering & River Restoration Conference, 1998, American Society of Civil Engineers, March 26th, 1998, Denver, CO.

Payton, E., C. Brendecke, B. Harding, E. Armbruster, T. McGuckin and C. Huntley. 1997. "Agricultural Water Conservation Planning & Pricing-Tools & Technologies." Proceedings of the Irrigation Association's 18th International Conference, Nov. 2, 1997, Nashville, TN.

Hydrosphere Resource Consultants, Inc., 1996, "Achieving Efficient Water Management: Agricultural Water Conservation Planning," workshop for U.S. Bureau of Reclamation staff, Dec. 16 - 18, Las Vegas, NV.

Brendecke, C., B. Harding and E. Payton, 1996, "PC-Based Decision Support Tools: Lessons from a Dozen Applications," Proceedings of the Fifth Water Resources Operations Management Workshop, Water Resources Planning and Management Division (ASCE). March 4, Arlington, Virginia.

Howe, C.W., M. Smith, L. Bennett, C. Brendecke, J. Flack, R. Hamm, R. Mann, L. Rozaklis, and K. Wunderlich, 1994, "The Value of Water Supply Reliability in Urban Water Systems," Journal of Environmental Economics and Management, 26, 19-30.

Brendecke, C., 1993, "Managing Snake River Operations for Juvenile Salmon Migration," Proceedings of the ASCE Water Resource Planning and Management Conference Division 20th Anniversary Conference, Seattle, Washington, May.

Brendecke, C., 1992, "The Hydrosphere Snake River Operations Model", 9th Annual Water Law and Resource Issues Seminar, Idaho Water Users Association, Boise, Idaho.

Brendecke, C., and B. Harding, 1990, "Logical Intransitivities and Other Administrative Nightmares: Can Models Help?," Proceedings of the 26th Annual AWRA Conference and Symposium, November 4-9, Denver, Colorado.

Harding, B., C. Brendecke, and R. Kerr, 1990, "Legal and Economic Disincentives in the Transfer of Models to Users," Proceedings of the 26th Annual AWRA Conference and Symposium, November 4-9, Denver, Colorado.

Brendecke, C., W. DeOreo, E. Payton, and L. Rozaklis, 1989, "Network Models of Water Rights and System Operations," Journal of the Water Resources Planning and Management Division (ASCE).

Rozaklis, L., E. Payton, C. Brendecke, and B. Harding, 1988, "Modeling Water Allocation Problems Under Complex Hydrologic and Institutional Settings," paper presented at the 24th Annual AWRA Conference and Symposium, November 8, Milwaukee, Wisconsin.

Brendecke, C., W. DeOreo, and L. Rozaklis, 1987, "Water Rights Analysis and System Operation Using Network Optimization Models," paper presented at the 14th Annual ASCE Water Resources Planning and Management Division Conference, March 16-18, Kansas City.

Brendecke, C., E. Payton, and R. Wheeler, 1987, "Network Optimization Models for Water Rights Analysis and System Operating Studies for the City of Boulder," Proceedings of the Colorado Water Engineering and Management Conference, February 17-18, Ft. Collins, Colorado.

Payton, E., and C. Brendecke, 1985, "Rainfall and Snowmelt Frequency in an Alpine Watershed," Proceedings of the 53rd Western Snow Conference, April 16-18, Boulder, Colorado, pp. 25-36.

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Brendecke, C., D. Laiho, and D. Holden, 1985, "Comparison of Two Daily Streamflow Simulation Models of an Alpine Watershed," Journal of Hydrology, 77, pp. 171-186.

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Brendecke, C., D. Laiho, and D. Holden, 1984, "A Comparative Evaluation of Streamflow Simulation Models in a Colorado Alpine and Subalpine Environment," Proceedings of the American Geophysical Union Front Range Branch Hydrology Days, April 24-26, Ft. Collins, Colorado, pp. 40-55.

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Brendecke, C., and L. Ortolano, 1981, "Environmental Considerations in Corps Planning," Water Resources Bulletin, 17(2), pp. 248-254.