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*ATTORNEYS FOR THE CITY OF POCATELLO*

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

IN THE MATTER OF DISTRIBUTION )  
OF WATER TO WATER RIGHTS HELD )  
BY RANGEN, INC., WATER RIGHT ) **AFFIDAVIT OF ADELHEID M. WELSH**  
NOS. 36-00134b, 36-00135A, AND )  
36-15501 )

STATE OF COLORADO )  
 ) ss.  
County of Denver )

ADELHEID “Heidi” M. WELSH, being first duly sworn upon oath, deposes and says:

I am over the age of 18 and state the following based upon my own personal knowledge and professional expertise:

1. I am a hydrologist at Spronk Water Engineers, Inc.
2. A copy of my resume is attached to this affidavit and is incorporated herein by this reference.
3. I participated in the IDWR administrative proceedings related to the 2011 delivery call placed by Rangen, Inc. (“2011 Rangen Delivery Call”), including assisting Greg Sullivan, P.E., in preparation of expert reports and exhibits on the accuracy of the Rangen flow measurements and attending the trial in 2013.

4. As part of my work on the 2011 Rangen Delivery Call, I have reviewed and analyzed the historical flow data associated with the Curren Tunnel and the Rangen facilities. However, the past work was focused on the accuracy of the flow measurements that are used to determine the total Rangen water use by (the sum of flow measured in the Large Raceways and in Billingsley Creek at the Lodge Dam). I have not analyzed in detail the accuracy of the Curren Tunnel flow measurements.
5. The IDWR has been maintaining daily records of the Curren Tunnel flow since September 8, 1993. The IDWR has provided me Curren Tunnel flow data through September 25, 2014 in a spreadsheet and these data have been marked as provisional and subject to change.
6. The IDWR has stated that on October 16, 2013, the pressure transducer used by the IDWR to measure flow in the Curren Tunnel electronically failed. A new pressure transducer was installed on March 5, 2014. Daily flow data during this period were estimated by IDWR by comparison to the flow of Box Canyon Spring. Because of this, data from October 16, 2013 – March 5, 2014 were graded poor by the IDWR.
7. As set forth in the IDWR Director’s findings in January 29, 2014 Final Order Regarding Rangen Inc.’s Petition for Delivery Call; Curtailing Ground Water Rights Junior to July 13, 1962, the total flow in the Curren Tunnel is computed as the sum of the flow measured at the tunnel mouth by IDWR plus the flow in the 6-inch PVC pipe that diverts from the tunnel upstream of where the IDWR flow measurement occurs (Finding of Fact ¶54). The flow in the 6-inch PVC pipe is measured by Rangen and reported to IDWR (Finding of Fact ¶98).
8. Rangen’s September 26, 2014 Memorandum in Support of Motion for Summary Judgment (“Rangen Memorandum”) refers to IDWR measurements of Curren Tunnel flow during 2014 (Rangen Memorandum ¶8 and Affidavit of J. Justin May in Support of Motion for Summary Judgment Exhibit 3).
  - a. Based on my review of these measurements, it is clear that these flows represent the flow at the mouth of the Curren Tunnel that is measured by IDWR downstream of the diversion into the 6-inch PVC pipe.
  - b. Therefore, the Curren Tunnel flow measurements described in the Rangen Memorandum do not include the flow in the 6-inch PVC pipe, and do not represent the total flow of the Curren Tunnel.
9. Further, it is my understanding that the current delivery system configuration for water from the mouth of the Curren Tunnel limits Rangen to deliveries of Curren Tunnel water through the 6-inch PVC pipe for its domestic and irrigation rights that are the subject of its delivery call.
10. As a result, the data that have been submitted by Rangen in support of its new delivery call (even in the absence of the measurement problems described above) are not sufficiently detailed to evaluate the extent of shortages, if any, to Rangen’s domestic and irrigation rights.

FURTHER AFFIANT SAYETH NAUGHT.

Dated this 13th day of October, 2014.

By Adelheid M. Welsh  
Adelheid M. Welsh

BEFORE ME, the undersigned, a Notary Public, in and for said County and State on this 13th Day of October, 2014, personally appeared Adelheid M. Welsh who executed the above as his free and voluntary act.

SANDY ROBERTS  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 20034008248  
MY COMMISSION EXPIRES MARCH 10, 2015

Sandy Roberts  
Notary Public  
1000 Logan St.  
Denver CO 80203

My Commission Expires: 3.10.2015

**Education:** B.S. Watershed Science, 2007, Colorado State University

**Professional Experience:**

**2009 - Present:** *Spronk Water Engineers, Inc., Staff Watershed Scientist*

Responsible for compilation and analysis of water resources, water rights and hydrologic data including climatological data, streamflow data, diversion records, cropping patterns, call records, water rights tabulations and decrees. Analyses include quantification of historical consumptive use, crop evapotranspiration calculations, water availability analyses, stream depletion modeling, point flow modeling, and other surface water modeling. Assists with water rights protection, substitute water supply plans, augmentation plans, and water rights accounting. Responsible for GIS mapping and modeling related to water resources including georeferencing and digitizing, delineation and quantification of irrigated area, hydrologic analyses, and geospatial analysis.

**Summary of Experience:**

Ms. Welsh has over 8 years of experience working in the water resources field in Colorado, Wyoming, New Mexico, Montana, and Idaho. She has provided engineering support and assistance with water rights protection, substitute water supply plans, and augmentation plans. She is experienced in the review, development and maintenance of water rights accounting. She has extensive experience in GIS applications and modeling related to water resources and has prepared numerous court exhibits.

**Description of Representative Projects:**

*Town of La Salle, Water Supply Consulting.*

Assisted the Town in developing a water supply for irrigation of parks, ballfield, and subdivision lawns. Assisted with a substitute supply plan and assisted in change of Godfrey Ditch and Union Reservoir water rights application to allow use of an irrigation well, replacing depletions with leased water supplies from the reservoir. Engineering analyses include calculation of water demands, water consumption and timing of stream



depletions to the South Platte River. Responsible for daily augmentation plan accounting.

**State of New Mexico, Rio Grande Compact.**

Responsible for review, compilation, and maintenance of surface water data. Assists in the review of surface water modeling efforts, including RiverWare modeling.

**Cherry Creek Project Water Authority.**

Assists with analysis and mapping of the Cherry Creek Basin in support of water rights applications and basin modeling. Analyses include water availability analyses, point flow modeling, consumptive use analyses, and stream depletion modeling.

**City of Pocatello, Water Rights Protection and Water Supply.**

Assists in preparation of exhibits and water rights analyses for administrative hearings. Engineering analyses include analysis and review of water rights data and water measurements, summarizing and mapping depletions using Eastern Snake Plain Aquifer Model runs, and mapping water rights data.

**Climax Molybdenum, Plan for Augmentation in Division 2.**

Assists with analysis in support of a water rights application. Analyses include computation of current and historical depletions, point flow and exchange potential modeling, and probability analyses. Responsible for GIS analyses and mapping for the project.

**Centennial Water & Sanitation District, Water Rights Protection.**

Assists with review of water court applications and substitute water supply plans for water rights protection. Analyses include return flow and consumptive use calculations, delineation of irrigated area, compilation of diversion records, and stream depletion modeling.

**Perry Park Water and Sanitation District, Change of Water Rights.**

Assisted in the historical use analysis and change of the Pleasant Park Ditch from irrigation to municipal and augmentation use by the Perry Park Water and Sanitation District.

**Yellowstone River Compact.**

Delineated current and historic irrigated fields along the Powder and



Tongue Rivers in Montana. Compiled and analyzed historical agricultural data from the U.S. Agricultural Census.

**2007 – 2009:**

**AATA International, Inc., Environmental/GIS Specialist**

Compiled and interpreted social and environmental data for preparation of large-scale environmental impact assessments and other technical reports. Conducted impact analysis, assessed water supply sources, and developed mitigation and monitoring plans for natural resource development projects. Utilized GIS software in mapping and analyses of environmental data and prepared numerous figures for technical reports.

**2006 – 2007:**

**USDA Forest Service, Hydrologic Technician**

Completed soil, stream crossing, and stream health surveys for timber sale units. Managed grazing by the completion of soil inventories for NEPA compliance. Mapped streams and forest roads using GPS and GIS. Evaluated Best Management Practices for feasibility and effectiveness.

**2006:**

**Teton Science School, Hydrology Intern**

Measured stream discharge, monitored ground water well levels and collected water quality samples weekly at twelve sites. Entered and analyzed data for technical documentation. Taught watershed science and hydrology field methods to adults and children.

**Professional Memberships:**

American Water Resources Association  
Colorado Ground Water Association

