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DEPARTMENT OF
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ATTORNEYS FOR THE CITY OF POCATELLO

IDAHO DEPARTMENT OF WATER RESOURCES

IN THE MATTER OF THE DISTRIBUTION OF WATER TO VARIOUS WATER RIGHTS HELD BY AND 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	Docket No. CM-DC-2010-001 **DECLARATION OF GREGORY K. SULLIVAN, P.E.**

I, Gregory K. Sullivan, P.E., being duly sworn do depose and state:

1. I make this affidavit based upon personal knowledge and expertise.

2. My professional resume is provided as **Attachment A** to this Declaration.

3. I have 37 years of experience in water resources engineering, water rights engineering, hydrologic analysis, groundwater and surface water modeling, conjunctive administration of groundwater and surface water, and other related disciplines.

4. I have worked on water resources, water rights, and conjunctive administration issues in the Snake River basin since the early 1990s.

5. My clients in the Snake River basin that are affected by the SWC Delivery Call include the City of Pocatello and the Coalition of Cities.

6. I have been a member of the Eastern Snake Plain Hydrologic Modeling Committee ("ESHMC") since its inception along with other stakeholders in Snake River basin issues. The ESHMC has provided guidance and peer review in the development of the Eastern Snake Plain Aquifer groundwater model ("ESPAM") since approximately 1999.

7. I have been involved in several water right delivery calls in the Snake River basin including the delivery calls by the Surface Water Coalition ("SWC"), the A&B Irrigation District, and the Rangen Fish Hatchery. My involvement has included preparation of expert reports and presentation of expert testimony at several administrative hearings.

8. My involvement in the SWC delivery calls began with the delivery call made in 2005. In response to that delivery call, I compiled extensive data and analyzed the operations of the SWC irrigation systems. This included several weeks in the field observing diversion and conveyance facilities, irrigated farms, and irrigation application methods. In addition, I was present at the depositions of managers and staff of each of the SWC members regarding irrigation system operations, system losses and efficiencies, record keeping, and other related matters. Based on this information, I prepared analyses of the historical irrigation operations of each SWC member over the period from 1990 – 2006. The results of my work were documented in several expert reports and presented at an IDWR hearing in February 2008.

9. Since the 2008 hearing regarding the SWC delivery call, I have reviewed the various amended methodology orders and the various as-applied orders concerning the SWC Methodology that have been issued over the years. In addition, I was involved in a May 2010 hearing on revisions to SWC Methodology proposed by IDWR based on experience in applying the methodology between 2005 and 2010, and based on recommendations from Hearing Officer Schroeder in his 2008 Order. Following the hearing, IDWR issued on June 23, 2010 the *Second Amended Final Order Regarding Methodology for Determining Material Injury to Reasonable In-Season Demand and Reasonable Carryover* ("Second Methodology Order"). The Second Methodology Order contains the framework that forms the basis for the current SWC Methodology procedures.

10. In early 2015, IDWR convened a technical working group ("TWG") of experts to review proposed changes to the Second Methodology Order. I participated in the TWG on behalf of the City of Pocatello. Several meetings of the TWG were held to

solicit input from the TWG members regarding the SWC Methodology. Following the meetings, IDWR issued recommendations for changes in how the water supplies of the SWC members were forecast and how the crop mix of the SWC members was determined for purposes of estimating crop water need. Other proposed changes to the SWC Methodology were discussed but not implemented. These included determination of supplemental groundwater use by the SWC members, improvements in determination of the irrigated areas of the SWC members, and revisions to the Project Efficiencies used in determining the Reasonable In-Season Demand ("RISD") of the SWC members. IDWR's *Third Amended Final Order Regarding Methodology for Determining Material Injury to Reasonable In-Season Demand and Reasonable Carryover* ("Third Methodology Order") was issued on April 16, 2015, shortly after completion of the TWG meetings.

11. On April 16, 2016, IDWR issued the *Fourth Amended Final Order Regarding Methodology for Determining Material Injury to Reasonable In-Season Demand and Reasonable Carryover* ("Fourth Methodology Order") that included some relatively minor revisions to the Third Methodology Order.

12. In late 2022, I actively participated in several meetings of another TWG that was convened by IDWR to consider potential changes to the Fourth Methodology Order. Given the approximate one-month period during which the TWG meetings took place, there was insufficient time to fully review and respond to the materials that IDWR distributed and the issues that were raised during the meetings. Nonetheless, I performed various preliminary analyses of the Baseline Year ("BLY") and the SWC Project Efficiencies that are used in the SWC Methodology. Results from these analyses were presented to the TWG during the meetings and written materials and spreadsheets were submitted to TWG members on December 12 and December 21.

13. On December 23, 2022, IDWR issued a one-page *Summary of Recommended Technical Revisions to the 4th Amended Order Regarding Methodology for Determining Material Injury to Reasonable In-Season Demand and Reasonable Carryover for the Surface Water Coalition* ("IDWR Recommendation"). The following is a summary of the proposed recommendations:

    a. Update the BLY for Reasonable In-Season Demand and Reasonable Carryover from an average of diversions during 2006, 2008, 2012 to the diversions in 2018.

    b. Update the Project Efficiencies to use average of the computed efficiencies for the SWC members during the previous 15 years instead of the previous 8 years.

14. The IDWR Recommendation document explicitly stated there were no recommendations regarding the following:

    a. Use of near real-time METRIC for determining crop water need.

    b. Use of transient modeling to determine curtailment priority dates.

15. On January 16, 2023, I submitted written comments on the IDWR Recommendation including:

    a. Critique of the proposed changes to the BLY for projecting shortages to the SWC members.

    b. Critique of the updated Project Efficiencies for computing in-season demand shortages.

    c. Recommendation that the irrigated area data for the SWC members be updated to reflect the areas that are actually irrigated.

    d. Recommendation that the crop water needs for the SWC members be adjusted for the supplemental groundwater use on the SWC irrigated lands.

16. There was no acknowledgement and no response from IDWR regarding my comments. Nor was there any further interaction between IDWR and the TWG after receipt of the IDWR Recommendation on December 23, 2022.

17. On April 21, 2023, IDWR issued the *Fifth Amended Final Order Regarding Methodology for Determining Material Injury to Reasonable In-Season Demand and Reasonable Carryover* ("Fifth Methodology Order") and the *Final Order Regarding April 2023 Forecast Supply* ("April As-Applied Order"). There was no apparent consideration of my comments in either of these orders.

18. Also on April 21, 2023, IDWR issued a *Notice of Hearing, Notice of Prehearing Conference, and Order Authorizing Discovery*. A hearing in the matter is scheduled for June 6-10, 2023.

19. On May 2, 2023, IDWR issued a *Schedule Order and Order Authorizing Remote Appearance at Hearing*. Among the scheduled events are the following:

    a. <u>May 5, 2023</u>

        i. Deadline for the Department to identify materials Ms. Sukow and Mr. Anders may rely upon at the hearing.

        ii. Deadline for the Department to summarize topics Ms. Sukow and Mr. Anders will testify about at the hearing.

        iii. Deadline for the parties to submit to the Department a written statement of proposed issues for the hearing.

    b. <u>May 10, 2023</u>

        i. Deadline for the Department to augment its above-mentioned list of materials Ms. Sukow and Mr. Anders may rely on at the hearing, if needed.

    c. <u>7 Days Prior to Hearing Day 1</u>

        i. Deadline for the parties to complete all discovery.

ii. Deadline for the parties to deliver copies of their expert reports to the other parties.

iii. Deadline for the parties to exchange and file with the Department their proposed lay and expert witness lists. The parties should include a general summary of each witness' anticipated testimony.

20. The proposed schedule leaves less than four weeks before the due date for expert reports and only one week to review the expert reports of others before the hearing. In addition, I, along with some of the other experts, are involved in the consolidated matters of the Big Wood River and Snake River Moratoria for which expert reports are due on June 9, 2023, in the middle of the proposed SWC Methodology hearing. Finally, I have previously scheduled a non-refundable trip to Europe departing on May 17 and returning on June 3, and so, as a practical matter, this leaves less than two weeks for me to complete my expert report.

21. The short time available before my expert report is due is far too little time for me to adequately analyze the Fifth Methodology Order, the April As-Applied Order, review the supporting materials that will be submitted by the IDWR witnesses, assist legal counsel with written discovery and depositions, compile additional data, perform field work, perform the necessary technical analyses, and document my work in an expert report.

22. It has been over 15 years since the 2008 hearing and Hearing Officer Schroeder's ruling that resulted in the Second Methodology Order issued in 2010. This was the last time that the SWC Methodology was significantly scrutinized. We now have 15 years of actual operating experience under the SWC Methodology Orders. Given the substantive changes to the SWC Methodology reflected in the Fifth Methodology Order, now is an appropriate time to fully review those changes, develop a comprehensive record of the 15 years of operating experience under the prior Methodology Orders, and to use this experience to propose and vet potential additional modifications to the SWC Methodology that will protect the SWC members from injury, ensure that the SWC members are operating with efficiently and without waste, protect groundwater users from excessive curtailment and mitigation obligations, and to maximize the beneficial use of the interconnected surface water and groundwater resources of the Snake River and the ESPA.

23. Given sufficient time, I would analyze information and data from the past 15 years of operations under the SWC Methodology Orders to assess changes in the irrigation operations of the SWC members, the improved and expanded availability of hydrologic and water use data, including remote-sensed data. In addition, interviews and/or depositions of IDWR staff and SWC managers and personnel will be necessary to provide context for the past 15 years of operating experience. Thorough review and analysis of this information and data will give me the knowledge that is necessary to recommend and support potential changes to the SWC Methodology.

24. The following is a preliminary high-level overview of the work that should be performed to analyze the operation of the SWC Methodology and the operations of the SWC members during the past 15 years:

a. Compile, summarize, review, and analyze available hydrologic data and operational data related to the availability and use of water by the SWC members.

b. Interview and/or depose managers and staff of the SWC members regarding their irrigation operations, data collection practices, and water use records.

c. Perform site investigations of the SWC member facilities and service areas.

d. Assess the operations of the SWC members to determine whether they are operating with reasonable efficiencies and without excessive waste consistent with industry standards.

e. Review and analyze the elements of the SWC Methodology that involve determination of in-season demand shortfalls.

f. Review and analyze the elements of the SWC Methodology that involve determination of material injury to reasonable carryover.

g. Review and analyze the elements of the SWC Methodology that involve determination of the priority date for curtailment of junior ground water users in response to computed shortages to the in-season demands and reasonable carryover requirements of the SWC members. This includes the radical change in how the ESPAM is used to determine the curtailment date. Under the Fifth Methodology Order, IDWR is using transient runs of the ESPAM to determine the curtailment date rather than the steady-state runs that have been used in all prior methodology orders. This results in a substantially more senior curtailment date that affects many more groundwater users. The curtailment date in the April As-Applied Order is December 30, 1953, based on a projected combined shortage to the SWC members totaling 75,000 AF. Under the steady-state run procedure of the prior methodology order, the curtailment date would have been sometime in the mid-1980s for a 75,000 AF shortage.

25. I estimate that a minimum of 3 to 5 months will be necessary to adequately perform the work described above and to prepare an expert report to summarize the results of this work. In making this time estimate, I am considering the clear and convincing evidentiary standard that reportedly applies to changes in the SWC Methodology and the attendant need to fully develop the necessary evidence to support my opinions.

I hereby certify that the facts set forth above are true and correct to the best of my information and belief.

DATED this 7th day of May 2023.

Gregory K. Sullivan, P.E.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 7th day of May, 2023, a true and correct copy of the foregoing document was served via email to the following:

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Attachment A

Gregory K. Sullivan, P.E.

President and Senior Water Resources Engineer

Education: M.S., Civil Engineering, 1990, University of Colorado - Denver
B.S., Civil Engineering, 1985, Colorado State University

Professional Registration: Professional Engineer in Colorado, Idaho, and New Mexico

Professional Experience:

1990 - Present: ***Spronk Water Engineers, Inc., President and Senior Water Resources Engineer***

Mr. Sullivan has over thirty-five years of experience completing a wide variety of water resources engineering projects. Mr. Sullivan has extensive experience performing historical consumptive use analyses, stream depletions analyses, and reservoir operations studies. Mr. Sullivan serves as the primary consultant to numerous water providers for water supply planning and water rights engineering. In that role, he has been responsible for technical analyses in supporting applications for adjudication of water rights, changes of water rights, exchanges, augmentation plans, and other water right matters. He has led the development of complex surface water operations models that simulate municipal water demands and how those demands maybe met by available water supplies and water rights. Mr. Sullivan has served on the Eastern Snake Hydrologic Modeling Committee that guides the development and use of a regional ground water model of the Eastern Snake River Plain Aquifer since 1996. Mr. Sullivan has provided expert testimony in the U.S. Supreme Court, Colorado Water Courts, Snake River Basin Adjudication Court (Idaho), and in administrative hearings before the Idaho Department of Water Resources.

Representative Projects:

Water Supply Modeling - Texas v. New Mexico and Colorado – Rio Grande Basin

Mr. Sullivan is the lead modeling expert for the State of New Mexico in an active lawsuit filed by the State of Texas in the U.S. Supreme Court concerning alleged violations of the 1938 Rio Grande Compact. Mr. Sullivan is leading a multidisciplinary team of renowned experts from across the country that is analyzing and modeling the historical operation of the Rio Grande Project and the effects of alleged compact violations asserted in the

claims and counterclaims of the parties. The ongoing work includes compilation and analysis of historical data from before the time of the compact to the present, and development of farm budget models of large irrigation systems in New Mexico, Texas, and Mexico. In addition, Mr. Sullivan is coordinating development and use of a linked surface water (RiverWare) and ground water (MODFLOW) models of the Lower Rio Grande area from Elephant Butte Reservoir in New Mexico to Fort Quitman, Texas. The Integrated Lower Rio Grande Model simulates the essential hydrologic and institutional/management processes associated with irrigation and municipal water systems in the study area, including the allocation, operation, and accounting mechanisms of the Rio Grande Project.

Water Supply Modeling - Kansas v. Colorado – Arkansas River Basin

Mr. Sullivan was involved in the refinement and use of the H-I Model of the Arkansas River system in Colorado that was developed to support claims by the State of Kansas that Colorado was violating the terms of the 1948 Arkansas River Compact. The model simulates daily operation of irrigation water uses under approximately two dozen canal systems along the Arkansas River in Colorado between the City of Pueblo and the Colorado-Kansas from 1950 to the present. In addition, the model simulates the operation of sole-source and supplemental irrigation wells, and the impact of those wells on the flow of the Arkansas River. Mr. Sullivan provided expert testimony before a Special Master appointed by the U.S. Supreme Court regarding the use of the H-I Model to evaluate the effects on state line flows resulting from post-compact well development in Colorado.

Injury Analysis - Kansas v. Colorado – Arkansas River Basin

Mr. Sullivan developed a model that was used as part of an analysis to compute the economic impacts and monetary damages to Kansas resulting from the compact violations by Colorado that were determined in the Kansas v. Colorado lawsuit. The model was used to translate monthly depletions to usable stateline flows over a 45-year period into impacts to (a) surface water users in Kansas, (b) to supplemental pumping demands in Kansas and (c) to recharge of the regional ground water system. Mr. Sullivan testified before the Special Master regarding the model development, operation, and results.

Analysis of Replacement Plans - Kansas v. Colorado – Arkansas River Basin

To continue use of post-compact Arkansas River alluvial wells, the well owners in Colorado were required to develop Replacement Plans to offset the impacts of pumping on senior surface water rights in Colorado and on usable stateline flows to Kansas. Mr. Sullivan analyzed the adequacy of these replacement plans through preparation of historical use analyses, water budgets, and other analyses. In addition, Mr. Sullivan used the H-I Model to simulate the effectiveness of the replacement plans in meeting Colorado's delivery obligations under the Arkansas River Compact. Mr. Sullivan provided expert testimony before the Special Master concerning his analyses of the Colorado Replacement Plans.

Change of Water Rights - City of Loveland, Colorado

Mr. Sullivan was the principal investigator for ditch-wide historical use analyses of the major Big Thompson River irrigation ditches that serve lands in and around the City of Loveland. These analyses served as the basis for successful changes of water rights that were approved by the Division 1 Water Court to allow the City to divert its ditch shares at the City's municipal water intakes to help meet its water supply needs. He also guided development of detailed water rights accounting for the City to Mr. Sullivan provided expert testimony in support of the changes of water rights in a contested trial.

Water Supply Yield Modeling - City of Loveland, Colorado

Mr. Sullivan led the development of a model to simulate the daily water supply and demand of the City of Loveland over a study period from 1950 - 2017. The water supplies that are simulated in the model include the ditch shares that have been changed to municipal use, Colorado-Big Thompson Project units, Windy Gap Project units, and the operation of the City's Green Ridge Glade Reservoir. The model is used by the City to evaluate the firm yield of its water supply, and how that yield can be increased through acquisition of additional supplies, development of additional storage, changes in water supply operations and other actions.

Water Supply Planning – ACWWA, Colorado

Mr. Sullivan has provided water resources and water rights consulting for the Arapahoe County Water and Wastewater Authority for over 30 years. ACWWA serves lands in the Cherry Creek basin south of Denver through a

combination of shallow alluvial wells and deep nontributary Denver Basin wells. Water use from these sources is integrated and optimized through operation of a complex plan for augmentation that provides for replacement of out-of-priority depletions to Cherry Creek to protect downstream senior water users. Mr. Sullivan has performed numerous analyses to evaluate the yield of ACWWA's water supplies, including completion of a raw water master plan in 2018.

Plan for Augmentation - Upper Cherry Creek Water Association, Colorado

Mr. Sullivan was instrumental in the development of an umbrella plan for augmentation for five major water users in the Cherry Creek Basin upstream of Cherry Creek Reservoir. The members have pooled their augmentation sources to replace the combined out-of-priority depletions resulting from alluvial well pumping and out-of-priority storage in Cherry Creek Reservoir. The plan includes an innovative method of computing depletions that considers times when Cherry Creek is dry in the vicinity of the member wells.

Cherry Creek Aquifer Modeling Project – Colorado

Mr. Sullivan led the development of a basin-wide simulation model of the hydrology and water use in the Cherry Creek basin upstream of Cherry Creek Reservoir. The model simulates the water supplies and water rights of all municipal water providers in the study area and optimizes the alluvial pumping of the water users and the use of Denver Basin ground water replacement supplies. The model also simulates the operation of Cherry Creek Reservoir and Rueter-Hess Reservoir. The model is used by the study participants to evaluate changes in water supply operations and acquisition of new water supplies.

Snake River Basin Adjudication - Idaho

Mr. Sullivan assisted the City of Pocatello in filing claims to adjudicate water rights as part of the SRBA. This work included historical research of facilities and water uses to document historical flow rates, volumes, and priority dates to assign to the claimed water rights. Mr. Sullivan provided expert testimony before the SRBA Court to help defend the City's claims that were disputed by others.

Snake River Delivery Calls - Idaho

Mr. Sullivan has provided technical analysis and expert testimony to the City of Pocatello in their participation in complex litigation involving water right delivery calls by senior surface water users on the Snake River in Idaho. Pocatello's water supply is derived primarily from junior priority wells that are tributary to the Snake River, and its water supply is threatened by the delivery calls. Mr. Sullivan analyzed the historical operation of seven major irrigation districts that placed the delivery calls to assess the extent of their claimed irrigation water shortages. The irrigation districts serve a combined area of 560,000 acres with annual diversions averaging 3.2 million acre-feet per year. Mr. Sullivan provide expert testimony is several hearings before the hearing officers in Idaho Depart of Water Resources.

ESPA Cities Mitigation Plan – Snake River Basin, Idaho

Mr. provided technical expertise and analysis in development of a mitigation plan for Pocatello, Idaho Falls, and more than a dozen other cities to mitigate the impacts of municipal groundwater pumping from the Eastern Snake Plain Aquifer in Idaho. The plan relies largely on aquifer recharge to mitigate the impacts of aquifer depletions from pumping that is projected to increase from about 60,000 acre-feet per year to over 120,000 acre-feet per year over the next 50 years.

Division 3 Rules Case - Rio Grande Basin, Colorado

Mr. Sullivan represented a group of surface water right owners that opposed the enactment of administrative rules governing the withdrawal and use of ground water in the Rio Grande Basin in Colorado (Water Division 3). The primary basis for their opposition was that the rules did not provide for mitigation of impacts to a large spring that was the source of their surface water rights and which dried up in conjunction with the large-scale development of ground water irrigation in the area. Mr. Sullivan's work included analysis of the historical irrigation water use by his clients, review of hydrologic data and records, and review of a ground water modeling of the San Luis Valley performed by the State of Colorado. Mr. Sullivan provided expert testimony on behalf of his clients in a trial before the Division 3 Water Court.

Ground Water Administrative Proceeding – Wood River Basin, Idaho

Mr. Sullivan represents the Sun Valley Company and the Cities of Ketchum, Hailey, and Bellevue in an administrative proceeding in the Wood River Valley in Idaho. Holders of senior surface water rights are seeking curtailment of junior ground water rights based on allegations of injury being suffered by the seniors, and the Idaho Department of Water Resources is proposing to implement conjunctive administration of groundwater rights and surface water rights to address the injury claims. A groundwater model of the Wood River Valley developed by IDWR with input from stakeholders is being used in the dispute to assess impacts from pumping on surface water supplies. Mr. Sullivan provided expert testimony on behalf of SVC and the Cities in a contested administrative hearing before the IDWR Director. Mr. Sullivan is also a member of a technical working group that has been assembled to develop a groundwater management plan that is hoped to settle the ongoing dispute.

1985 – 1990: ***J. W. Patterson & Associates, Inc., Water Resources Engineer***

Performed water supply, hydraulic and hydrologic analyses for agricultural, industrial, commercial, and municipal developments. Managed yield and impact analyses of water rights adjudications, transfers, exchanges and plans for augmentation. Conducted ground water studies including aquifer testing, project dewatering and water well design and construction monitoring.

Continuing Education:

Applied Ground-Water Flow Modeling. International Ground Water Modeling Center, Colorado School of Mines, Golden, CO. March 1993.

Introduction to Simulation Training in RiverWare, Center for Advanced Decision Support for Water and Environmental Systems, University of Colorado, May 2016.