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**IN RE: NON-BINDING ARBITRATION PURSUANT TO THE FINAL  
SETTLEMENT STIPULATION, *KANSAS v. NEBRASKA AND COLORADO*,  
NO. 126 ORIGINAL**

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**BEFORE JEFFREY C. FEREDAY, ARBITRATOR**

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**Direct Testimony of Dick Wolfe P.E. On Behalf of Colorado Regarding the  
Nebraska Rock Creek Augmentation Plan and the Nebraska Water Short  
Year Plan**

**August 21, 2013**

I declare under penalty of perjury that the following answers are true and correct.



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Dick Wolfe

1. Qualifications/Experience

Q Could you please state your full name and provide a spelling of your last name?

A Dick Wolfe, W-O-L-F-E.

Q And, Mr. Wolfe, could you give us a summary of your educational background.

A I have a bachelor's degree and masters of science degree in agricultural engineering from Colorado State University.

Q Did you do a thesis or coursework to achieve your masters degree?

A A thesis.

Q What was the subject of your thesis?

A Basically, it was the evaluation of the center pivot's uniformity of application of water and overall application efficiency based on wind speed. I was trying to understand the operation of center pivot irrigation systems in terms of maximizing the application efficiency and how those efficiencies are a function of how and when they're operated; specifically understanding how and to what extent operation of center pivots during windy conditions affects their ability to provide a uniform application of water on a parcel.

Q What is your current position?

A I'm currently State Engineer for Colorado and also Director of the Colorado Division of Water Resources.

Q Could you briefly summarize your duties as state engineer?

A Basically, I manage approximately 280 employees whose principal responsibilities are surface and groundwater administration throughout the state of Colorado and administration of interstate compacts and agreements. The Division is also responsible for surface and groundwater hydrologic studies, the hydrographic program, the public safety program for dam safety, and well inspections. I also act as Colorado's representative to several Compact or interstate decree commissions. I also sit on and advise several state boards that address Colorado water issues, such as the Colorado Ground Water Commission and the Colorado Water Conservation Board. And, most

relevant here, I am Colorado's representative to the Republican River Compact Administration, or RRCA, and also act as commissioner on four other compacts.

Q And when were you appointed state engineer?

A November 26, 2007.

Q In total, how long have you been employed with the Division of Water Resources?

A A little over 20 years.

Q What other positions have you held within the division?

A When I first joined the Division of Water Resources, I was staff engineer. Then I was a team leader for Water Divisions 2, 3, and 7; and then I was the chief of water supply; and then I became the assistant state engineer prior to my appointment as the state engineer.

Q What is a team leader?

A A team leader is responsible for a group of individuals in the Denver office of the Division of Water Resources who assist our Division offices and is responsible for both surface and groundwater activities, reviewing and evaluating water court applications, review of subdivision water supply plans, issuance of water well permits, approval of substitute water supply plans and other general water review and administration duties.

Q Were you employed prior to working for the Division of Water Resources?

A Yes.

Q And what positions did you hold?

A Prior to joining the Division of Water Resources, I was a partner with Spronk Water Engineers, a private consulting firm in Denver, for seven years.

Q What types of work did you do with Spronk Water Engineers?

A I was a water resources engineer consulting on water rights issues, groundwater and surface water hydrology studies, water court applications including plans for augmentation and other types of activities regarding water resources engineering.

Q Have you had extensive experience developing, reviewing, and administering augmentation plans?

A Yes, under Colorado law.

Q What is the basic requirement of an augmentation plan under Colorado law?

A Remedy of injury – that is remedying the depletions to a stream that could cause material injury to a senior water right by the diversion and consumption of water by a junior water right.

Q And are you a registered professional engineer within Colorado?

A Yes.

Q Is Exhibit C004 a copy of your curriculum vitae?

A Yes.

Q Do you have any additions or corrections to your curriculum vitae?

A No.

Q Have you previously been admitted as an expert witness in any prior water court cases or other cases?

A Yes, I have, several times.

Q Do you remember in what areas you were qualified as an expert?

A As one example for intrastate matters, I was admitted as an expert by the Division 3 Water Court – that is the Rio Grande Basin in 2008 in the areas of groundwater hydrology, surface water hydrology, water rights administration, and water resources engineering. In the arbitration hearing before Arbitrator Pagel in 2010 I was admitted as an expert and provided expert opinions and testimony. More recently, in the Supreme Court lawsuit by Kansas against Nebraska and Colorado, I was also admitted as an expert and provided expert opinions and testimony

Q Do you have any expertise in the area of interstate compact administration?

A Yes, I am responsible for assuring that Colorado continues to comply with the various compacts and interstate decrees by administering water rights within Colorado. I also regularly interpret and apply those compacts and interstate decrees, in the same way I must interpret permits and decrees of the Colorado courts.

2. Offer as an Expert

Colorado moves to admit Mr. Wolfe as an expert in the areas of groundwater hydrology, surface water hydrology, water rights administration, Compact and interstate water administration and water resources engineering.

3. Responsibilities and Duties

Q Mr. Wolfe, you testified that you sit on or advise various inter and intra-state boards and commissions, could you describe your duties and responsibilities on some of those boards and commissions in greater detail?

A Yes, those boards and commissions take up a great deal of my time because of the effort those responsibilities require. For example, the Colorado Ground Water Commission meets 4 times a year and for each meeting I must review materials and be prepared to advise the Commission on matters relating to permit applications, replacement plans, applications for variances, appeals of the Hearing Officer, and request for new or modified designations of ground water basins. I also assist the Commission in any hearings before them and also advise on any potential legislation that may be germane to the Commission. In looking at all of these requests to the Commission, I have to review any technical data included, meet with my staff and if necessary our attorneys, to review each claim and request, analyze any engineering to make sure I understand it and to determine if there are any flaws or other problems, whether technical or legal. Oftentimes, I am asked to meet with the applicants or parties to issues to assist

in resolving the issue prior to and after Commission meetings. These activities have ranged from facilitation to mediation. I also act as an advisor and as a board member of the Colorado Water Conservation Board and the Interbasin Compact Committee. These bodies are primarily responsible for water policy in Colorado and for developing the Colorado Water Plan (a planning document to address the future water needs of Colorado). Between these two bodies there is a meeting almost every month, which are held throughout the State. The members of these bodies represent all sectors of Colorado from agriculture, municipal and industrial, energy, environmental and recreation. I commit a significant amount of time and work into these activities for these various commissions and boards in order to meet my fiduciary obligations and the legal requirement that the decisions I make are not arbitrary or capricious, but instead are reasoned and based on scientific and legal principles with appropriate and adequate supporting documentation and any other information I think I need to make an informed decision.

Q Does that apply to your duties on interstate boards or committees as well?

A Yes, I also act as commissioner on five of our nine interstate compacts. These positions require an understanding of both intrastate laws of the compacting states but also the interstate laws that also pertain to these states. Many technical and legal issues come before these commissions that often require many months if not years of working closely with our sister states to address and resolve these issues to maintain comity between the states. In many ways, I go through the same process, and if anything in greater detail and with more involvement beforehand because of the potential impacts across large numbers of water users, not just in Colorado, but in other states. I may also have the ability for myself and my staff to invest a little more time in these matters because the meetings are not as frequent and there is often a little more time to look into these types of matters. But even under a short time frame, I, with the assistance of staff and others, must perform a complete analysis of the issues. As a recent example in the Rio Grande Basin, the Fish and Wildlife Service designated critical habitat for the Southwestern Willow Flycatcher, along with other species. Some of that designation was in Colorado, but more was in New Mexico. The Rio Grande Compact Commission (RGCC), made up of representatives from Colorado, New Mexico and Texas, were concerned about the impacts of that designation, and what we all perceived as problems with the basis of the designation. In advance of the meeting where the RGCC would discuss the matter with representatives from the United States, I discussed the issues and facts with water users in the Colorado portion of the basin and staff members from the other States, talked to our attorneys about the legal basis and requirements of the designation, sent my staff to investigate the actual on-the-ground status of these areas and provide me the information that was not included in the designation, and then spent some time looking into and discussing the broader policy implications with staff, legal counsel, and some water users and water user groups in the Basin. I believe that type of work in advance of taking any formal position on an issue relating to compacts or interstate decrees is necessary to properly do my job for those boards or commissions.

4. Rock Creek Augmentation Project Evaluation

Q Looking more specifically at Nebraska's Rock Creek Augmentation Plan, when did you first become aware of the Plan?

A I first became aware that Nebraska, or its water users, were moving towards some type of pipeline or augmentation project in late 2011 or early 2012. That information came out during the discovery process in Kansas' suit against Nebraska in the United States Supreme Court.

Q At that time did you investigate Nebraska's plans or otherwise try to find out more information?

A No. At that time all I knew was that there may be some sort of plan by Nebraska similar in nature to Colorado's Compact Compliance Pipeline. But I felt it was best to wait for Nebraska to figure out what they wanted to do and present a plan or proposal to the RRCA for evaluation and action.

Q Did Nebraska present a plan to the RRCA?

A Yes, Nebraska submitted what I call the Nebraska Rock Creek Augmentation Plan to the RRCA on February 8, 2013.

Q Were you aware of any of the details of the plan prior to receiving the formal written proposal from Nebraska?

A No.

Q What did you do after receiving the Rock Creek Augmentation Plan?

A I quickly distributed copies of the Plan to my staff and consultants so we could begin the process of reviewing the Plan.

Q Could you summarize what the review consist of?

A I, together with my staff and consultants, reviewed the Republican River Compact and the Final Settlement Stipulation (FSS) in the original Kansas v. Nebraska and Colorado case, again, to familiarize ourselves with the requirements of these documents. I also specifically asked our modeling consultant Dr. Willem Schreüder to review the Nebraska's use of the RRCA Groundwater Model as part of their plan.

Q Who is Dr. Schreüder?

A Dr. Schreüder is an expert in the area of mathematics and groundwater models. He has testified as an expert in these and related areas several times, including state courts, multiple arbitrations under the FSS and to the Special Master in Kansas' suit against Nebraska in the United States Supreme Court. He was one of Colorado's representatives on the committee that constructed the RRCA Groundwater Model and he maintains and operates the official version of the model. He is extremely familiar with the RRCA Groundwater model. In my opinion, he is one of the most knowledgeable groundwater modelers around and he has developed and maintained several groundwater models for or with the State of Colorado as well as private entities throughout the state and even around the world.

Q Why did you ask Dr. Schreüder to review Nebraska's Rock Creek Augmentation Plan?

A I wanted him to review the Plan and give me his opinion as to whether Nebraska's proposed use of the Model was a reasonable scientific method.

Q Did he do that?

A Yes.

Q Do you know what he did?

A Yes. I know he reviewed the Plan descriptions, model inputs and outputs and electronic data provided by Nebraska. He did not perform any runs himself, but he analyzed all of the data provided by Nebraska and discussed the proposed Plan with me and other members of my staff.

Q Did you do anything else?

A Yes, I of course met with and spoke to Dr. Schreüder frequently, as well as others on my staff such as Ivan Franco and Mike Sullivan, as well as my attorneys and probably others as well.

Q Were you satisfied with the Rock Creek Augmentation Plan as presented by Nebraska?

A No, at first we didn't fully understand some aspects of the Plan as presented by Nebraska and had various questions and concerns.

Q What did you do?

A We engaged with Nebraska officials for informal consultations so that we could fully understand their proposal and its implications to in order to determine if it met the requirements of the Compact and the Final Settlement Stipulation. For example, Dr. Schreüder did not fully understand how Nebraska set up the model runs it used to illustrate the operation of its Plan. So, Dr. Schreüder called up Dr. Jim Schneider, Nebraska's lead modeler, among other titles he holds within Nebraska, and the two of them talked about Dr. Schreüder's questions until Dr. Schreuder understood what Nebraska had done.

Q Do you know when that was done?

A It must have been after February 8, 2013, when we received the Rock Creek Augmentation Plan and before the RRCA voted on the Plan in March 2013.

Q Was everything done that informally?

A No. For example, the RRCA had a work session so the States and their representatives could discuss the Plan as a group in a somewhat more formal session. I, as Colorado's representative, still had questions and concerns regarding the Plan. At the work session, I and members of my staff raised questions about our concerns to Nebraska, who then explained their reasons, the engineering and other facts involved, until we understood their proposal and they fully understood our concerns regarding their proposal. They, in turn, worked to address and resolve our concerns with their Plan until we were satisfied.

Q When was this done?

A In the time period between receiving the Plan and the RRCA special meeting to vote on the Plan.

Q Where representative of Kansas at that work session?

A Yes, we met in the Kansas Water Office in Topeka.

Q Did they have the same opportunity to ask questions and voice concerns?

A Yes.

Q Ultimately, how did you, as Colorado's representative to the RRCA, vote on the Rock Creek Augmentation Plan?

A I voted to approve the Plan based on the resolution presented by Nebraska.

Q Can you briefly explain why you voted in favor of the Plan?

A Yes, to summarize, after all of the consideration and analyses that I and the others put into this for Colorado based on the information they provided to us, I determined that they met the requirements of the FSS and Compact despite the objections by Kansas. Principally, the FSS does not prescribe a particular use of the RRCA Groundwater Model in evaluating and accounting for an augmentation plan. This means that there is no set way to approve augmentation plans under the FSS, and each proposal must be evaluated on its own merits. After due consideration and the input of staff and consultants, I agreed that the Rock Creek Augmentation Plan complied with the requirements of the Compact and FSS and was a reasonable project, in conjunction with its other actions, to assist Nebraska in complying with the Republican River Compact.

Q Are your opinions on this issue described in a little more detail in Exhibits C001 and C002?

A Yes, the joint opinions of Dr. Schreüder and I are contained in those exhibits.

Q Are any of the opinions therein held only by Dr. Schreüder and not you?

A No, they are fully joint opinions; we evaluated the Rock Creek Augmentation Plan, reached our conclusions and opinions and wrote and revised the report together, so it is truly a joint report. Of course any of the technical evaluations of Nebraska's modeling work were done by Dr. Schreüder and he reported his conclusions based on that review to me and I rely on those conclusions as part of the basis for my opinions.

## 5. WSYA Plan Evaluation

Q Switching to Nebraska's Alternative Water Short Year Administration Plan (WSYA Plan), did you proceed with your evaluation of the WSYA Plan similarly to your evaluation of the Rock Creek Augmentation Plan?

A Yes, very similar. Once I received the WSYA Plan in July 2012, I distributed it to staff and consultants for their review and input. With them, I reviewed Appendix M of the Final Settlement Stipulation and applied the standards and requirements of Appendix M to the evaluation of the WSYA Plan as well as evaluated the technical aspects of the Plan.

Q When did you do this?



A Nebraska first presented the Plan to the RRCA on July 30, 2012 and the RRCA voted on the Plan October 16, 2012. So, all the review and evaluation were done between those dates.

Q Did you agree with the WSYA Plan when Nebraska first presented it?

A Again, I and others of my staff had some questions and concerns at first, but we were able to discuss with the staff for Nebraska our concerns and questions, and allow, if necessary, Nebraska to address our concerns and answer our questions.

Q How did you vote on the Plan?

A I voted in favor of the Plan.

Q Why?

A I believe the Plan met the requirements of Appendix M to the Final Settlement Stipulation, and otherwise meets the requirements of the FSS and Compact, and is scientifically sound and technically feasible. As I stated at the RRCA meeting when voting in favor of the Plan, it may not be perfect, but we cannot let perfection be the enemy of good. Appendix M does not require perfection and Nebraska presented a reasonable plan that met Appendix M's requirements. Approval of the WSYA Plan does not exempt Nebraska from the Compact's requirements; they still must live within their allocation and approval of the Plan would not excuse a Compact violation.

Q Are your opinions on the WSYA Plan explained in a little more detail in Exhibits C001 and C002?

A Yes, and as before, this is a joint report with Dr. Schreüder and the same statements I made regarding our opinions on the Rock Creek Augmentation Plan apply here.

Q Do you still hold the opinions as to the Rock Creek Augmentation Plan and the WSYA Plan as set forth in Exhibits C001 and C002?

A Yes.

6. Admit Exhibits

Colorado moves to admit Exhibits C001, C002, C003, C004, and C005.

No further questions for this witness, Colorado reserves the right to for redirect examination and to present rebuttal testimony from this or other witnesses.