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

BEFORE MARTHA O. PAGEL, ARBITRATOR

REBUTTAL EXPERT REPORT OF DICK WOLFE, P.E. STATE ENGINEER

I, Dick Wolfe, state the following:

(1) I understand that my role as an expert, both in preparing this report and in giving evidence, is to assist the arbitrator to understand the evidence or to determine facts in issue. The opinions expressed in my report are my own professional opinions.

(2) I have endeavored in my report and disclosures to be accurate and complete, and have addressed matters that I regard as being material to the opinions expressed, including the assumptions that I have made, the bases for my opinions, and the methods that I have employed in reaching those opinions.

(3) I have been advised by the attorney for the State of Colorado of the disclosure requirements of the rules of the arbitration, and I have provided in my report the information required by those rules. I have not included anything in my report and disclosures that has been suggested by anyone, including the attorney for the State of Colorado, without forming my own independent judgment on the matter.

(4) I will immediately notify, in writing, the attorney for the party for whom I am giving evidence if, for any reason, I consider that my existing report requires any correction or qualification; and, if the correction or qualification is significant, will prepare a supplementary report or disclosure to the extent permitted by the applicable rules of the arbitration.

(5) I have used my best efforts in my report and disclosures, and will use my best efforts in any evidence that I am called to give, to express opinions within those areas in which I have been offered or qualified as an expert by the arbitrator, and to state whether there are qualifications to my opinions.

(6) I have made the inquiries that I believe are appropriate and, to the best my knowledge, no matters of significance that I regard as relevant have been withheld from the arbitrator.

(7) I have disclosed any financial or pecuniary interest that I have in the results of this lawsuit or in any property or rights that are the subject of the lawsuit for which my report and disclosures are being submitted.

Dated this 2nd day of July, 2010.

Dick Wolfe

Dick Wolfe

INTRODUCTION

This rebuttal report responds to the reports prepared for the State of Kansas by Mr. Barfield and Mr. Book dated June 22, 2010. I will respond to statements made by Mr. Barfield and Mr. Book regarding the claimed inadequacies of Colorado's proposed Compact Compliance Pipeline and their statements concerning compliance on the South Fork of the Republican River. The issues I will address are: Augmentation Plan Experience; Actions Regarding Depletion of a Finite Resource; Comprehensive Document; Project Deliveries and Pipeline Operations; Use of "Unallocated Waters"; Time, Location, Amount Issue; Sub-basin Non-impairment; South Fork Issue; and RRCA Approval Issue.

I. Augmentation Plan Experience:

Mr. Barfield contends that the RRCA lacks experience with any augmentation plan (see page 12 of Barfield report). This is true, as Colorado's proposal is the first proposal the RRCA has considered under the Final Settlement Stipulation ("FSS"), Subsection III.B.1.K. However, Colorado has had extensive experience with augmentation plans for over forty years and the operation of such plans is a routine part of water administration within Colorado. Further, as Colorado's compliance under the Republican River Compact is determined on a 5-year running average based upon annual values, the operation of the Compact Compliance Pipeline will be significantly simpler than many of the augmentation plans currently administered by the Colorado Division of Water Resources. Kansas is aware of Colorado's extensive experience with plans for augmentation, particularly as it relates to the Arkansas River Compact and Colorado's compliance with the requirements of that compact. Colorado has demonstrated over the past 14 years that it can operate complex plans to replace depletions from well pumping in order to comply with the Arkansas River Compact. This was even acknowledged by the Special Master in the Kansas v. Colorado case in his final report to the U.S. Supreme Court. Fifth and Final Report of the Special Master, *Kansas v. Colorado*, No. 105, Original (Jan. 2008) at 13-15; Fourth Report of the Special Master, *Kansas v. Colorado*, No. 105, Original (Oct. 2003) at 8-24.

Mr. Barfield further states that because the term of the loan used to construct the Colorado Compact Compliance Pipeline ("CCP") and some surface water leases are for twenty years, "it seems reasonable to require periodic review of the augmentation plan by the RRCA twenty years after the plan's implementation." Barfield Report at 12. This makes no sense and no periodic review is necessary. First, neither the repayment period for the loan for the CCP nor the term of a few surface water leases have any bearing on the operation of the CCP. Instead, Colorado must operate the CCP to assure Compact compliance. Colorado must have certainty that the CCP will provide a long-term solution for Compact compliance. It is clear to me from Kansas' actions during the past two years that Kansas will do nothing but obstruct and will do everything in its power to deny Colorado the ability to meet its Compact obligations, at least unless

Colorado concedes to every condition that Kansas insists must be imposed on Colorado's efforts to comply with the Compact. Allowing Kansas to obstruct the operation of the CCP every twenty years would defeat the certainty that Colorado and the Republican River Water Conservation District need to proceed with the CCP and is not required or necessary.

II. Actions Regarding Depletion of a Finite Resource

Mr. Barfield further alleges that Colorado's Proposal would facilitate the ongoing, *aggressive,* depletion of a finite and non-replenishable supply of ground water. Barfield Report at 12. This is not true. Colorado, with assistance from the Republican River Water Conservation District, has taken proactive steps to reduce consumption of ground water within the basin. Approximately 35,000 acres have been permanently converted to non-irrigated use through CREP and EQIP programs. Colorado and the Republican River Water Conservation District have applied for an additional 30,000 additional acres to be eligible for retirement through a pending amendment to the original CREP program. Secondly, I promulgated well measurement rules in 2008. Measurement rules in other areas of Colorado have had the effect of reducing pumping by approximately 10%. Additionally, the local groundwater management districts are taking proactive steps to address long-term sustainability of the Ogallala aquifer within the basin through a variety of water conservation programs. It is in the Colorado water users' best interest to manage this resource as carefully as possible to extend the economic usefulness of the aquifer for as long as possible. However, Colorado has the right under the Compact to continue to use groundwater as long as Colorado complies with the restrictions of the Compact. The CCP allows Colorado and its water users to do that and is the only way Colorado can comply with its statewide allocations under the Compact for many years.

As is evident from attachment 6 to the Barfield Report, Kansas is also mining its groundwater in the Republican River Basin, as well as other areas. It is my understanding that Kansas' only response to the unsustainable groundwater depletions within its portion of the Republican River Basin is to institute a moratorium on new wells, use federal programs such as CREP to reduce irrigated acreage and require the use of meters to encourage conservation; the very same steps Colorado is taking to address the use of the aquifer in Colorado. It is easy to make claims and accusations about what should be done, but as is evident from what is occurring within Kansas, it is very difficult to simply shut down wells.

Finally, as shown in the reports of Mr. Slattery and Dr. Schreuder, the location of the CCP wellfield was carefully chosen to maximize the life of the CCP and will allow Colorado to continue to replace depletions even after a significant portion of the wells within Colorado are no longer pumping due to reduced saturated thickness. This allows a long term solution to Colorado's North Fork and Statewide Compact obligations.

III. Comprehensive Document

Mr. Barfield claims that Colorado has not provided a comprehensive document regarding Colorado's proposed Compact Compliance Pipeline. Barfield Report at 2. This is not true. After a long series of negotiations among the States, Colorado provided a comprehensive report to Kansas and Nebraska in August 2009 that was considered by the RRCA Commissioners. Mr. Barfield and Mr. Book assert that the proposal in this arbitration is different than the plan presented in August 2009. See, for example, Book Report at 10. The CCP proposal as it exists today and as is the subject of this arbitration is the same plan as presented in August 2009.

The only addition to the August 2009 Proposal is added clarity to the specific months during the year that deliveries would be made from the Pipeline to allow the downstream States to make the most efficient beneficial use of that added water and how Colorado intends to determine the amount of water to be augmented. Kansas has not raised any issue with when the deliveries are made during the year. All restrictions and plans contained in the August 2009 Proposal, including limitations on delivery and allowable credit to Colorado, remain in effect.

IV. Projected Deliveries and Pipeline Operations

Mr. Barfield contends that the Colorado Proposal's "Projected Deliveries" are not based on any projections of the status of Colorado's compliance; rather, those "Projected Deliveries" are only a cap on deliveries. Barfield Report at 11. This is not true. The "Projected Deliveries" shown in exhibit 4 of the Proposal is simply a hypothetical representation of the determination of the largest deficit in the last 10 years, which is then applied under the formula contained in the Proposal. This is used to calculate the cap on **credits**, not deliveries (column F) which was done to satisfy the Kansas concern that Colorado would significantly overdeliver in one year and deliver nothing in the next four years. The hypotheticals show that Colorado cannot attempt to deliver the minimum for several years and then over-deliver in a single year, as the cap on credits acts to prevent such actions, even if the CCP itself may have the physical capacity to make such large deliveries.

The calculation used to determine the cap on credits is based on Colorado's compliance in the past 10 years, which is integral to calculating Colorado's compliance in the future due to the 5-year running average test of Colorado Compliance. So, while this is used to estimate the maximum amount of projected deliveries, it is misleading for Kansas to suggest that this is how actual deliveries will be made. During my deposition on June 17, 2010, I described in detail using Exhibit 4 to the August 2009 proposed resolution how actual deliveries would be determined (see pages 50-59 of transcript, attached as exhibit C). In all cases, actual deliveries would always consider the 5-year compliance test as shown in column I of Exhibit 4 as well as the minimum delivery requirement and the cap on maximum credit Colorado could receive.

Finally, Mr. Slattery described in detail how the CCP will be operated based on the 5-year running average compliance test, recognizing that stream depletions and water supply are factors that vary based on future climate conditions. It is not possible to know in advance what Colorado's obligation will be in any single year, so CCP operations must allow some flexibility in the prediction of future needs and operation during a year to respond to changing conditions.

V. Use of Unallocated Waters

Mr. Barfield also claims in his report that "At a minimum, Kansas' interest in the waters of the South Fork sub-basin extends to its specifically allocated waters and to its share (51.1%) of the 'unallocated waters' of the South Fork." Barfield Report at 11. He further states (Barfield Report at 2) the "unallocated water" is in fact allocated—it is reserved for use in the main stem. As is evident from the States' representations to Special Master McKusick, this is wrong. Transcript of Hearing Before Special Master, (Jan. 6, 2003) at 33 – 40 (attached at Exhibit A.). Amicus Curiae United States addressed the unallocated waters and again those statements directly contradict Mr. Barfield:

> During the course of this litigation and particularly during settlement, it became clear that the Compact's silence as to where the States may consume those "otherwise unallocated" created uncertainty and a potential for conflict among the States. In particular the States desired to resolve whether it was permissible for a State to consume more than its specific allocation on a tributary of the Republican River so long as the State did not exceed its overall allocation. The proposed settlement resolves that question by providing that water derived from a sub-basin in excess of a State's specific sub-basin allocation may be used by any of the States to the extent that: (1) the water is physically available; (2) the "use of such water does not impair the ability of another state to use its sub-basin Allocated Water Supply within the same sub-basin"; (3) the State remains within its total allocation; and (4) certain water-short year administration measures (described below)were not in effect. See Final Settlement Stipulation, Subsection IV.B.
> Those provisions provide sensible rules for use of the "otherwise unallocated" waters. Returning to the example of the South Fork of the Republican River, the Final Settlement Stipulation would allow any of the three States to consume the 8,000 acre-feet of "otherwise unallocated" water that is physically available….For example, Colorado could divert some or all of the 8,000 acre-feet from the South Fork provided that Colorado does not: (a) exceed its total state-wide allocation of 54,100 acre-feet …and (b) prevent Kansas or Nebraska from receiving their respective South Fork allocations of 23,000 acre-feet and 800 acre-feet…

Statement of the United States as Amicus Curiae in Support of the Proposed Settlement, App. E to the Second Report of the Special Master (Subject: Final

Settlement Stipulation) at E9 – E10 (attached as Exhibit B). Special Master McKusick concurred with the United States' analysis of the issue, reporting that each state may use the unallocated portion of the waters within a subbasin, so long as such use does not impair the other states' right to consume its specifically allocated water. Second Report of the Special Master at 54.

Mr. Book acknowledges in his expert report that Colorado can use unallocated water on a sub-basin:

> The sub-basin test is provided in the RRCA AP Table 4A, Colorado's Sub-Basin Non-impairment Compliance. This table includes several values, and reflects the flexibility from the FSS for sub-basin compliance by computing a value termed Total Available Supply. The Total Available Supply for this test is the sum of the State's allocation for the sub-basin and the unallocated supply on the tributary. *The unallocated supply is defined as the amount of the total CWS for the sub-basin that is not allocated to any of the states in the sub-basin*, but is allocated to the mainstem supply for Nebraska and Kansas. *In summary, Colorado can use water allocated to the mainstem from the South Fork sub-basin,* if compliance is maintained with its state-wide allocation by using less than its allocation in another sub-basin."

Book Report at 5 (emphasis added).

Furthermore, Mr. Barfield contradicts himself in the assertion that Kansas is allocated the unallocated supply of the South Fork:

> The rules governing sub-basin accounting and compliance, which protect Kansas' South Fork sub-basin allocation, are a major reason why Kansas rejected the Colorado Proposal at the RRCA meeting in August, 2009. Under these rules, a State can use its specific sub-basin allocation. *A state can also use the "unallocated water" for that sub-basin, provided that it underuses its specific allocations elsewhere in the Basin to meet the statewide test.* But that State cannot use a downstream State's specific sub-basin allocation. This test is done on a 5 year average basis. (FSS Section IV.B. and Appendix C, Tables 4A, 4B, 4C.)

Barfield Report at 7 (emphasis added). Based on the continued representations of all parties and the United States regarding unallocated waters, I find it surprising that Mr. Barfield now attempts to claim a right to unallocated water of the South Fork. In any event, his assertions that Kansas has a specific "interest" in the unallocated waters of the South Fork is wrong.

VI. Time, Location, Amount Issue

Mr. Barfield states that my report significantly overstates the Kansas position on time, location, and amount of replacement requirements. Barfield Report at 10. Mr.

Barfield believes that augmentation credits, as Colorado proposes here, should be directly tied to the location and amounts of a State's overuse and that replacements should occur only on a timely basis. Despite this statement, Mr. Barfield states that Kansas has not argued for replacement of depletions in "exact time, location, and amount" as my report notes and he states that "Kansas recognizes some degree of flexibility in this area." Mr. Barfield additionally claims that at a minimum the FSS requires credits for augmentation to be determined using the Model. Barfield Report at 8. The FSS does not state or require this. That is, apparently, Mr. Barfield's own interpretation. Mr. Slattery and Dr. Schreuder further elaborate on this issue in their respective rebuttal reports. Both Mr. Barfield, at 10 and Mr. Book, at 7, 8 & 10, of their reports assert that Colorado has too much discretion or flexibility in making augmentation deliveries. However, they have not identified that Colorado would violate any requirements of the Compact or FSS or that these actions would cause injury or impairment to Kansas.

Instead, as Colorado's Compact compliance is determined on a five-year running average that is based on **annual** allocations and consumptive use, it is appropriate to consider the augmentation water on an **annual** basis by either sub-basin or state wide, depending on the appropriate test that Colorado must meet. Thus, there is no need or requirement for augmentation deliveries to meet any other time, location, or amount criteria.

VII. Sub-basin Non-impairment

Mr. Barfield asserts that the central issue is whether and to what degree Colorado should be able to replace its South Fork depletions with its North Fork Pipeline. Barfield Report at 11. Mr. Barfield misstates the issue. I have acknowledged that there is a sub-basin non-impairment requirement in the FSS, which imposes a limit on Colorado's flexibility to use more than its "allocation" in the South Fork sub-basin, but that Colorado retains some flexibility to consume "unallocated" waters as shown above. Further, subsection III.b.1.k of the FSS allows wells acquired for augmentation by a state to be used to offset stream depletions in order to comply with its Compact allocations.

Mr. Barfield states that the Colorado proposal does not address Colorado's failure to meet its sub-basin obligations to Kansas on the South Fork (see page 10 of Barfield report). The FSS does not require a state to include all augmentation plans or other solutions to meet Compact requirements in a single proposal. In order to address Kansas' concerns, we attempted to do this as described below but were unable to reach resolution with Kansas. Therefore, Colorado has continued to proceed step-by-step so that it can meet its obligations on the North Fork and basin wide. For example, Colorado and its water users have moved forward with many discrete actions to reduce its consumption of water, including metering wells, participation in federal programs such as CREP, and purchase or lease of surface water irrigation rights to retire those lands and dedicate the flows to the streams. Kansas should not unreasonably withhold approval the Compact Compliance Plan just because it has not ultimate resolution as to

how Colorado will achieve compliance on South Fork under the sub-basin non-impairment test.

VIII. South Fork Issue

While not part of this proposal Colorado has proposed to address its overuse in the South Fork sub-basin by eliminating water stored in conservation storage in Bonny Reservoir, which will reduce the evaporation charged to Colorado as beneficial consumptive use. While eliminating water stored in conservation storage will reduce evaporation, there is also seepage from water stored in the reservoir represented in the RRCA Groundwater Model, which also increases Colorado's computed beneficial consumptive use. If conservation storage in Bonny Reservoir is eliminated then it will be necessary to accurately represent the stream by changing the RRCA Groundwater Model back to its pre-Bonny condition as is already reflected in the model from 1918 to 1952. As shown in Mr. Slattery's expert report, these reductions will result in Colorado's full Compact compliance.

Kansas proposed an alternative for Colorado to comply with the sub-basin non-impairment requirement in the South Fork sub-basin, which is to extend the North Fork Pipeline to Cherry Creek, an intermittent tributary of the South Fork in Kansas (letter from Mr. Barfield dated April 30, 2010, attached as Exhibit D). However, Kansas provided no details on what credit Colorado would receive for groundwater delivered to Cherry Creek for the purposes of the sub-basin non-impairment requirement or the statewide test for Compact compliance. My understanding is that the Kansas proposal is merely "conceptual", without any of the detailed investigation or analysis that Kansas demands from Colorado as part of its Proposal.

IX. RRCA Approval Issue

Finally, Mr. Barfield attests that if a state can ignore the FSS' requirement that the RRCA approve augmentation plans prior to their implementation, and use of the FSS' dispute resolution procedures to impose the terms of augmentation plans, then Kansas will have lost its ability to protect its waters under the FSS and the Compact itself. Barfield Report at 14. Colorado has never asserted that it can ignore the FSS requirement to get RRCA approval of our Compact Compliance Pipeline prior to implementation. All three states agreed in the FSS that the dispute resolution process was needed when future disputes arose. It was never intended to circumvent the RRCA approval process. However, it should be recognized that under Mr. Barfield's interpretation one state could hold unreasonable veto power on any action needing approval by the RRCA thus leading to the absurd result that one state could potentially extort unreasonable conditions and deny another States' rights as guaranteed by the Compact, to obtain approval.

CONCLUSION

I continue to hold the opinions I set forth in my Expert Report (May 24, 2010) and continue to disagree with the expert opinions set out by Kansas.

CONFIDENTIAL EXCERPT ATORNEYS' EYES ONLY

1 SUPREME COURT OF THE UNITED STATES
2 No. 126, Original
3 STATE OF KANSAS,
4 Plaintiff,
5 vs.
STATE OF NEBRASKA and
6
STATE OF COLORADO
7
Defendants.
8
9 CONTAINS CONFIDENTIAL INFORMATION
10 HEARING before SPECIAL MASTER Vincent L. McKusick,
11 held at Division III Appellate Courtroom, U.S. Court of
12 Appeals for the 10th Circuit at the Byron R. White U.S.
13 Courthouse, 1823 Stout Street, Denver, Colorado, on
14 January 6, 2003, commencing at 1:03 p.m., before Amanda L.
15 Maze, RPR, a notary public in and for the State of Colorado.
16
17 APPEARANCES:
18 For the State of Kansas: John Draper, Esq.
Leland E. Rolfs, Esq.
19 David Pope
20 For the State of Nebraska: David D. Cookson, Esq.
Bartholomew L. McLeay, Esq.
21 Roger Patterson
22 For the State of Colorado: Carol D. Angel, Esq.
Peter J. Ampe, Esq.
23 Hal D. Simpson
24 For the United States: Sarah Himmelhoch, Esq.
Jeffrey Minear, Esq. CERTIFIED COPY
25

1 INDEX

2 PAGE

3 Opening remarks and introductions 3
4 Section I & II 10
5 Section III -- Existing Development by Mr. Patterson 12
6 Section IV A-D -- Compact Accounting by Mr. Pope 28
7 Section IV E-H -- Compact Accounting by Mr. Simpson 72
8 Section V -- Guide Rock by Mr. Patterson 84
9 Section VI -- Soil and Water Conservation by 96
10 Mr. Simpson
11 Section VII -- Dispute Resolution by Mr. Pope 99
12 Section VIII-X 103
13 Wind-up by Mr. Draper 116
14 Wind-up by Mr. Cookson 117
15 Wind-up by Ms. Angel 121
16 Wind-up by Ms. Himmelhoch 127

17
18
19
20
21
22
23
24
25

CONFIDENTIAL EXCERPT ATORNEYS' EYES ONLY

1 depletions, and averaging.
2 Now, with regard to Subsection B, which
3 deals with sub-basin accounting, this section
4 defines the States' flexibility in the use of their
5 allocation geographically. This section allows the
6 States to use what's been referred to as otherwise
7 unallocated waters at locations of their choosing so
8 long as the following conditions are met.
9 Basically, a State may not impair the
10 ability of a downstream State to use its specific
11 sub-basin allocation within that sub-basin.
12 Secondly, a State, of course, may not use more than
13 its state-wide allocation. And then, thirdly, in
14 water-short years, additional constraints apply as
15 will be discussed in the Guide Rock section by
16 Mr. Patterson in a few minutes.
17 SPECIAL MASTER MCKUSICK: Stopping there
18 before you go to IV. Does this -- first of all,
19 when it says, Water derived from sub-basins in
20 excess of a State's specific sub-basin allocations
21 as available, does that mean any State, even though
22 it's not a State within which any part of the
23 sub-basin is located?
24 And I'm leading up to my next question is,
25 if more than one State could make a demand on this

1 unallocated water, does it become simply first
2 come/first serve, the first one that gets there?
3 MR. POPE: I think the answer to the first
4 question is that it would be only States within that
5 sub-basin that would be using water from that
6 sub-basin. I believe I've not missed anything when
7 I say that.
8 And secondly, the protection that's really
9 embodied is in part so that the practical aspects in
10 terms of where water's used and how much water's
11 used in the basin under the current status of
12 existing development -- but an example would be in a
13 sub-basin shared by two States, this settlement
14 agreement provides that the upper State would not
15 use any more water than that amount that would still
16 leave available the amount allocated to the
17 downstream State.
18 SPECIAL MASTER MCKUSICK: I can see that.
19 Take Red Willow Creek, which, I believe, is
20 completely in Nebraska.
21 MR. POPE: Correct.
22 SPECIAL MASTER MCKUSICK: And I believe
23 that Kansas is allocated some water from that.
24 Could Kansas, if it called on the water first, ahead
25 of Nebraska, could it take unallocated water out of

1 that sub-basin?
2 MR. POPE: Well, when you have a sub-basin
3 of that nature -- Sarah may have a comment here in a
4 minute -- the unalloc -- so-called unallocated
5 waters are really allocated to the main stay. They
6 are really the waters that are relied upon in the
7 Compact to make up the main stem allocations in
8 part.
9 And Kansas would not have a specific claim
10 to individual tributary, but it would have a claim
11 to all of the water that's allocated to it in its
12 main stem allocation. And whether Nebraska would
13 use part of the unallocated water in that particular
14 sub-basin or whether it would use more or less from
15 the main stem, wouldn't matter as long as it doesn't
16 directly interfere within this case, the Kansas use
17 of water.
18 MS. HIMMELHOCH: If I may, Your Honor?
19 This is the Compact, as I understand it,
20 contemplates use by each state within its own state
21 boundaries. The exception being that Kansas is
22 being given the option to divert its water at Guide
23 Rock. That general provision applies here as well,
24 so Kansas would divert whatever portion of the
25 otherwise unallocated water it wished to use within

1 Kansas or at Guide Rock. Nebraska within Nebraska
2 and Colorado within Colorado.
3 What would happen on a creek which only
4 appears -- which only flows in one state, like Red
5 Willow, is that Nebraska is obliged to let flow into
6 the main stem that portion which has been allocated
7 to Kansas so that Kansas can divert it either at
8 Guide Rock or in the state of Kansas.
9 MR. POPE: I know this is --
10 SPECIAL MASTER MCKUSICK: I find it rather
11 complicated.
12 MR. POPE: It is somewhat complicated. We
13 spent many days and days working on ways to try to
14 get this accomplished that would protect all
15 interested and be consistent with the Compact.
16 Let me go on for a minute and see if it
17 would help with your questions and we can go further
18 as may be needed.
19 In regard to the test of impairment of a
20 downstream State's specific sub-basin allocation,
21 the accounting procedures require specific
22 calculations to determine Kansas and Colorado
23 compliance with this requirement. And the reason I
24 say Kansas and Colorado is because all of the
25 sub-basins in Nebraska are not shared sub-basins.

CONFIDENTIAL EXCERPT ATORNEYS' EYES ONLY

1 They are all within Nebraska. But there are others
2 that are shared between either two or three of the
3 States.
4 These calculations require that States'
5 use in a specific sub-basin be less than the sum of
6 its allocation from that sub-basin, any remaining
7 allocation from an upstream State in that sub-basin,
8 and the unallocated waters of that sub-basin. So
9 it's a sum of those three components.
10 And, again, as I said, Nebraska's in a
11 little different situation.
12 Fundamentally, each -- for each sub-basin,
13 the test prohibits an upstream State from, again,
14 using a specific allocation from a downstream
15 sub-basin.
16 Similarly, the accounting procedures
17 include calculations to determine whether on a
18 five-year running average basis, each States'
19 statewide use is within its statewide allocation.
20 And, again, the details of the special case in the
21 water-short years will be discussed in a few
22 minutes.
23 Let me pause and see if there's any
24 further questions on that component or maybe this
25 will become --

1 SPECIAL MASTER MCKUSICK: Do any of the
2 rest of you have comments on that?
3 MS. HIMMELHOCH: Your Honor, I realized I
4 forgot to answer the second half of your question,
5 which was, Is it first come/first serve. And the
6 answer to that with respect to the otherwise
7 unallocated is yes, it is first come/first serve.
8 As a practical matter with the moratorium
9 in place, we are essentially fixing the world as it
10 exists today and there is unlikely to be any
11 question as to who gets to use the otherwise
12 unallocated water because everybody that has their
13 development in place. But the fundamental principle
14 is with respect to otherwise unallocated water,
15 first come/first serve.
16 MR. POPE: There are some unique sort of
17 physical circumstances in some of the shared
18 sub-basins, that I think, help make this work.
19 MR. PATTERSON: Your Honor, if I could,
20 just add one thing, the example of Red Willow where
21 it is a sub-basin entirely within one state, there
22 is a specific allocation to Nebraska. There is no
23 specific allocation to Kansas. But the unallocated
24 is split between the two.
25 SPECIAL MASTER MCKUSICK: I missed that.

CONFIDENTIAL EXCERPT ATORNEYS' EYES ONLY

1 MR. PATTERSON: So there would be no
2 obligation on Nebraska in Red Willow Creek. We
3 could use our specific and we could use all of the
4 unallocated. However, that means that we would have
5 to use, less, obviously, somewhere else in the
6 basin.
7 MR. POPE: With respect to Subsection C
8 about the groundwater modeling component. Last
9 April, in the settlement principles, the States
10 agreed that a comprehensive groundwater model was
11 needed to properly account for stream flow
12 depletions due to groundwater pumping from both the
13 alluvial pumping and upland and highplains,
14 sometimes known as Ogallala pumping, as well as to
15 determine credit for imported water. And that was
16 the imported water Mr. Patterson spoke of in terms
17 of the groundwater mound issue.
18 This is consistent with the conclusions of
19 your first report. The settlement principles
20 obligated the States to work aggressively and
21 cooperatively in consultation with the United States
22 to develop the model between then and July 1 of 2003
23 with a number of specific interim requirements
24 during the period between the signing of the
25 settlement principles and November 15th or

1 essentially, finally, December when we reached the
2 final settlement.
3 The States created a technical modeling
4 committee to carry out this work. The modeling
5 committee is composed of modeling and other experts
6 of each State, the United States Geological Survey
7 and the Bureau of Reclamation.
8 Modeling committee was given the following
9 assignments for the period through November 15th of
10 2002: First, they were to meet with the U.S.
11 Geological Survey personnel to become throughly
12 familiar with the work that they had done thus far
13 on the modeling effort. Secondly, decide whether to
14 adapt the U.S. Geological Survey model or to develop
15 another model acceptable to the States for the
16 purposes set forth in the settlement principles.
17 And thirdly, to identify issues and set
18 deadlines for discussing the issues for adaptation
19 or development of a selected model and adopt
20 milestones to adopt, run, and calibrate the model.
21 And fourthly, work on the necessary steps to
22 accomplish this adopting, running, and calibrating
23 the model, and to agree on fundamental model issues
24 next, including what's known as calibration
25 parameters and targets, and procedures for

No. 126, Original

In The
Supreme Court of the United States

STATE OF KANSAS,

Plaintiff,

v.

STATE OF NEBRASKA

and

STATE OF COLORADO,

Defendants.

BEFORE SPECIAL MASTER VINCENT L. McKUSICK
(Hearing Scheduled For January 6, 2002)

STATEMENT OF THE UNITED STATES AS AMICUS CURIAE IN SUPPORT OF PROPOSED SETTLEMENT

Theodore B. Olson
Solicitor General
Thomas L. Sansonetti
Assistant Attorney General
Edwin S. Kneedler
Deputy Solicitor General
Jeffrey P. Minear
Assistant to the Solicitor General
Andrew F. Walch
Michael A. Gheleta
Sarah D. Himmelhoch
James DuBois
Attorneys
United States Department of Justice
Washington, D.C. 20530-0001
202-514-2217

E1

IN THE SUPREME COURT OF THE UNITED STATES

No. 126, Original

STATE OF KANSAS, Plaintiff,

v.

STATE OF NEBRASKA
and
STATE OF COLORADO

BEFORE SPECIAL MASTER VINCENT L. McKUSICK
(Hearing Scheduled For January 6, 2002)

STATEMENT OF THE UNITED STATES AS AMICUS CURIAE IN SUPPORT OF PROPOSED SETTLEMENT

The United States submits this statement in accordance with the Special Master's instructions during the status conference held on November 13, 2002. The United States supports the joint motion of the parties seeking the Court's approval of the proposed settlement of this action because the settlement agreement is consistent with the Compact and this Court's rulings and because the agreement ensures greater certainty and efficiency in administering the waters of the Republican River Basin.

transfers or replacements do not result in additional depletions to the stream. *Id.*, Subsection III.B.1.g. and i. The most significant exception from the groundwater moratorium is the provision permitting "wells for expansion of municipal and industrial uses." *Id.*, Subsection III.B.1.j. Any such wells would be accounted for as a beneficial consumptive use by the State. The proposed settlement also exempts from the moratorium wells designed to augment stream flow to help achieve Compact compliance, so long as those wells do not result in a net depletion of stream flows. *Id.*, Subsection III.B.1.k. Colorado anticipates that it may purchase or install groundwater wells to pump water into the stream to offset some of its beneficial uses in order to maintain compliance with its Compact allocations. The RRCA must approve plans for the installation and operation of such augmentation wells. *Id.*

In general, the moratorium on groundwater wells can be lifted in all or in a portion of the Republican River Basin only if the RRCA unanimously determines that new information demonstrates that additional groundwater development would not result in a violation of the Compact. Final Settlement Stipulation, Subsection III.A.1. With respect to the area above Trenton Dam, however, the States have agreed: (1) "not to increase the level of development of groundwater wells as of July 1, 2002" unless the Court approves a modification of the settlement agreement; and (2) not to transfer well usage from below Trenton Dam to above it. *Id.*, Subsections III.A.3 and III.B.1.i(ii).

In sum, the groundwater moratorium, coupled with the completion of the groundwater model and revision of the accounting procedures, resolve one of the central issues in this litigation. By adopting terms that account

for the relationship between ground and surface water, the states have resolved this issue in a manner that meets the requirements and terms of the Compact.

B. Use of Waters "Otherwise Unallocated"

The Compact divides the waters of the Republican River among the three States by allocating specific amounts to particular States in each designated drainage basin, including the main stem. For instance, Article III of the Compact estimates the average virgin water supply in the South Fork of the Republican River drainage basin at 57,200 acre-feet. Article IV allocates specific amounts to each State, which amounts are "to be derived from the sources and in the amounts hereinafter specified." As to the South Fork of the Republican River, Colorado is allocated 25,000 acre-feet, Kansas is allocated 23,000 acre-feet, and Nebraska is allocated 800 acre-feet. Thus, under the Compact, 48,800 acre-feet of the 57,200 acre-feet of the water supply in the South Fork of the Republican River drainage basin are allocated, while the remaining 8,400 are not specifically allocated. Article IV of the Compact provides that the waters of the mainstem, together with the waters of "upstream basins" that are "otherwise unallocated," are allocated to Kansas and Nebraska. The ratio of their respective shares is 51.1 percent for Kansas and 48.9 percent for Nebraska. Compact Article IV (the ratio of 138,000 acre-feet to 132,000 acre-feet).

During the course of this litigation and particularly during settlement, it became clear that the Compact's silence as to where the States may consume those "otherwise unallocated" waters created uncertainty and a

potential for conflict among the States. In particular, the States desired to resolve whether it was permissible for a State to consume more than its specific allocation on a tributary of the Republican River so long as the State did not exceed its overall allocation. The proposed settlement resolves that question by providing that water derived from a sub-basin in excess of a State's specific sub-basin allocation may be used by any of the States to the extent that: (1) the water is physically available; (2) the "use of such water does not impair the ability of another state to use its sub-basin Allocated Water Supply within the same sub-basin"; (3) the State remains within its total allocation; and (4) certain water-short-year administration measures (described below) are not in effect. *See* Final Settlement Stipulation, Subsection IV.B.

Those provisions provide sensible rules for use of the "otherwise unallocated" waters. Returning to the example of the South Fork of the Republican River, the Final Settlement Stipulation would allow any of the three States to consume the 8,000 acre-feet of "otherwise unallocated" water that is physically available, in the sense that it can be diverted from the South Fork or downstream on the main stem, provided that the State first putting the water to use does not exceed its total state-wide allocation, and provided that the State's use does not adversely affect the specific sub-basin allocations of the other States in the South Fork. For example, Colorado could divert some or all of the 8,000 acre-feet from the South Fork, provided that Colorado does not: (a) exceed its total state-wide allocation of 54,100 acre-feet (or its adjusted allocation in an abnormally wet or dry year); and (b) prevent Kansas or Nebraska from receiving their respective South Fork allocations of 23,000 acre-feet and 800 acre-feet (or their

adjusted allocations in an abnormally wet or dry year). Furthermore, Colorado's use could not violate any of the administrative measures, discussed below, for water-short years.

The proposed settlement terms are consistent with a reasonable interpretation and implementation of the Compact. While Article IV envisions that only Kansas and Nebraska would share the "unallocated" water, and that they would do so in essentially equal measure, there is no evident harm to the interests of the United States and the individual States if Kansas and Nebraska further agree to share the relatively small amounts of water at issue here with Colorado and to allow whichever State can put the water to use to do so. To the contrary, the Compact states that its "major purposes" include "provid[ing] for the most efficient use of the waters of the Republican River Basin." Compact, Article I. The States entered into this Compact before significant development had occurred in the Basin and, therefore, had limited information about where the best and most efficient uses of the water might occur. It is reasonable to conclude that drafters of the Compact and Congress, in providing for "the most efficient use" of the waters, intended the States to have the measure of flexibility reflected in the proposed settlement.

The pragmatic compromise adopted in the proposed settlement is also consistent with the conduct of the States and the United States since the ratification and approval of the Compact. Specifically, the United States constructed Hugh Butler Lake-Red Willow Dam on a tributary of the Republican River in Nebraska. The United States' beneficial use of those waters, which includes reservoir evaporation, are therefore accounted for as a beneficial consumptive use by Nebraska. *See* Compact Articles I,

XI(a). The Compact identifies the virgin water supply in Red Willow Creek as 21,900 acre-feet (adjusted to an average of 25,000 acre-feet during the period 1959-1994). Nebraska is allocated 4,200 acre-feet of depletion from Red Willow Creek (adjusted to about 4,700 acre-feet during the period 1959-1994). The remainder of that stream is "otherwise unallocated." The net evaporation from Hugh Butler Lake was estimated to average 2,900 acre-feet between 1963 and 2001, and the Project diversions deplete an average of at least 4,500 acre-feet from Red Willow Creek during that same period. In addition, at the time the project was built, Nebraska users were depleting 800 acre-feet on the Creek. The Reclamation project thus contemplates depleting not only Nebraska's specific allocation on Red Willow Creek, but also a portion of the "otherwise unallocated" supply, which is accounted against Nebraska's main stem and state-wide allocations. The historic operation of the Reclamation project is consistent with the Compact interpretation adopted in the proposed settlement.

In sum, the States' resolution of the ambiguities arising from the Compact's identification of "otherwise unallocated" waters rests on a sensible compromise that is acceptable to all interested States and the United States. That compromise provides the States with greater certainty and allows for the most efficient use of the waters of the Basin, thereby promoting the Compact's stated purposes.

C. Additional Administration During Drier Years

The proposed settlement also provides greater certainty and stability by establishing a specific set of procedures that will apply when water is in short supply. Specifically, in Section V of the proposed settlement, the States have adopted additional water administration and accounting procedures to protect downstream users, including Harlan County Lake, during drier years. In general, those provisions identify two thresholds of irrigation supply at Harlan County Lake. If either of these thresholds is met, the States agree to restrict certain activities and take certain actions to improve flows into Harlan County Lake and increase flows available for the Bostwick Division Irrigation Districts. *See* Final Settlement Stipulation, Section V.

If the U.S. Bureau of Reclamation estimates that the irrigation supply at Harlan County Lake will be less than 130,000 acre-feet of storage, Nebraska will close junior appropriators and enforce priorities between Harlan County Dam and Guide Rock to protect the senior water rights for the Bureau of Reclamation's Bostwick Irrigation Project. *See* Final Settlement Stipulation, Subsection V.A.2. Nebraska will also take action to protect the delivery of stored water released from Harlan County Lake. *Id.*, Subsection V.A.3. If the Bureau of Reclamation estimates that the irrigation supply at Harlan County Lake will be less than 119,000 acre-feet of storage, then more significant actions are required. In any such water-short year, Nebraska and Kansas must each limit their beneficial consumptive use above Guide Rock to their share of water derived from sources upstream of Guide Rock. *Id.*, Subsections V.B.2.a. and V.B.4. In those years, Colorado also

KANSAS v. NEBRASKA & COLORADO
No. 126, Orig., U.S. Supreme Court
Decree of May 29, 2003, 538 U.S. 720

DEPOSITION OF DICK WOLFE

STATE OF KANSAS,
Plaintiff,
vs.
STATE OF NEBRASKA and STATE OF COLORADO,
Defendants.

Thursday, June 17, 2010

8:50 a.m.

PURSUANT TO NOTICE and the Federal Rules of Civil Procedure, the above-entitled deposition was taken on behalf of Plaintiff at 1525 Sherman Street, 7th Floor, Denver, Colorado, before Denise A. Freeman, Registered Professional Reporter and Notary Public within Colorado.

APPEARANCES:
For the Plaintiff:
JOHN B. DRAPER, ESQ.
Montgomery & Andrews, P.A.
Post Office Box 2307
Santa Fe, New Mexico 87504-2307
For the Defendants:
PETER J. AMPE, ESQ.
AUTUMN BERNHARDT, ESQ.
Natural Resources and Environment Section
Colorado Attorney General's Office
1525 Sherman Street, 7th Floor
Denver, Colorado 80203
JUSTIN D. LAVENE, ESQ.
Agriculture, Environment & Natural Resources
Nebraska Attorney General's Office
2115 State Capitol
Lincoln, Nebraska 68509-8920
For the Republican River Water Conservation District:
DAVID ROBBINS, ESQ.
DENNIS M. MONTGOMERY, ESQ.
Hill & Robbins, PC
1441 18th Street, Suite 100
Denver, Colorado 80202

Also Present:
Steven P. Larson
Angela B. Schenk
Dale Book
Eve W. McDonald
Jim Slattery
Willem Schreuder
Dennis Coryell
Present by Telephone:
Dave Barfield

I N D E X

EXAMINATION		PAGE
June 17, 2010		
By Mr. Draper		4
By Mr. Ampe		77
EXHIBITS		INITIAL REFERENCE
1	Notice of Depositions and Subpoenas Duces Tecum	5
2	Colorado's Amended Exhibit and Witness List	19
3	Expert Report of Dick Wolfe, P.E., State Engineer	20
4	Order of the State Engineer	26
5	Joint Notice of Stipulation	39

(Exhibits attached to original and electronic transcripts to counsel ordering same.)

involved.

Q. What role did they play?

A. Their role was in regards to how, since they are going to the operator of the compact compliance pipeline, they were involved as far as any discussions in terms of terms or conditions on how -- what restrictions would be placed on operation of that pipeline.

Q. Looking at those limits that are now part of the proposal, are those permanent limits?

A. I think we included the provision in here under 4C.

The intent was that these were agreed upon to be permanent limits by Colorado, but they could be modified, or if they are further modified by the arbitrator in this process or by the Supreme Court, it indicates the states will agree to work to incorporate those changes as part of the stipulation.

Q. Let's suppose for a moment that the Colorado proposal was adopted. If water conditions change and there's a greater water supply or Colorado comes up with some other source of supply to meet its obligations, this minimum would still be in place and complied with?

A. Yes. That's our understanding.

Q. And the Colorado proposal, in general, is

for permanent augmentation; is that right?

A. What do you mean by "permanent"?

Q. No time limit.

A. I believe it's the hope of the District that this will become a long-term solution to their -- and the State of Colorado's -- compact compliance obligations.

It doesn't prevent, at some point down the road -- if other additions to, if you will, to that, if they want to continue on indefinite in the future, but it is intended to be part of their permanent commitment to compact compliance.

MR. DRAPER: Why don't we take a short break.

MR. AMPE: Sure.

(Break was taken from 10:16 to 10:38.)

Q. (BY MR. DRAPER) Mr. Wolfe, we were talking about limitations on the deliveries that are part of Colorado's proposal, which you take up on page 9 of your report.

On page 9 you refer to an Exhibit 4. Is that Exhibit 4 to Colorado's proposal which, in turn, was part of the resolution that was submitted to the RRCA?

A. Yes.

Q. Do you have a copy of that?
A. Yes, I do.
Q. Let me just show you what I have got. Is that the same one?
A. Yes, it is. It looks like the version I have. It got part of the remarks truncated off, but it appears to be the same one. Although the one I am looking at doesn't have the footnotes to it. It apparently was on a back side and didn't get copied as part of my documents, but it is the same document.
Q. And this is a document that has a heading on it that says, "Hypothetical Calculations of the Projected Delivery and the Limit on Augmentation Water, Supp. 8/5/2009"?
A. Correct.
Q. And although it doesn't say "Exhibit 4" on it anywhere, this is Exhibit 4 that's referred to in the resolution that was presented to the RRCA seeking approval of the Colorado pipeline proposal, correct?
A. That's my understanding, yes.
Q. This has a number of columns designated as A through J, correct?
A. And a Remarks column as well.
Q. Yes. Looking at Column G, that's entitled, "Measured Pipeline Deliveries," correct?

A. Correct.

Q. And reading down that column, which has spaces for the years 1993 through 2020, the first year is 1993 through 1997. They have zeros in them. And then there is a series of years, 1998 through 2003, with 4000, and then various other numbers appear as you go further down?

A. Correct.

Q. How were the numbers in that Column G determined?

A. The determination of measured pipeline deliveries is a function of looking at what the deficit or difference that's identified in Column D is and in combination with an annual calculation in Column H while also considering what the five-year running average is.

And an estimate of pipeline deliveries is computed there to ensure that we maintain or try to achieve compliance on a five-year running average that's identified in Column I.

Q. So, for instance, in any given year, how do those considerations come together? Is there a mathematical relationship?

A. There are mathematical relationships built into this spreadsheet, and I don't have that electronic version with me.

Q. You have years there for -- these are the actual deliveries under this hypothetical table. You are supposing that 4000 acre-feet would be delivered in the years 1998 through 2003. Specifically how was that number arrived at?

A. Based on the proposal that we had submitted, we said we would deliver at least a minimum of 4000 acre-feet in any given year.

Q. That would give a minimum. It could be anything above that. Why was it at the minimum for those years?

A. I believe because, in this hypothetical, the compact compliance period didn't start until after the agreement was signed in 2003, and then, from 2003 on, that's where we would actively operate underneath this proposal.

Mike Sullivan was the other one who assisted on this and who had developed this particular hypothetical that we had used for the purposes of this exhibit.

Q. When you go to year 2004, that 4000 number for what you would actually deliver under this scenario jumps from 4000 to 13,629. What determines that number?

A. This was -- as you will see in the remarks over there, there was a deficit of 11,130. And keep in

mind, the five-year running average over there on the right is still in the negative.

We will try to make deliveries up to the maximum amount that's identified there with that 140 percent of projected delivery. But in this particular situation, deliveries were limited to 13,629, which is the amount of the historical consumptive use that was associated with the water rights that were purchased by the District for the pipeline.

Q. I see. So the 13,629 is the maximum amount that you can deliver under the water rights that you presently have?

A. I think that was referred to in Exhibit 3 of the resolution. That's where the 13,629 comes from is that estimate of the average annual historical consumptive use of those water rights.

Q. I see. So then that's very helpful. So it flip-flops between the minimum and the maximum amount of acre-feet for which you have water rights until you get down to 2011 where we see the number 20,500. And I see, over in Column J, it says, "Limited to max."

I don't know if that's connected to further remarks in the next column over or not. Can you explain the 20,500 number in this example?

A. Yes. This is limited based on, as you will

see in the remarks, the historical consumptive use limit based on the banking provision that's outlined in the Groundwater Commission's Rule 7-11. And how that's determined, that three-year banking provision limit came into play.

Q. In other words, there was a banking allowed with the minimal use. Where we see in previous years of 4000, the undelivered amounts in those years could be banked and then delivered in this later year, in your example, 2011?

A. Generally speaking, yes. There is a formula that -- in how you calculate that banking, but your characterization of it is generally correct.

Q. And that method for banking and then later utilizing banked amounts is set out in Rule 7-11 or 7.11 of the Groundwater Commission rules; is that right?

A. I believe so. Let me refer to my expert report attachment Exhibit B. If you will look on page 26 of that document under Rule 7.11, Three-Year Modified Banking, describes that process.

Q. Just to make sure I understand this, looking at page 9 of your expert report, you say there, in the first full paragraph where you refer to this Exhibit 4 that we have been looking at, you say, "This is an illustrative exhibit using hypothetical data to

demonstrate how the AWS would be limited."

And then you state, "This exhibit includes a maximum AWS credit, a minimum physical delivery of 4000, a limitation based on available source water."

Are there any other limitations that you are referring to there than what we have just discussed?

A. I believe that includes them all.

Q. I am looking at that number we had in Exhibit 4 for 2011 of a delivery of 20,500 acre-feet. We now understand better how you were able to achieve that number given the limitation on the water rights, that you can use the banking provisions to go above that.

Why was that necessary for compliance purposes? Why did it go that high?

A. I don't think this was necessarily trying to anticipate the -- let me correct -- step back.

What this table was reflected to do was to address the concerns that Nebraska and Kansas had about how the District and the State would operate this pipeline.

So what we were trying to reflect in this exhibit, even with these limitations of the minimum and maximum, if we even run it with those kind of swings in here, in this hypothetical example, we were trying to

demonstrate that this would put appropriate constraints on those deliveries and not cause this situation where there would be a lot of deliveries one year and no deliveries in subsequent years.

And as you can see by the -- even with those ranges that we've put in this table in Column G, you can see what effect it has on the five-year running average, which was the other thing conceptually we were talking about to show that, even with those kind of operations, you don't have the situation where you build up large amounts of credits or also, from our perspective, going into a deficit situation, too, on the other end.

So that's why those numbers were put in there is to just show the operational limits of that. And it is, again, a hypothetical example.

Q. But looking at the Column D in your Exhibit 4, in your example there of various deficit numbers in previous years that, when accumulated in a five-year running total, would have been a basis for going up towards the 20,500 to try to cover that?

A. I'm sorry. I misunderstood your question.

Q. I am just looking at the years prior to 2011 in your example on Exhibit 4, and Column D is entitled, "Deficit or Difference." And if I understand that Column D, those are the annual overages or underages of

the consumptive use in Colorado versus the allocation?

A. That is correct.

Q. And so you want to be -- you want to be non-negative for each five-year period; is that right?

A. Well, again, that column is just reflecting an annual number, not a five-year average.

Q. But they would constitute, when combined, a five-year amount?

A. The five-year running average, I think you are referring to, is identified in Column I.

Q. So that shows that, with the 20,500, you were, in that year, over by 1716 acre-feet?

A. I'm sorry. What year are you referring to? 2011?

Q. Yes.

A. That five-year running average in 2011 resulted in 1716 acre-feet. And keep in mind the five-year average we are talking about in Column I is of the five-year running average of Column H, not of Column D.

Q. H is the difference between D and G, isn't it?

A. Column H is computed as the difference between what we are allocated in Column B, and we subtract off of that our computed beneficial consumptive

use in C, and then we also account for any deliveries that are identified in Column G from the pipeline. And it's that net amount that's computed in Column H.

Q. So just to summarize, we have now heard you describe every element of how the amount in Column G is determined?

A. I believe so.

Q. On page 8 of your report, you refer to the Kansas concern about crediting on the South Fork. In general, what do you understand the obligations of Colorado to be under the compact regarding Colorado's consumptive use in the basin?

MR. AMPE: I am going to ask for a little clarification because you used both "basin" and "subbasin" in the same sentence. Does your question go to the basin as a whole?

Q. (BY MR. DRAPER) Yeah. The Republican Basin as a whole, to start with.

A. As the basin as a whole, there's a determination made on what our available allocation is, and then there's a determination made pursuant to the accounting procedures on what our computed consumptive beneficial use is.

And we are required to ensure that our computed -- or I will say CBCU for short -- does not

KANSAS
DEPARTMENT OF AGRICULTURE

Mark Parkinson, Governor
Joshua Svaty, Secretary

www.ksda.gov/dwr

April 30, 2010

Dick Wolfe, P.E.
Colorado State Engineer
Colorado Commissioner
Republican River Compact Administration
1313 Sherman St., Room 818
Denver, CO 80203

Re: *Kansas v. Nebraska & Colorado,* No. 126, Orig., U.S. Supreme Court
Arbitration under Final Settlement Stipulation
Colorado Compact Compliance Pipeline Issues

Dear Commissioner Wolfe,

Since the arbitration process was initiated on the Compact Compliance Pipeline ("CCP") last August, Kansas has kept Colorado informed of its concerns with Colorado's proposed pipeline. As you know from my letter of November 30, 2009, Kansas cannot approve a plan that would allow Colorado to substitute water specifically allocated to Kansas on the South Fork of the Republican River and instead deliver it as augmentation water into the North Fork basin. In light of this objection, Kansas has been exploring the potential costs to Colorado of constructing and operating an extension of the CCP which would deliver water to Cherry Creek, a tributary of the South Fork in Kansas.

Late last year, Kansas commissioned Miller & Associates, P.C., an engineering firm, to provide an estimate for constructing and operating such an extension. The purpose of this letter is to summarize that estimate.

The Miller estimate divides the extension pipeline into four segments. The first segment of the pipeline begins at the North Fork Republican River in Colorado, and would transport the water .13 of a mile to the Haigler Canal. The estimated cost for constructing this segment is $1,237,295. The second segment of the pipeline would transport water from the Haigler Canal to the Kansas-Colorado line, a distance of 7.05 miles according to Miller's chosen pipeline path. The estimated cost for this second segment is $2,373,825. The third segment of the pipeline would transport water from the west side of the Arikaree River at the Colorado-Kansas state line to the high point of the project in Kansas, a distance of 9.02 miles according to Miller's path. The estimated cost for this segment is $3,050,630. The fourth and final segment of the pipeline would run from that high point to Cherry Creek, a tributary of the South Fork, a distance of 10.11 miles. The estimated cost for this final segment is $3,419,550. The estimate for these four segments amounts to $10,719,455. After including $638,155 in general costs, $2,144,000 for construction contingencies (20% of the construction subtotal), and $1,608,000 in engineering, legal, and administrative costs (15% of the construction subtotal), the total estimate for constructing the South Fork pipeline comes to $14,471.455.

The Miller firm also provided a preliminary opinion for the probable operation and maintenance costs for the South Fork pipeline, which would pump 3,000 acre-feet of water annually. Equipment replacement costs amount to an estimated $30,000 annually, while operation and maintenance costs amount to $350,000 annually. As a result, the total preliminary opinion of probably operation and maintenance costs comes to $380,000 per year.

Division of Water Resources • David W. Barfield, Chief Engineer
109 SW 9th St., 2nd Floor; Topeka, KS 66612-1283 • (785) 296-3717 • Fax: (785) 296-1176

In sum, the Miller firm's preliminary opinions anticipate a total construction cost of $14,471,455, with an annual O & M cost of $380,000. I have included the more detailed breakdowns of these opinions in this letter, along with a map and the profile sections of the proposed pipeline route.

Kansas continues to wish to resolve the South Fork and Colorado augmentation plan issues in a mutually agreeable manner. To that end, I hope that you will find these estimates to be useful. Please do not hesitate to contact me if you have any questions.

Sincerely yours,

David W. Barfield, P.E.
Chief Engineer
Kansas Commissioner

Encl.: Miller & Associates Preliminary Opinion of Probable Cost (2 pp.)
Miller & Associates Preliminary Opinion of Probable O & M Cost (1 p.)
Miller & Associates Profile Section (1 p.)
Miller & Associates Map of Proposed pipeline path (1 p.)

cc: Brian Dunnigan, Nebraska Commissioner, RRCA (by U.S. Mail and email)
Pete Ampe, Asst. Attorney General, State of Colorado (by email only)
Dennis Coryell, RRWCD (by email only)
Stan Murphy, RRWCD (by email only)
David Robbins, Counsel, RRWCD (by email only)

Preliminary Opinion of Probable Cost

General Costs							
Item No.	Description	Estimated Quantity	Units	Unit Cost		Estimated Cost	
0.1	Bonds, Insurance, Mobilization/Demobilization	1	LS	$	350,000	$	350,000
0.2	Utility Relocation	1	LS	$	100,000	$	100,000
0.3	Permitting	1	LS	$	25,000	$	25,000
0.4	Pipeline Markers	26.3	Mile	$	500	$	13,155
0.5	Geotechnical Investigation	1	LS	$	25,000	$	25,000
0.6	Storm Water Pollution Prevention Plan	1	LS	$	25,000	$	25,000
0.7	Erosion Control, Traffic Control	1	LS	$	100,000	$	100,000
					Subtotal	*$*	*638,155*

Segment No. 1 - North Fork Republican River (CO) to Haigler Canal (CO)							
Item No.	Description	Estimated Quantity	Units	Unit Cost		Estimated Cost	
1.1	Inlet Structure and Pumping Station	1	LS	$	750,000	$	750,000
1.2	Power to Pumping Station (3 miles est.)	1	LS	$	200,000	$	200,000
1.3	Stand-by Power (if necessary)	1	LS	$	150,000	$	150,000
1.4	16" Diameter Pipeline	0.13	Mile	$	290,000	$	37,700
1.5	Valves and Fittings	0.13	Mile	$	10,000	$	1,300
1.6	Air release/vacuum valve vault	1	EA	$	5,000	$	2,600
1.7	Pipeline Easement	1	LS	$	10,000	$	10,000
1.8	Dewatering	1	LS	$	20,000	$	20,000
1.9	Railroad Crossing - Bore and Steel Case	1	EA	$	20,000	$	20,000
1.10	Highway Crossing - Bore and Case	1	EA	$	15,000	$	15,000
1.11	Outlet structure/valve at canal	1	LS	$	25,000	$	25,000
1.12	Road Re-surfacing (including driveways)	1	LS	$	5,000	$	5,000
1.13	Seeding	0.2	Acre	$	2,500	$	500
1.14	Construction Staking	0.13	Mile	$	1,500	$	195
					Subtotal	*$*	*1,237,295*

Segment No. 2 - Haigler Canal (CO) to KS/CO State Line (west side of Arikaree River, KS)							
Item No.	Description	Estimated Quantity	Units	Unit Cost		Estimated Cost	
2.1	Canal Crossing	1	LS	$	20,000	$	20,000
2.2	16" Diameter Pipeline	7.05	Mile	$	290,000	$	2,044,500
2.3	Valves and Fittings	7.05	Mile	$	10,000	$	70,500
2.4	Dewatering	1	LS	$	20,000	$	20,000
2.5	Air release/vacuum valve vault	28	EA	$	5,000	$	141,000
2.6	Road Re-surfacing	7.05	Mile	$	5,000	$	35,250
2.7	Seeding	12.8	Acre	$	2,500	$	32,000
2.8	Construction Staking	7.05	Mile	$	1,500	$	10,575
					Subtotal	*$*	*2,373,825*

Miller & Associates
CONSULTING ENGINEERS, P.C.

Preliminary Opinion of Probable Cost

Segment No. 3 - KS/CO State Line (west side of Arikaree River) to High Point (KS)					
Item No.	Description	Estimated Quantity	Units	Unit Cost	Estimated Cost
3.1	River Crossing	1	EA	$ 45,000	$ 45,000
3.2	16" Diameter Pipeline	9.02	Mile	$ 290,000	$ 2,615,800
3.3	Valves and Fittings	9.02	Mile	$ 10,000	$ 90,200
3.4	Dewatering	1	LS	$ 20,000	$ 20,000
3.5	Air release/vacuum valve vault	36	EA	$ 5,000	$ 180,000
3.6	Road Re-surfacing	9.02	Mile	$ 5,000	$ 45,100
3.7	Seeding	16.4	Acre	$ 2,500	$ 41,000
3.8	Construction Staking	9.02	Mile	$ 1,500	$ 13,530
				Subtotal	*$ 3,050,630*

Segment No. 4 - High Point (KS) to Cherry Creek Tributary (KS)					
Item No.	Description	Estimated Quantity	Units	Unit Cost	Estimated Cost
4.1	16" Diameter Pipeline	10.11	Mile	$ 290,000	$ 2,931,900
4.2	Pipeline Easement	1	LS	$ 10,000	$ 10,000
4.3	Valves and Fittings	10.11	Mile	$ 10,000	$ 101,100
4.4	Dewatering	1	LS	$ 20,000	$ 20,000
4.5	Air release/vacuum valve vault	40	EA	$ 5,000	$ 200,000
4.6	Discharge Structure	1	LS	$ 60,000	$ 60,000
4.7	Road Re-surfacing	10.11	Mile	$ 5,000	$ 50,550
4.8	Seeding	18.4	Acre	$ 2,500	$ 46,000
4.9	Construction Staking	10.11	Mile	$ 1,500	$ 15,165
				Subtotal	*$ 3,419,550*

SUMMARY OF COSTS			
0.0	General Costs		*$ 638,155*
1.0	Segment No. 1 - North Fork Republican River (CO) to Haigler Canal (CO)		*$ 1,237,295*
2.0	Segment No. 2 - Haigler Canal (CO) to KS/CO State Line (west side of Arikaree River, KS)		*$ 2,373,825*
3.0	Segment No. 3 - KS/CO State Line (west side of Arikaree River) to High Point (KS)		*$ 3,050,630*
4.0	Segment No. 4 - High Point (KS) to Cherry Creek Tributary (KS)		*$ 3,419,550*
	Subtotal Construction Cost		*$ 10,719,455*
	Construction Contingencies	20 %	$ 2,144,000
	TOTAL PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST		**$ 12,863,455**
	Engineering, Legal, Administrative	15 %	$ 1,608,000
	TOTAL PRELIMINARY OPINION OF PROBABLE COST		***$ 14,471,455***

Miller & Associates
CONSULTING ENGINEERS, P.C.

Preliminary Opinion of Probable O&M Cost

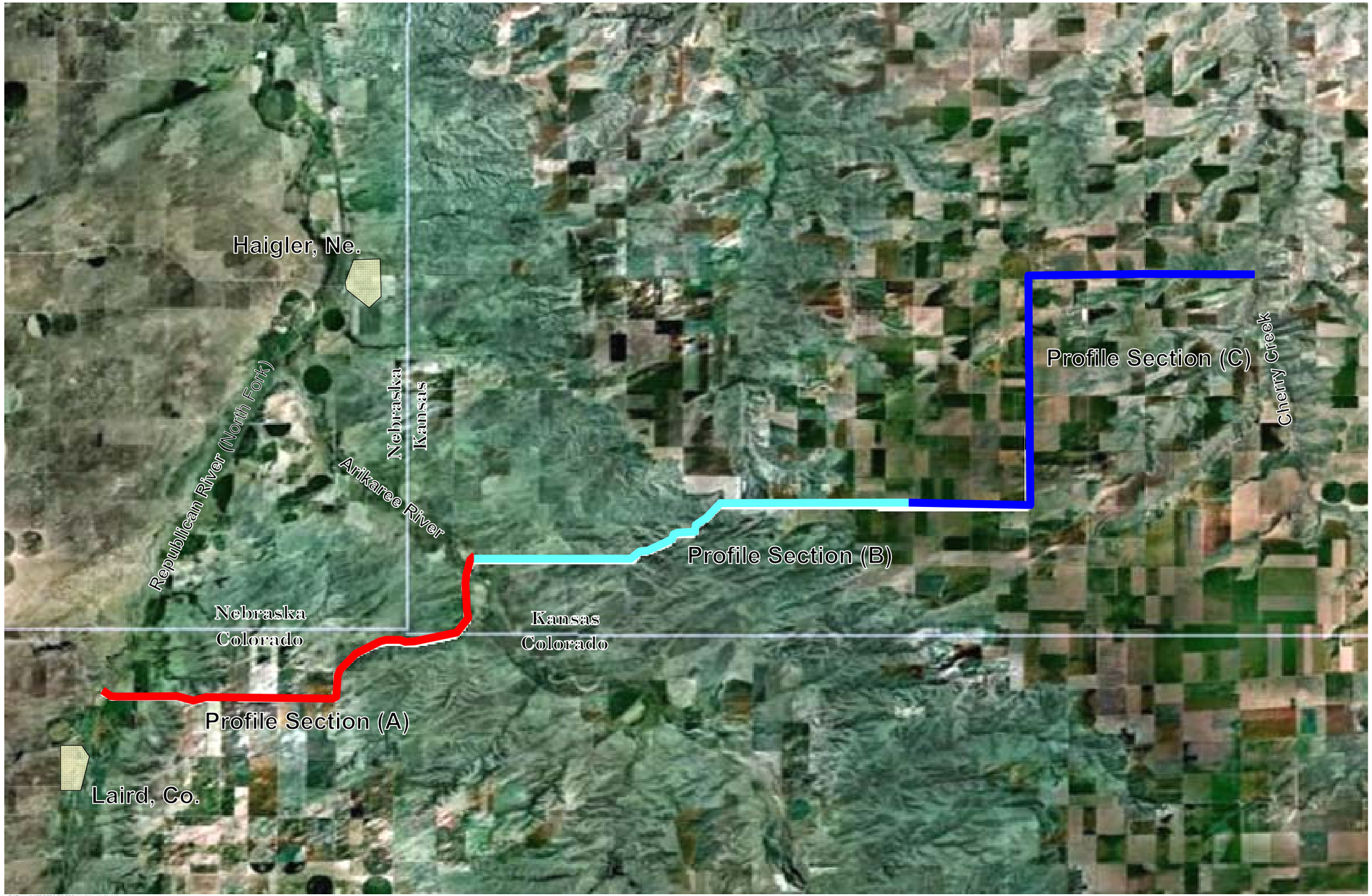
Equipment Replacement							
Item No.	Description	Estimated Quantity	Units	Unit Cost	Estimated Cost	Estimated Life	Annualized Cost
0.1	Pump bowl assembly	4	EA	$ 10,000	$ 40,000	10	$ 4,000
0.2	Motor	4	EA	$ 12,000	$ 48,000	20	$ 2,400
0.3	Column, discharge head, piping, valves	4	EA	$ 20,000	$ 80,000	20	$ 4,000
0.4	Electrical & electrical components	1	LS	$ 150,000	$ 150,000	20	$ 7,500
0.5	Control System	1	LS	$ 50,000	$ 50,000	20	$ 2,500
0.6	Valves and structures	1	LS	$ 25,000	$ 25,000	20	$ 1,250
0.7	Air/Vacuum Valves	105	EA	$ 300	$ 31,500	10	$ 3,150
0.8	Pipeline Repairs	1	LS	$ 50,000	$ 50,000	20	$ 2,500
0.9	Miscellaneous	1	LS	$ 2,700	$ 2,700	1	$ 2,700
						Subtotal	*$ 30,000*

Operation and Maintenance							
Item No.	Description	Estimated Quantity	Units	Unit Cost	Estimated Cost		Annualized Cost
1.1	Pump and motor maintenance	12	EA	$ 50	$ 600		$ 600
1.2	Air/vacuum valve maintenance	105	EA	$ 10	$ 1,050		$ 1,050
1.3	Building maintenance	1	LS	$ 1,000	$ 1,000		$ 1,000
1.4	Inlet and discharge structures	1	LS	$ 1,000	$ 1,000		$ 1,000
1.5	Pipeline markers, pipeline route surface repair	1	LS	$ 1,500	$ 1,500		$ 1,500
1.6	Labor	500	Hr	$ 25	$ 12,500		$ 12,500
1.7	Mileage	1,700	Mile	$ 0.60	$ 1,020		$ 1,020
1.8	Electrical - Pump Operation	2,650,000	kw-hr	$ 0.12	$ 318,000		$ 318,000
1.9	Electrical - Building Operation	12	mo.	$ 250	$ 3,000		$ 3,000
1.10	Insurance	1	LS	$ 3,000	$ 3,000		$ 3,000
1.11	Miscellaneous	1	LS	$ 7,330	$ 7,330		$ 7,330
						Subtotal	*$ 350,000*
						TOTAL PRELIMINARY OPINION OF PROBABLE O&M COSTS	**$ 380,000**

Basic Assumptions

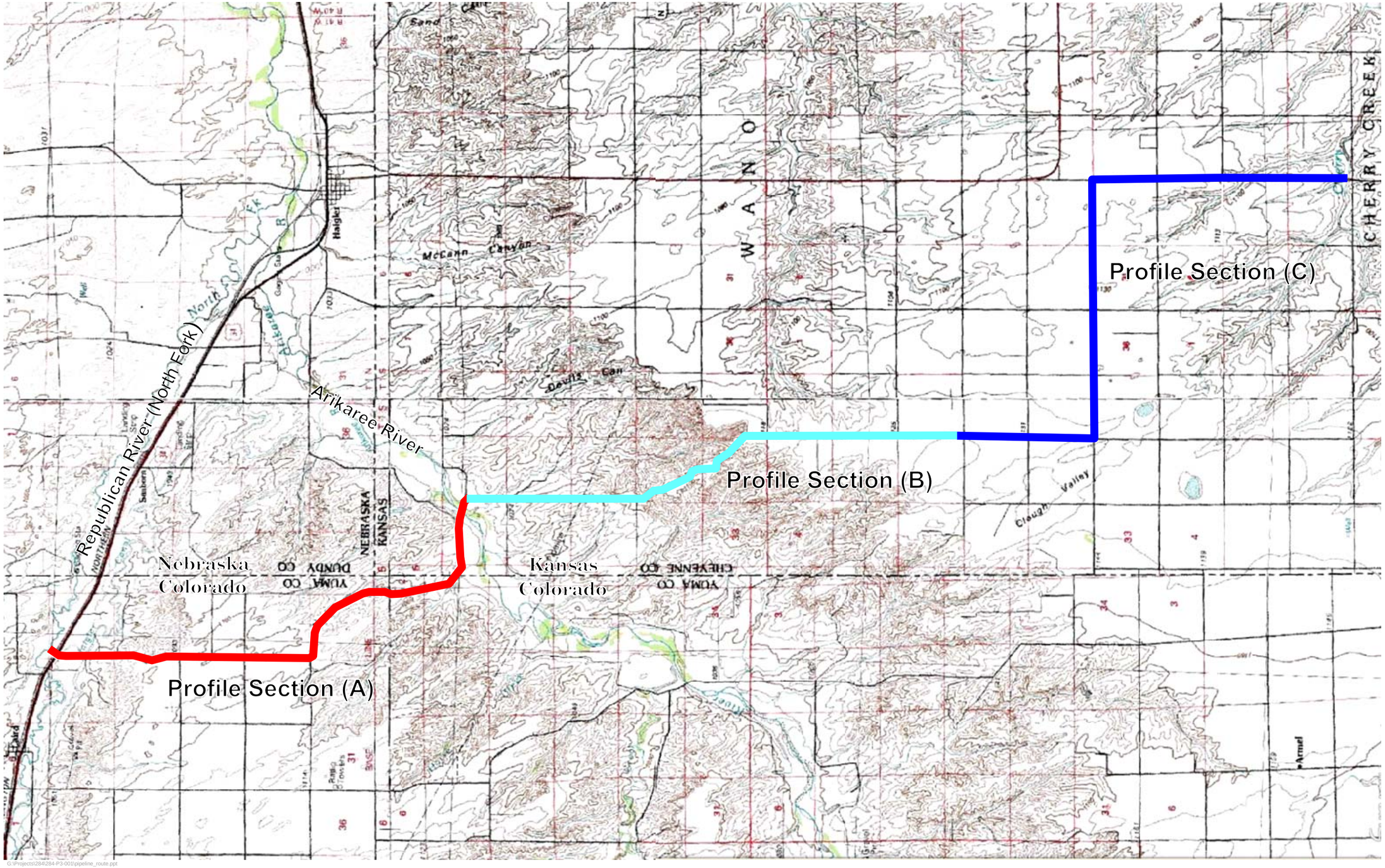
(1) Electrical & electrical components includes replacing motor starters/VFDs
(2) Pump and motor maintenance is based upon checking and lubricating pump and motor monthly.
(3) Air/vacuum valve maintenance is based upon 105 valves, which correlates to 1 valve per quarter mile of pipeline.
(4) Building maintenance is based upon upkeep of the building
(5) Labor is based upon checking system once per month while performing maintenance, travel time, etc.
(6) Labor cost includes salary, insurance, fringe benefits, withholding, etc.
(7) Mileage is based upon driving the route once per month plus miscellaneous miles.
(8) Electrical - Pump Operation is based upon pumping 3,000 ac-ft per yr with 72% pump/motor efficiency.
(9) Electrical - Building Operation is based upon lighting and HVAC loads.
(10) Miscellaneous is included to round out the total cost and cover incidental costs not itemized.

Miller & Associates
CONSULTING ENGINEERS, P.C.



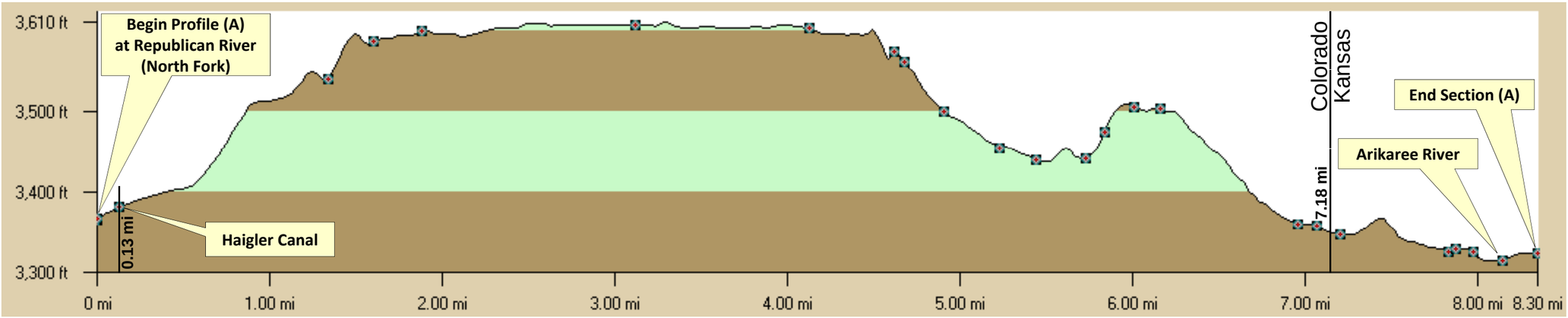
North

Miller & Associates
CONSULTING ENGINEERS, P.C.

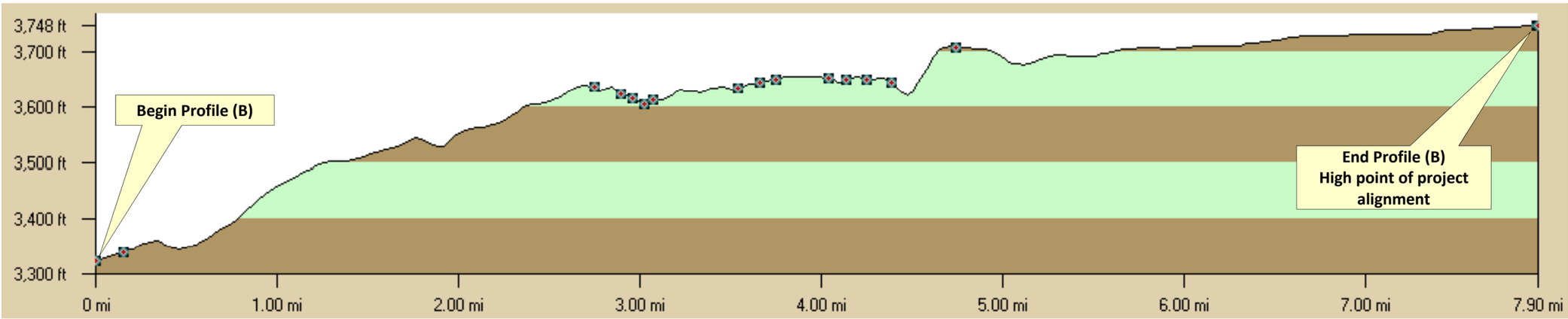


Miller & Associates
CONSULTING ENGINEERS, P.C.

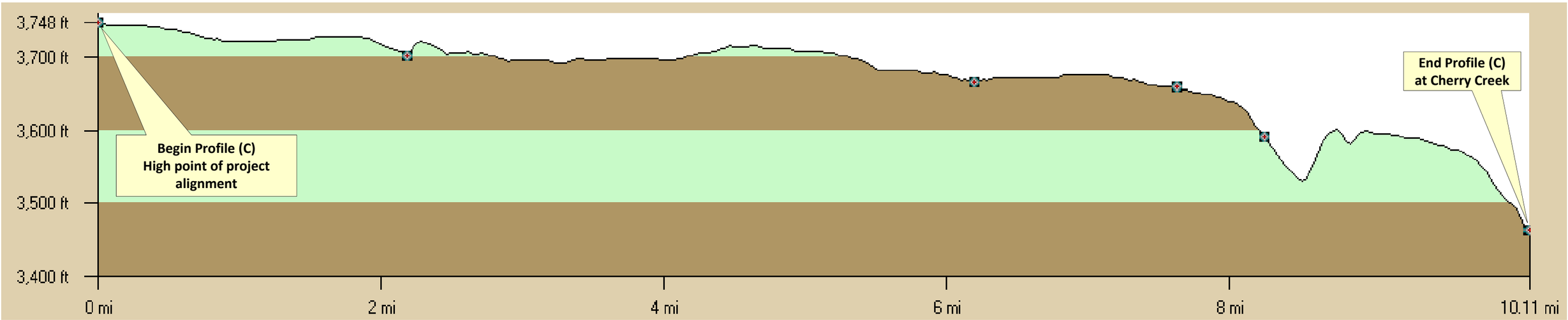
Miller & Associates
CONSULTING ENGINEERS, P.C.



Profile Section (A)



Profile Section (B)



G:\Projects\284\284-P3-001\pipeline_route.ppt

Profile Section (C)