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**STATE OF KANSAS, BEFORE THE DIVISION OF WATER RESOURCES
KANSAS DEPARTMENT OF AGRICULTURE**

**In the Matter of the City of Wichita’s)
Phase II Aquifer Storage and Recovery Project) Case No. 18 Water 14014
In Harvey and Sedgwick Counties, Kansas.)**

Pursuant to K.S.A. 82a-1901 and K.A.R. 5-14-3a.

PROPOSED FINDINGS, CONCLUSIONS AND BRIEF

COMES NOW Equus Beds Groundwater Management District Number 2 (hereinafter “the District”), by and through counsel Thomas A. Adrian of Adrian & Pankratz, P.A., and David Stucky, with its Proposed Findings, Conclusions and Brief in support of its position, as follows:

I. Findings of Fact

a. General Background and History of Phase I

1. Years ago, the City of Wichita (the “City”) accumulated 40,000 acre feet of native water rights (“Native Rights”) in the Equus Beds Aquifer (the “Aquifer”). (See City’s Vested Water Right No. HV-006, Water Right Nos. 388 and 1006.)

2. Up until the early 1990s, the City was pumping all or nearly all of its Native Rights authorized quantity of 40,000 acre-feet. This created a significant water-level decline and a “hole” in the Aquifer in the Wichita well field area. Thus, due to concerns with future water shortages, the City first began discussions regarding the possibility of recharging the Aquifer.

3. Tim Boese and the Equus Beds Groundwater Management District No. 2 (the “District” or “GMD2”) were involved in those discussions from the inception. (Testimony of Boese, R. Vol.VII, p. 2089, l. 9 – p. 2091, l. 5).

4. As a consequence of this planning, the City pursued ASR Phase I, which allowed for three bank storage wells, a surface water intake from the Little Arkansas River, a surface water treatment facility, and recharge facilities including recharge wells and recharge basins. The goal of ASR Phase I was to create a “hydraulic barrier” and slow the migration of the chloride plume toward the City’s well field, along with other nearby water users. (Testimony of Pajor, R. Vol. II, p. 296, ll. 8-12.)

5. As a part of ASR Phase I, the City entered into a Memorandum of Understanding with the District (“Phase I MOU”) that included a variety of requirements including, but not limited to, the protection of domestic wells’ water quality and a remedy if the water quality is impacted by the ASR Phase I operations. (*See* ASR Phase I MOU.)

6. ASR Phase I approvals also imposed various permit conditions including, but not limited to, defining the horizontal and vertical boundaries of the ASR basin storage area, water quality and water-level monitoring, physical recharge credit accounting, establishing the Minimum Index Levels per Index Cell, prohibition of withdrawing recharge credits below the Minimum Index Levels, and prohibition of passive recharge credits. (*See* ASR Phase I Initial Findings & Order dated August 8, 2005, and associated ASR Phase I approved water permits.)

7. The Current Minimum Index Level is based on 1993 historic water levels and precludes the City from withdrawing recharge credits below that level. (*See* ASR Phase I Initial Findings & Order dated August 8, 2005, ASR Phase II Findings and Orders dated September 18, 2009 and September 28, 2010, and associated ASR Phase I/Phase II approved water permits.)

8. The City’s engineer, Michael G. Jacobs, sent an official letter on behalf of the City that the 1993 groundwater levels were the “reasonable” metric to use when ASR Phase I was permitted. (Testimony of Henry, R. Vol. III, p. 575, l. 11 – p. 576, l. 1; City Exhibit 19.)

9. Mr. Jacobs also opined that not dropping below the 1993 levels was in the public interest. (Exhibit 19.) Mr. Henry agreed that this was the position of the City at that time. (*See* Testimony of Henry, R. Vol. III, p. 576, l. 24 – p. 577, l. 4.) One of the reasons for the City’s concern during this period was that dropping below the 1993 level would remove the hydraulic barrier and cause the migration of the Chloride plume and deteriorate water quality. (Testimony of Henry, R. Vol. III, p. 580, ll. 5-16; City Exhibit 19.)

10. Consequently, the City committed to the fact that it would only withdraw recharge credits if the static water level in each index well was above that established minimum level. (City Exhibit 19.)

b. Background of Phase II

11. Subsequently, the City decided to pursue the next step in its efforts to artificially recharge the Aquifer through ASR Phase II.

12. With ASR Phase II, the City can accumulate recharge credits by treating and physically injecting treated surface water into the Aquifer. (Testimony of Pajor, R. Vol. II, p. 338, ll. 5-10.) The credits can then be stored and utilized for later consumptive purposes by the City. (*See id.*) Because water is injected into the Aquifer, the accumulation of recharge credits can be metered. (*Id.* at p. 340, ll. 6-9.)

13. Mr. Letourneau identified six main steps inherent in the process: 1) water is taken from the Little Arkansas River during flooding, 2) that is treated, 3) then injected into the Aquifer, 4) to be stored in the basin storage area of the Aquifer, 5) determine losses, and then 6) take the water to the City for municipal use. (Testimony of Letourneau, R. Vol. V, p. 1315, l. 3 – p. 1316, l. 1; Testimony of Letourneau, R. Vol. VII, p. 1743, l. 14 – p. 1744, l. 8.)

14. ASR Phase II permits identified two uses made of the water: municipal and artificial recharge credits. (Testimony of Pajor, R. Vol. II, p. 341, ll. 19-23.)

15. Mr. Letourneau testified that the “recharge credit use” is satisfied when water is actually physically injected into the Aquifer. (Testimony of Letourneau, R. Vol. V, p. 1317, ll. 13-22.) The following exchange occurred at the hearing:

Q: And so the first beneficial use occurs when this water is taken out of the Little Arkansas River and then injected into the actual aquifer, is that the first beneficial use?

A: Yes.

Q: And, in fact, when this water is taken out of the Little Arkansas River and injected into the aquifer, the beneficial use is artificial recharge; is that right?

A: That’s correct.

(*Id.*)

16. For clarity, Mr. Letourneau indicated that physical recharge only occurs when “an actual molecule of actual water [is] put into the aquifer.” (*Id.* at p. 1314, ll. 6-9.)

17. Mr. Letourneau testified that the “municipal use” was only satisfied under ASR Phase II after water that had been stored in the Aquifer was then removed for use in the City. (*Id.* at p. 1318, ll. 2-17.) In other words, “when that water is taken back out of the aquifer, it’s the same source water that was injected.” (Testimony of Letourneau, R. Vol. VII, p. 1665, ll. 7-10.)

18. Mr. Letourneau explained the complicated perfection process involved in ASR Phase II permits. He identified that, under the ASR Phase II Permit, to perfect for artificial recharge you have to accumulate recharge credits and then to perfect for municipal use you have to utilize the credits and put the water to municipal use. (*Id.* at p. 1805, l. 15 – p. 1806, l. 5.)

19. As mutually exclusive from the beneficial use of artificial recharge, currently, the ASR Phase II permits currently allow the City to take higher flow water from the Little Arkansas River, treat it, and send it to the City for municipal use. (*Id.* at p. 1912, l. 4 – 1913, l. 4.)

20. The goal of Phase II was that the additional water generated from the physical recharge credits could be recovered regularly by the City. (Testimony of Pajor, R. Vol. II, p. 297, ll. 7-11.) The credits would only be recovered now on a very “sparse basis to address drought response.” (*Id.* at p. 297, l. 11.)

21. As with ASR Phase I, the City entered into a Memorandum of Understanding (“Phase II MOU”) with the District. (*See* ASR Phase II MOU.) The Phase II MOU also imposed crucial guidelines on the City and the GMD2 including, but not limited to, the City’s commitment to a remedy for domestic well owners if the ASR Phase II project degrades the water quality to below drinking water quality at the domestic well; the City’s commitment to a remedy for domestic well owners within 660 feet of an ASR Phase II recharge and recovery well if operation of the ASR well impairs the domestic well; and a commitment by GMD2 to recommend spacing waivers for ASR recharge and recovery wells that do not meet spacing to existing wells. (*See id.*)

22. Mr. Letourneau indicated that not dropping (withdrawing recharge credits) below the 1993 levels was a requirement of ASR Phase II. (Testimony of Letourneau, R. Vol. V, p. 1313, ll. 13-15.) He indicated that Mr. McCormick, a primary expert for the City, incorrectly testified that this was not a condition. (*Id.* at p. 1313, ll. 16-19.)

23. Mr. Letourneau also testified that when ASR Phase II was finalized, it was determined that not dropping below the 1993 levels was in the public interest. (Testimony of Letourneau, R. Vol. VI, p. 1599, ll. 13-17.)

24. As a further part of ASR Phase II, the City requested, and was granted by the District, various spacing waivers. (Testimony of Pajor, R. Vol. II, p. 321, ll. 16-24.) The

spacing waivers were necessary because several of the ASR Phase II permits did not meet spacing requirements to senior existing wells. (*Id.*)

25. The City also sent letters to various domestic well owners asking them to sign spacing consent forms and assuring the well owners that the Aquifer would be artificially recharged, and that the City would not withdraw recharge credits below the established 1993 water-levels. (Testimony of Letourneau, R. Vol. V, p. 1304, l. 15 – p. 1306, l. 25; Exhibit 57.)

26. ASR Phase II approvals also imposed permit conditions on the City including, but not limited to, the following: description of the horizontal and vertical boundaries of the ASR basin storage area, water quality and water-level monitoring, physical recharge credit accounting, describing the Minimum Index Levels per Index Cell, prohibition of withdrawing recharge credits below the Minimum Index Levels, and prohibition of passive recharge credits. (*See* ASR Phase II Findings and Orders dated September 18, 2009 and September 28, 2010, and associated ASR Phase II approved water permits.)

27. Through 2016, the City’s ASR Phase I and Phase II operations have injected 9,844.91 acre-feet into the aquifer and accumulated 6,372.2 acre-feet of recharge credits. (*See* Wichita ASR 2016 Annual Accounting Report.)

c. The City’s Current Proposal

i. Overview

28. On March 12, 2018, the City submitted to the Chief Engineer of the Division of Water Resources a proposal titled “ASR Permit Modification Proposal Revised Minimum Index Levels & Aquifer Maintenance Credits” (hereinafter the “Proposal”). (City’s Exhibit 1)

29. In short, under the Proposal, the City is attempting to accomplish two things: 1) obtain a new type of recharge credit known as Aquifer Maintenance Credits (“AMCs”) based on

water left in storage in the Aquifer during times when the Aquifer is at or near capacity and the City thus pumps water directly from the Little Arkansas River to the City for municipal use, and 2) to lower the minimum index levels under which the City can withdraw recharge credits. (*See* City's Exhibit 1.)

30. Mr. Letourneau testified that in his 33 years of working for DWR that the concept of AMCs was all "new," and he had never previously seen anything like this elsewhere in the state. (Testimony of Letourneau, R. Vol. VI, p. 1526, ll. 4-13.) In fact, besides the City of Wichita, there are not any other ASR recharge facilities or pending ASR permits in the state of Kansas. (Testimony of Letourneau, R. Vol. VII, p. 1717, ll. 7-15.)

31. The City, and its consultants, first started discussing the concepts of the Proposal with the DWR approximately a year or two before the Proposal was submitted. (Testimony of Letourneau, R. Vol. V, p. 1340, ll. 1-3.)

32. After that, "early on" in the process, discussions occurred that also involved the District. (*Id.* at p. 1383, ll. 8-9.)

33. However, in later testimony, Mr. Letourneau identified a preliminary 2014 meeting between the DWR and the City where AMCs were being discussed, and the District was not included in the meeting. (Testimony of Letourneau, R. Vol. VII, p. 1710, ll. 5-12.)

34. Regardless, because the District expressed viewpoints that differed from the City, the District was later excluded from the discussions concerning AMCs. (Testimony of Letourneau, R. Vol. V, p. 1384, l. 23 – p. 1385, l. 4.) Mr. Letourneau indicated it was the City's decision to exclude the District and the District had desired to remain a part of the discussions. (*Id.* at p. 1386, ll. 8-15.)

35. Mr. Letourneau indicated that, in hindsight, it would have been much better not to have excluded the District from the analysis and planning inherent in the Proposal. (*Id.* at p. 1385, ll. 5-13.) Because the District was banned from the planning, some errors identified by the District with the modeling and the Proposal, were first brought to light during the hearing. (*Id.*) Had the District been present, these concerns could have been addressed much sooner. (*See id.*)

36. The City pursued its Proposal ostensibly for drought planning. (*Id.* at p. 1363, ll. 17-20.)

37. The City acknowledged that it planned for a 1 percent drought. (Testimony of Henry, R. Vol. III, p. 560 l. 25 – p. 561, l. 15; City Exhibit 18.) However, Don Henry acknowledged that guidelines from the State of Kansas only require cities to plan for a 2 percent drought. (*Id.*)

38. Another major reason cited for justifying the City's Proposal is the forecast for increased water demand within the City. (Testimony of Pajor, R. Vol. II, p. 296, ll. 21-23.) As fleshed out later, the City has made various predictions as to its future water needs. However, the City readily acknowledged that its "forecasts" in the past have turned out to be incorrect. (Testimony of Pajor, R. Vol. I, p. 238, ll. 1-6.) The City's current Proposal takes into account population projections through the year 2060. (Testimony of Letourneau, R. Vol. V, p. 1363, ll. 17-20.)

39. The City further indicated a reason for the Proposal is due to the replenishment of the Aquifer to predevelopment conditions, and high-water levels within its well field. (Testimony of Henry, p. 541, l. 23 – p. 542, l. 6.) Indeed, among other reasons cited for the Aquifer's recovery, Mr. Letourneau testified that irrigators only use an average of about 65 to 70 percent of their authorized quantity. (Testimony of Letourneau R. Vol. VII, p. 1749, ll. 6-13.)

40. When the City provided the Proposal, it did not file a change application. (City's Exhibit 1; Testimony of Letourneau, R. Vol. VII, p. 1658, ll. 3-11.)

41. Likewise, a new application/permit is not a component of the Proposal. (*Id.*)

42. The changes requested in the Proposal (allowing AMCs and lowering the Minimum Index Level) are two of most fundamental aspects of the City's ASR Phase II permits and cannot be made with a change application or by a mere request by the applicant; rather new application(s) would have to be filed. (Testimony of Boese, R. Vol. VIII, p. 2173, l. 12 – p. 2175, l. 22.)

43. Mr. Pope also testified that the type of modifications the City is proposing cannot be done with a change application. (Testimony of Pope, R. Vol. X, p. 2714, l. 3 – p. 2716, l. 7.)

44. At the request of Mr. McLeod, Mr. Boese researched the Kansas Water Appropriation Act related statutes and regulations and provided an exhaustive detailed summary of the type of changes that can be made to water rights and orders that can be issued by the Chief Engineer pursuant to these statutes and regulations, in addition to the Change Application statute K.S.A. 82-708(b). (Testimony of Boese, R. Vol. XI, p. 2861, l. 10 – p. 2880, l. 16.) As he identified, there are no Kansas Water Appropriation statues or regulations that allow the type of modifications the City is requesting in its Proposal. (Testimony of Boese, R. Vol. XI, p. 2880, l. 17 – p. 2881, l. 1.)

45. There were several Hearing Officer Orders issued which described what requirements the City's Proposal must meet. These orders included the Order to Modify Hearing and Schedule issued on September 27, 2018, the Pre-Hearing Conference Order dated July 23, 2018, and the Prehearing Order dated May 1, 2019. (*See Various Hearing Orders.*)

46. The May 1, 2019, Prehearing Order states:

[T]he City shall bear the burden of proof, proving by a preponderance of the evidence that the proposed changes to the project should be approved. K.A.R. 5-14-3a(n)(1). The proposed changes must meet the requirements set forth for Aquifer Storage and Recovery projects in K.A.R. 5-12-1, *et al.* and the requirements set forth in K.S.A. 82a-708b, including that the proposed changes are reasonable and will not cause impairment and that the proposed changes relate to the same local source of supply. Whether or not a change is reasonable should consider the effect upon the public interest.

(*See* May 1, 2019 Prehearing Order.)

47. As outlined in the Hearing, K.S.A. 82a-708(b) details what aspects of a water right may be modified with a change application, namely the place of use, the point of diversion, and the use made of water. The statute further states that the applicant must demonstrate to the Chief Engineer that the change is reasonable, will not impair existing rights, and relates to the same local source of supply. (*See* K.S.A. 82a-708b.)

48. Furthermore, K.S.A. 82a-708(b) states that the change application must be processed using the same provisions as new applications to appropriate water, that being those found in K.S.A. 82a-708(a), 82a-709 through 714. (*See* K.S.A. 82a-708b.)

49. K.S.A. 82a-711 is the statute regarding the Chief Engineer's review of a new application. In part, as testified to by Mr. Boese, it states that the new application cannot impair an existing water right and cannot prejudicially or unreasonably affect the public interest. It further states that in determining whether the proposed use will prejudicially and unreasonably affect the public interest, the Chief Engineer will take into consideration, in part, established minimum streamflow requirements, the area, safe yield, and recharge rate of the water supply, and the priority of existing water rights. It further states that impairment shall include the unreasonable raising or lowering of the static water level and the unreasonable deterioration of the water quality at the existing water user's point of diversion. (*See* K.S.A. 82a-711.)

50. Therefore, although the District does not believe the type of modifications requested by the City can be processed by just merely submitting the Proposal, and that new applications should have been filed as discussed above, the proposed modifications, if considered by the Hearing Officer, must comply with K.S.A. 82a-708(b), and by extension, K.S.A. 82a-711. (Testimony of Boese, R. Vol. XI, p. 2880, l. 17 – p. 2881, l. 1, *See* May 1, 2019 Prehearing Order, K.S.A. 82a-708b, and K.S.A. 82a-711.)

51. To help support the Proposal, the City has developed a modified USGS Equus Beds Groundwater Flow Model (hereinafter “the MODFLOW Model”). In short, the MODFLOW Model purports to show the hydrologic effects of the City’s Proposal on the Aquifer. (*See* City Exhibit 1.)

52. Under the Proposal, during times when the Aquifer is at or above the historic 1998 water levels, the City is asking for a new type of credit called AMCs for diverting water directly to the City from the Little Arkansas River, and thus ostensibly leaving water in the Aquifer. (Testimony of Pajor, R. Vol. I, p. 161, ll. 13-25.)

53. The Little Arkansas River surface water diverted to the City, upon proper treatment, could immediately be used for consumptive use purposes. (Testimony of Pajor, R. Vol. I, p. 193; ll. 20-23; Testimony of Henry, R. Vol. III, p. 594, ll. 5-9.)

54. In fact, even absent the adoption of the Proposal, the City has already directly diverted at least 1,132.19 acre feet of water from the Little Arkansas River to the City for municipal use. (Testimony of Pajor, R. Vol. II, p. 344, ll. 13-24.) Mr. Pajor acknowledged that when this water was sent directly to the City in the past, no recharge credit was accumulated. (*Id.* at p. 344, ll. 19-24.) Rather, the authorized use was only for municipal purposes. (*Id.*)

55. In discussions regarding the water that has historically been diverted directly from the Little Arkansas River to the City for municipal consumption, the following conversation occurred between Mr. Pajor and counsel for the District:

Q: Now, if we were to focus on the ASR II, order and permit, and those accompanying documents, would you agree that that water was used as a municipal beneficial use?

A: Yes, I would.

Q: And would you also agree with me that that water was not used pursuant to the other beneficial use. Namely, the recharge credit beneficial use?

A: With that argument you can't have AMCs. And I know that's where you are trying to get me to.

Q: Well, I am just asking you to answer the question.

A: Sure. I will answer it yes.

(Testimony of Pajor, R. Vol. II, p. 345, ll. 2-15.) This testimony thus exemplifies that this situation is directly consistent with the City's current Proposal, where only a municipal use is actually being generated and no recharge credit beneficial use is obtained. (*Id.*) However, as acknowledged by Mr. Pajor's own conclusions and using ASR II ground rules as a baseline, drawing parallels between past diversions directly to the City from the Little Arkansas River to the City's current Proposal, would not allow for AMCs. (*Id.*)

56. However, with the Proposal, for each gallon the City diverts from the Little Arkansas River for municipal use, the City would accumulate a corresponding AMC to divert the same amount of water from the Aquifer in the future, subject to gradational losses. (Testimony of Henry, R. Vol. III, p. 594, ll. 10-17; Testimony of Pajor, R. Vol. I, p. 161, ll. 13-25.)

57. The City's Proposal, unfortunately, fails to address the circumstances under which the City can and should withdraw AMCs in the future. (*See, e.g.*, Testimony of Henry, R. Vol. III, p. 614, ll. 12-17.) In the testimony of Mr. Henry, the following exchange occurred:

Q. My question is, under the conditions that that future water could be taken out of the aquifer, are those conditions part of this hearing today or would

that be determined at a later time as far as what that would look like and how the City could take out that water?

A. There are no terms and conditions, as you described that, within the current proposal.

(*Id.* at p. 595, ll. 16-23.)

58. With AMCs, the City would not physically inject any source water into the Aquifer. (Testimony of Pajor, R. Vol. I, p. 241, ll. 11-16; Testimony of Letourneau, R. Vol. VI, p. 1444, ll. 12-17.) Under this scenario, there would be no ability to meter water as it is diverted into the Aquifer, as with ASR Phase II water. (City's Exhibit 1; Testimony of Letourneau, R. Vol. VI, p. 1444, ll. 12-23.)

59. Instead, with AMCs, the source water from the Little Arkansas River would be sent directly to the City for municipal use. (*Id.* at p. 1447, l. 2 – p. 1148, l. 10.)

60. There would also be no ability to measure a change in the water level of the Aquifer because “[n]o water is injected [and] no water is removed.” (*Id.* at p. 1446, l. 1.)

61. Consequently, the City agreed that through the Proposal no recharge of the Aquifer would occur. (Testimony of Pajor, R. Vol. I, p. 241, ll. 17-23.) Mr. Pajor was asked point blank by counsel the following question: “[S]trictly with respect to accumulating aquifer maintenance credits, there would be no physical recharge of the aquifer that would occur. Would you agree with that?” (*Id.* at p. 241, ll. 19-22.) Mr. Pajor simply answered “Yes.” (*Id.* at p. 241, l. 23.) Mr. Pajor further indicated that since with AMCs no water is actually placed in the Aquifer by the City, unlike physical recharge, the water cannot be metered, as the recharge is only “theoretical.” (Testimony of Pajor, R. Vol. II, p. 338, ll. 11-16, p. 340, ll. 9-12.)

62. Nonetheless, the City acknowledged that when an AMC credit is withdrawn, the City will take another gallon from the Aquifer that was not placed there by the City. (Testimony

of Pajor, R. Vol. I, p. 243, ll. 11-18, p. 244, ll. 17-20.) In cross-examination, the following exchange with Mr. Pajor occurred:

Q: That one gallon of water (i.e., Little Arkansas River surface water) would be used by the City for its municipal water supply; is that correct:

A: Yes, it is.

Q: And is what the City is then saying is at a later time when the City is asking to withdraw its aquifer maintenance credit for that one gallon of water, that the City would be allowed to then take another gallon of water from the aquifer at a later time. Is that what the City's proposal purports to do?

A: Yes.

(*Id.* at p. 243, ll. 7-18.) Mr. Pajor highlighted that this further withdrawal would occur at a “subsequent point in time.” (Testimony of Pajor, R. Vol. II, p. 326, ll. 16-22.) The City made a feeble attempt to analogize AMCs to physical recharge credits by calling the subsequent withdrawal merely a “reabeled gallon of water.” (*Id.*)

63. With this analysis, the City recognized that for each gallon of Little Arkansas River surface water sent directly to the City for municipal use, the City could take a subsequent gallon of water out of the Aquifer. (Testimony of Pajor, R. Vol. I, p. 245, ll. 9-16.) With respect to AMCs, the additional water would be taken out of the Aquifer at a “subsequent time” in the same fashion as if a physical recharge credit was cashed in. (Testimony of Pajor, R. Vol. II, p. 327, ll. 10-16.)

64. Through the analogy of the consumption of a water bottle, the City explicitly acknowledged that it would be allowed to essentially consume two gallons of water for each gallon of Little Arkansas River surface water diverted to the City through the AMC Proposal. (Testimony of Pajor, R. Vol. II, p. 330, ll. 1-19.)

65. Mr. Pajor acknowledged that its Proposal will open the door for other water users to get similar credits to AMCs so long as these water users can similarly demonstrate that they

are diverting water from new sources other than the Aquifer. (*See* Testimony of Pajor, R. Vol. II, p. 367, l. 18 – p. 368, l. 3.) On this subject, the following illuminating exchange occurred:

Q: Is it your belief that anyone who leaves water in the aquifer should similarly obtain such a credit?

A: No, it is not.

Q: And why should the City earn a credit for water left, if not others.

A: If another water rights user can meet the water demand that they have from a source other than the aquifer and leave a credit of water in the aquifer, then the argument is parallel. If they cannot, it is not.

(*Id.*)

66. Mr. Letourneau also agreed that irrigators should not receive a credit for leaving water in storage in the Aquifer because they are “not part of an aquifer storage and recovery.” (Testimony of Letourneau, R. Vol. VII, p. 1829, ll. 10-16.)

67. However, throughout his testimony, Mr. Pajor highlighted that AMCs were fundamentally based on receiving a credit for water left in storage. (*See, e.g.*, Testimony of Pajor, R. Vol. I, p. 243, l. 18 – p. 245, l. 8.) Yet, Mr. Pajor concluded his testimony with a statement directly contrary to approving an AMC pursuant to this logic, as the following dialogue occurred:

Q: The question is, if the irrigators in the room leave water in the aquifer, they don't use their entire authorized quantity in a given year, should they receive a credit for having left that water in the aquifer?

A: No water rights holder should. Neither the City of Wichita nor others.

(Testimony of Pajor, R. Vol. II, at p. 381, ll. 4-10.)

68. Mr. Letourneau supported the City's testimony and indicated also that the Proposal was based on “water left in storage.” (Testimony of Letourneau, R. Vol. VI, p. 1439, ll. 13-24.) Page 3-1 of the City's Proposal states the same thing. (*Id.*; Exhibit 1.)

69. In also acknowledging the two-for-one aspect of the City's Proposal, the following conversation with Mr. Letourneau occurred on the record:

Q: So for each gallon of water that is taken from the Little Arkansas River and treated and sent to the City, essentially there would be credit given for another gallon essentially for an aquifer maintenance credit because water is being left in storage. Is that what this sentence is implying?

A: Correct.

(Testimony of Letourneau, R. Vol. VII, p. 1639, ll. 17-24.)

70. Mr. Letourneau explicitly admitted that it was his opinion that the City could double its consumptive use through the AMC Proposal:

Q: [I]f a gallon of water is sent to the City and then when that AMC credit is withdrawn, another gallon of water can be taken out of the aquifer. Is that a true statement?

A: At a later date, yes.

Q: So for each gallon of water the City... sends directly to the City for municipal use after treating it, they can then subsequently take another gallon out of the aquifer based on the water left in storage; is that right?

A: Well, it's not quite a gallon because they leak a little bit, but yes. Yes.

(*Id.* at 1737, ll. 8-20.)

71. Mr. Letourneau also reiterated the City's testimony that with the AMC concept, no physical recharge of the Aquifer would occur as no source water was being injected into the Aquifer. (Testimony of Letourneau, R. Vol. VI, p. 1453, ll.13-17; R. Vol. VII, p. 1647, ll. 8-12.) He also acknowledged that, similarly, with AMCs no source water enters the Aquifer. (*Id.* at p. 1453, l. 24 – p. 1454, l. 2.) As a corollary, the following exchange occurred regarding AMCs:

Q: And that source water isn't stored in the aquifer; is that correct?

A: That's correct.

(R. Vol. VII, p. 1647, ll. 13-15.)

The conversation went further:

Q: Well, if there's no source water injected into the aquifer pursuant to an aquifer maintenance credit, there's not source water in the aquifer to then take back out later, true?

A: Under the—yes, under that scenario.

(*Id.* at p. 1665, ll. 16-20.)

72. Mr. Letourneau took the conversation one final step and admitted that because an AMC is fundamentally different from a physical recharge credit, the source of water taken from the Aquifer with respect to an AMC is different. (*Id.* at p. 1665, l. 21 – p. 1666, l. 2.)

73. As indicated, Mr. Letourneau outlined six distinct steps inherent in accumulating an ASR Phase II recharge credit. (*Supra* Fact 13) However, with AMCs, he recognized that several of those distinct steps would not occur because 1) there is no artificial recharge, 2) there was no beneficial use for physical recharge, and 3) there is no source water stored, that is available 4) for later consumption. (*Id.* at 1744, l. 20 – p. 1746, l. 21.)

74. The perfection process for AMCs can also be contrasted with the perfection of ASR Phase II physical recharge credits. With AMCs, the recharge credit would ostensibly be created at the same time Wichita consumes Little Arkansas River water for municipal use and then perfected for municipal use when the water is subsequently withdrawn from the Aquifer and used in the City, again for municipal use. (*See id.* at p. 1814, ll.13-21; 1914, ll. 1-16.) Mr. Letourneau admitted that this was only his speculation as to how an AMC would be perfected as the process was not even outlined in the Proposal. (R. Vol. VII, p. 1919, l. 23 – p. 1921, l. 7.) However, note that with ASR Phase II permits if water is diverted directly to the City for municipal use, the City can already perfect that water for municipal use. (*See* Phase II Permits.)

75. Mr. Letourneau then took the acknowledgement of Mr. Pajor that the City was doubling its consumptive use one step further and admitted that with AMCs two beneficial uses are made of the water at the exact same time:

Q: But isn't it possible, then, with the AMC credit proposal that we have two beneficial uses that are made of the water at the same time? So in other words, this water is used in the City for municipal purposes, and at the same time, isn't it possible that we have a recharge credit that's created at the same time.

A: Yes.

(Testimony of Letourneau, R. Vol. VII, p. 1921, ll. 8-15.)

76. Mr. Letourneau also emphasized that if the Hearing Officer makes a determination that “AMCs are not a recharge credit, then ... AMCs don’t exist.” (Testimony of Letourneau, R. Vol. VI, p. 1506, ll. 15-25.)

77. With respect to AMCs, the groundwater the City wishes to consume is already “dedicated” to other users in the Aquifer. (Testimony of Pajor, R. Vol. II, p. 338, ll. 1-4.) Mr. Pajor specifically acknowledged that with the Proposal the water would be “taken” from other users. (*Id.*)

78. Mr. Letourneau agreed with Mr. Pajor’s testimony and indicated that the water left in storage would be native water already in the Aquifer that the City did not place there. (Testimony of Letourneau, R. Vol. VI, p. 1442, l. 7 – p. 1443, l. 2.) However, the water would be withdrawn from the basin storage area. (Testimony of Letourneau, R. Vol. VII, p. 1688, ll. 7-8.)

79. With respect to AMCs and physical recharge credits, the City is proposing putting a cap of 120,000 acre-feet of total credits that can be accumulated. (*See* City’s Exhibit 1.)

80. The City had contradicting testimony regarding how the cap was determined. For example, Joe Pajor said the cap was “based on the estimated 60,000 acre-feet we need for the 1% drought protection during the 50-year planning period.” (Testimony of Pajor, R. Vol. I, p. 195, ll. 21-23.) As a corollary, the 120,000 acre-feet cap would allow the City to bank enough credits to survive more than two 1 percent droughts. (Testimony of Pajor, R. Vol. I, p. 269, ll. 12-14.)

81. However, even in a 1 percent drought, the City would only need approximately 50,000 acre-feet of credits. (Testimony of Pajor, R. Vol. I, p. 167, l. 16 – p. 168, l. 9.)

82. Mr. Letourneau speculated that the cap was based on the storage capacity of the basin storage area in the Aquifer. (Testimony of Letourneau, R. Vol. VI, p. 1477, l. 21 – p. 1478, l. 3.) Mr. Letourneau also testified that the City’s Proposal committed to the City continuing to monitor this storage capacity over time, and that number may change. (*Id.* at p. 1481, l. 21 – p. 1482, l. 2.) Mr. Letourneau testified that this additional monitoring by the City was an important function for the City to perform. (*Id.* at p. 1483, l. 25 – p. 1484, l. 5.)

83. Currently, Phase II credits could be withdrawn at a rate of 18,000¹ acre-feet per year. (Testimony of Pajor, R. Vol. II, p. 364, ll. 20-24.)

84. Mr. Letourneau testified that it had not yet been determined by the City in the Proposal exactly when the City could “cash in” AMCs and if withdrawal would be limited to a time of drought. (Testimony of Letourneau, R. Vol. VI, p. 1515, ll. 12-20.) He indicated “that is one thing that we do want to talk about.” (*Id.*) Apparently, this discussion is left for a later time after more analysis by the City, and further dialogue on the Proposal. (*See id.*) However, presently in the Proposal, the City can withdraw AMCs at any time and is not limited to a drought scenario. (*Id.* at p. 1516, l. 21 – p. 1517, l. 1; Testimony of Letourneau, R. Vol. VII, p. 1704, ll. 3-6.)

85. As the second main part of the Proposal, the City now wishes to lower the Current Minimum Index Level anywhere from 9 to 23 feet depending on the location in the Aquifer (“New Minimum Index Level”). (City’s Exhibit 1.) The New Minimum Index Level will define the new “floor” to the City’s ability to recover recharge credits, although, as long as the water level is below the Maximum Index Level, the City can always recharge the Aquifer even if water

¹The City originally incorrectly identified that the current annual Phase II recharge credit withdrawal cap was 19,000 per year.

levels drop below the New Minimum Index Level. (Testimony of Letourneau, R. Vol. VI, p. 1596, ll. 5-22.)

86. Prior to the Proposal's submission, the DWR helped the City complete a regulation change to pave the way for this lowered minimum index level. (Testimony of Letourneau, R. Vol. VII, p. 1713, l. 11 – 1715, l. 19.)

87. The City has also proposed a simplified accounting methodology to establish the accumulation of AMCs. (*See* City's Exhibit 1.) Under the simplified approach, AMCs would be created by looking at the annual water levels on the ASR Index monitoring well as measured in January each year and the recharge capacity of the ASR recharge well network, subject to initial and gradational losses. (City's Exhibit 1, Testimony of McCormick, R. Vol. IV, p. 1093, l. 10 – p. 1095, l. 14.)

88. The New Minimum Index Level and AMCs are collectively referred to as the "Proposed Modifications."

89. The Proposed Modifications will apply to all ASR Phase II permits and all future ASR permits sought by the City. (Testimony of Pajor, R. Vol. II, p. 347, ll. 11-17.)

90. In fact, the City has already attempted to pursue ASR Phase III. (*Id.* at p. 347, l. 18 – p. 348, l. 11.) ASR Phase III is targeted at enhancing "future development and expansion of the capacities and capabilities of ASR." (*Id.*) In fact, the City even pursued grant funding for ASR Phase III. (*Id.*)

91. Part of ASR Phase III would be to potentially pursue additional bank storage wells. (*Id.*) Constructing more bank storage wells would increase the City's capacity to accumulate AMCs. (*Id.* at p. 348, l. 25 – p. 349, l. 5; City's Exhibit 1; Testimony of Letourneau, R. Vol. VI, p. 1449, ll. 14-18, p. 1451, ll. 1-4.) "The bank storage wells are wells that are

completed in the alluvium that capture flow and then delay the flow moving downstream.”

(Testimony of Letourneau, R. Vol. VI, p. 1449, ll. 3-7.) The Proposal also contemplates future bank storage wells. (City’s Exhibit 1; Testimony of Letourneau, R. Vol. VI, p. 1450, ll. 12-14.)

92. In reviewing the City’s Proposal, in direct contrast to the testimony of Mr. Pajor, Mr. Letourneau testified that he didn’t believe the City’s Proposal applied to future ASR applications. (Testimony of Letourneau, R. Vol. VI, p. 1521, ll. 9-13.) Thus, this is yet another part of the Proposal that was not adequately clarified. (*See* City’s Exhibit 1.)

ii. Benefits Touted by the City

93. The City has argued several benefits of its Proposal. One advantage touted by the City of the New Minimum Index Level, is that it can wait longer to withdraw credits during a drought. (Testimony of Pajor, R. Vol. I, p. 169, ll. 12-13; Testimony of Henry, R. Vol. III, p. 540, ll. 1-8; Testimony of Letourneau, R. Vol. VI, p. 1430, ll. 17-23.) The resulting touted benefit is that the City *may* not have to withdraw the credits “during temporary dry spells.” (*Id.* at p. 540, ll. 8-10.)

94. However, no aspect of the City’s Proposal guarantees that the City will wait longer to withdraw credits and it is the City’s sole decision whether to pump down the Aquifer or be a good steward of the resource. (Testimony of Pajor, R. Vol. I, p. 249, ll. 6-14; Testimony of Letourneau, R. Vol. VI, p. 1432, l. 21 – p. 1433, l. 2.)

95. However, short of the possibility that the City may not have to withdraw the credits at all, the City provided no modeled rationale or scientific explanation for how withdrawing credits in later years of a drought scenario would result in less impact to the Aquifer. (*See* City’s Exhibit 1.)

96. Although far from a benefit of the City’s Proposal, it should be noted that the City plans to use Native Water Rights first and accumulate credits to use at a later date. (Testimony

of Henry, R. Vol. III, p. 546, l. 24 – p. 547, l. 2.) However, no condition in the Proposal or the proposed permit conditions guarantees this fact. (*See City’s Exhibit 1.*)

97. The City also maintains that it will be incentivized to keep the Aquifer full if it can obtain AMCs. (Testimony of Pajor, R. Vol. I, p. 191, ll. 16-21.) The City argues that with the Proposal it will not have to first pump a hole in the Aquifer to create space for artificial recharge. (*Id.* at p. 196, ll. 18-21.)

98. Apparently due to the notion that the Aquifer would be kept full heading into a drought, the Chief Engineer of the DWR, David Barfield, acknowledged his support for the approach eventually memorialized by the City’s Proposal some time before it was submitted. (Testimony of Letourneau, R. Vol. V, p. 1392, l. 16 – p. 1393, l. 9.) As early as 2017, he promoted the idea behind the Proposal through both letters and during public meetings. (*Id.*) He had also reached an official determination that AMCs were a “functional equivalent” to physical recharge credits. (*Id.* at p. 1393, l. 24 – p. 1394, l. 4.) In contrast, although the DWR has taken a formal position in support of the Proposal subject to this Hearing, the DWR remained neutral in advance of both the original ASR Phase I and ASR Phase II hearings. (Testimony of Letourneau, R. Vol. VII, p. 1907, l. 14 – p. 1908, l. 16.)

99. Mr. Letourneau agreed that the DWR’s support was based *solely* on the belief that the Aquifer would be kept full while AMCs are accumulated and did not consider any other outcomes of the City’s Proposal, and DWR did not cite any other reasons for its support. (Testimony of Letourneau, R. Vol. V, p. 1403, l. 19 – p. 1405, l. 15.)

100. In fact, Mr. Letourneau agreed during his cross-examination (after the City had rested its case-in-chief) that there had been “little discussion” about the impacts of withdrawing

the corresponding water associated with an AMC. (Testimony of Letourneau, R. Vol. VI, p. 1600, ll. 3-12.)

101. Mr. Letourneau also addressed a simple hypothetical regarding the Proposal during his testimony. He explained that if the Aquifer was a metaphorical box of a one-acre area and 10 feet above bedrock, with physical recharge credits, if an acre-foot of water was injected and later withdrawn, the resulting level of the Aquifer would still be 10 feet above bedrock. (R. Vol. VIII, p. 1981, l. 9 – p. 1982, l. 22.) However, he admitted that with an AMC, if the Aquifer was at 10 feet above bedrock, and surface water was sent directly to the City, and then a credit was withdrawn from the Aquifer of one-acre foot, the resulting level of the Aquifer would be 9 feet. (*Id.*)

d. Universal Concepts Applicable to this Hearing

102. Although there were obviously many points of contention, there were a handful of universal truisms that all parties acknowledged during the Hearing. Although it took numerous questions for the City to admit this very basic point, the City agreed that withdrawing water from the Aquifer generally poses a detriment to the viability of the Aquifer itself. (*See* Testimony of Henry, R. Vol. III, p. 553, ll. 5-9.)

103. The City also agreed that preservation and restoration of the Aquifer is important because it is a viable resource. (*Id.* at p. 582, ll. 18-22.)

104. The parties also agreed that the Aquifer has recovered over time due to natural recharge and the sustainable water practices of the various constituents of the Aquifer. (Testimony of Pajor, R. Vol. I, p. 151, ll. 4-12.)

105. For example, like the District, the City acknowledged that promoting safe yield is a very beneficial operating policy. (*Id.* at p. 220, ll. 4-8.)

106. All parties confirmed that the area of the City’s well field in the Aquifer is heavily over-appropriated. (*See, e.g., id.* at p. 220, ll. 1-3; Testimony of Boese, R. Vol. VIII, p. 2210, l. 13 – p. 2225, l. 16; GMD2 Exhibits 59 and 41.)

107. Further, all parties agreed that lower water levels could cause the increased migration of the chloride plumes in the Aquifer. Mr. Pajor stated it succinctly, “Lower aquifer levels will adversely impact chloride contamination.” (Testimony of Pajor, R. Vol. I, p. 263, ll. 22-23.) These above points, supported by all parties, are important basic tenets applicable to the other concepts testified to during the Hearing.

a. The City’s Modeling and the District’s Response

i. The City’s Modeling

1. Drought Modeling

108. The City’s consultant used the Palmer Drought Severity Index to determine the duration and intensity of 1 percent drought simulation and used the 1933-1940 drought period as a “near fit.” (Testimony of Winchester, R. Vol. I, P. 52, ll. 1-5; City’s Exhibit 1.)

109. The 1933-1940 drought actually represents a more severe drought than a 1% drought. (Testimony of Winchester, R. Vol. I, p. 53, ll. 10-15; City’s Exhibit 1.)

110. The City’s consultant admitted that there were many limitations and issues with the Palmer Drought Severity Index method of determining drought severity, including, but not limited to: it is based on approximations, reliability issues, arbitrary in nature, lacks regional data, and doesn’t account for snow/ice and extreme precipitation events. (*Id.* at p. 87, l. 6 – p. 92, l. 2.)

111. The City's 1 percent modeled drought used a period of 8 years. (City's Exhibit 1.) Mr. Winchester admitted a 1 percent drought does not have to be 8 years in duration and that there is no such thing as a normal or average 1 percent drought. (*Id.* at p. 121, ll. 8-19.)

112. The City's models use the years 2011 and 2012 repeated four times to come up with a 1 percent drought of 8 years in duration. (City's Exhibit 1). 2011 and 2012 repeated four times equates to a more severe drought than the 1933 to 1940 drought. (Testimony of Winchester, R. Vol. I, p. 131, l. 25 - p. 133, l. 13.)

2. MODSIM

113. As part of the City's attempts to justify its Proposal, the City engaged in two types of modeling: MODSIM modeling to consider drought conditions pumping ("the MODSIM Model") and the MODFLOW Model. (*See* City's Exhibit 1.)

114. As part of the testimony on the MODSIM Model, the City's experts acknowledged various issues and errors as identified below.

115. Mr. Macey advised that he input different water resource and pumping scenarios regarding the drought simulation into the MODSIM Model, despite only receiving training in using the model from Mr. Winchester over the phone and via e-mail. (Testimony of Macey, R. Vol. III, p. 637, l. 22 – p. 629, l. 10.)

116. Despite apparently doing the majority of the City's work related to inputs to the MODSIM model, Mr. Macey advised that when he first started using the model in 2016, he was not an expert at it and was "learning." (*Id.* at p. 638, l. 22 – p. 639, l. 1.)

117. Mr. Macey advised that the City's future water needs through the year 2060 were based on a medium growth projection as described in the City's Water Demand Assessment (*see* City Exhibit 22), but that he did not perform any of the work or calculations and did not know

why that was used, other than it was recommended as the most likely outcome. (*Id.* at p. 664, l. 18 – p. 666, l. 24.)

118. The City’s projected medium growth projection was based on population growth projections when the City’s population was growing between 1 to 1.2 percent annually, however Mr. Macey testified that the City’s population had only grown 1.8 percent total over the last 8 years, which he described as “considerable flat lining.” (*Id.* at p. 640, l. 18 – p. 642, l. 15.)

119. Mr. Macey testified that the majority of the water use in the City’s well field area, (central well field study area) was by the City. (*Id.* at p. 676, l. 24 – p. 678, l. 23.)

120. An error was noted with Cheney Reservoir being assumed to be starting at 110 percent full, instead of 100 percent full in the analysis. (Testimony of Letourneau, R. Vol. V, p. 1341, 25 – p. 1343, l. 20.) In fact, David Barfield identified this error, along with other concerns, in a September 18, 2017 letter to the City. (DWR Exhibit 4.) However, Mr. Letourneau could not recall if the City ever addressed the discrepancy prior to the Proposal being submitted, nor could he remember whether the City bothered to respond to Mr. Barfield’s letter. (Testimony of Letourneau, R. Vol. V, p. 1344, ll. 4-16.) The error was still present in the Proposal in Table 2-3. (Testimony of Letourneau, R. Vol. VI, p. 1424, ll. 12-13.)

121. Despite questions and comments from both Mr. Barfield and Mr. Boese, prior to the Proposal being officially submitted, regarding why Cheney Reservoir was shown at being 110 percent full at the start of the City’s drought simulation, the City did not correct or explain the error. (Testimony of Macey, R. Vol. III, p. 684, l. 15 – p. 689, l. 17.)

122. The City also failed to account for additional sources of supply available to it through its water demand projections, such as the Bentley Reserve and E&S well fields.

(Testimony of Letourneau, R. Vol. V, p. 1368, l. 2 – p. 1369, l. 7.) Mr. Letourneau testified that the City should have accounted for these additional sources of water in its analysis. (*Id.*)

3. MODFLOW

123. With respect to the MODFLOW Model, the City's experts and the District's experts agreed that the City had numerous errors in its Proposal tables and that there were potential errors in the input files. For example, Table 2-5 of the Proposal has the incorrect figure of 15,552 acre-feet instead of 16,579 acre-feet for recharge credits withdrawal during the 1 percent drought simulation. (Testimony of Pajor, R. Vol. I, p. 207, ll. 4-23.)

124. There were also errors in Table 2-10 of the Proposal. (Testimony of Letourneau, R. Vol. VI, p. 1424, ll. 12-13.)

125. Luca DeAngelis advised the USGS MODFLOW Model has not been calibrated by USGS since the USGS Report 2013-1452, which was published in 2013, despite the model being updated with new data from the years 2009 through 2015 and beyond. (Testimony of DeAngelis, R. Vol. II, p. 491, l. 16 – p. 493, l. 5; City's Exhibit 1).

126. The USGS MODFLOW Model has a maximum 10 percent root-mean-square error goal for the entire model area. (Testimony of DeAngelis, R. Vol. II, p. 467, l. 16 – p. 468, l. 17; City's Exhibit 1.)

127. The USGS MODFLOW Model was not analyzed or calibrated for individual well accuracy. (Testimony of DeAngelis, R. Vol. II, p. 469, l. 18 – p. 470, l. 9; City's Exhibit 1.)

128. The MODFLOW Model simulated versus observed actual groundwater levels differed by more than 20 feet at some individual well locations. (Testimony of DeAngelis, R. Vol. II, p. 473, l. 19 – p. 474, l. 14; City's Exhibit 1.)

129. The City's MODFLOW model did not account for rivers drying up during the drought simulation pumping. (Testimony of Romero, R. Vol. IX, p. 2517, l. 16 – p. 2523, l. 21; GMD2 Exhibit 68.) Mr. Romero recommended that this be reviewed and accounted for in the model. (*See id.*)

130. Mr. McCormick admitted that this modeling did not occur, but the City could consider this condition in the future. (Testimony of McCormick, R. Vol. XIV, p. 3,525, l. 5 – p. 3,527, l. 9.)

131. Mr. Clement further agreed that if the MODFLOW model accounted for the rivers drying up, the impact to the aquifer would be greater since no water from the rivers would be entering the aquifer when the rivers are dry. (Testimony of Clement, R. Vol. IV, p. 959, l. 14 – p. 960, l. 15.)

132. The City could not explain the defensibility of using the 1998 groundwater levels as a baseline for physical recharge operations and starting the MODFLOW model 1 percent drought simulation at the 1998 levels. (*Id.* at p. 935, l. 1 – 936, l. 21.)

133. Mr. Clement further advised that if the groundwater levels were started higher than the 1998 levels, then the modeled results would change and the water levels would be higher at the end of the drought than what the model indicated. (*Id.* at p. 938, ll. 6 – 14.)

134. In the Proposal 1 percent drought simulation, Cheney Reservoir is assumed to be 100² percent full while the Aquifer starting point is 91 percent capacity. (Testimony of Letourneau, R. Vol. VI, p. 1473, l. 2 – p. 1474, l. 22.) Had the City started with the Aquifer at 100 percent full, it would have changed the results of the analysis. (*Id.*) For example, the current Minimum Index Levels would be impacted much later. (*Id.*) Mr. Letourneau admitted it

²Again, for the sake of benefit of doubt to the City, it is assumed that the City meant 100 percent full for Cheney rather than 110 percent full as indicated in the Proposal.

would be very useful to understand the results of the City’s modeling with the Aquifer starting at 100 percent capacity and that he would “like” that data. (*Id.*)

135. The City indicated that the 120,000 acre-feet cap was based on an “estimate” of the “central well field basin storage area, based on ’93 levels.” (Testimony of Henry, R. Vol. III, p. 544, ll. 3-6.) The City projected this to be 11.7 percent of the total aquifer storage available. (*Id.* at p. 544, ll. 7-10.)

136. In testimony, the City conceded that it did not own the Aquifer space under which the cap was based. (*See, e.g.*, Testimony of Henry, R. Vol. III, p. 591, l. 22 – p. 592, l. 3.)

137. The City alleged that the most water it would need in the time of an extreme drought, beyond its Native Rights, is approximately 50,000 acre-feet. (Testimony of Pajor, R. Vol. I, p. 167, l. 16 – p. 168, l. 9.)

138. Thus, even during an extreme 8-year drought, the City wouldn’t use “anywhere near” 120,000 acre-feet of credits. (*Id.* at p. 209, ll. 11-15.) Mr. Pajor also claimed that AMCs would only be withdrawn approximately once every 100 years. (Testimony of Pajor, R. Vol. II, p. 365, ll. 10-19.) Based on the City’s own calculations, if it indeed was accumulating AMCs only for use during an extreme drought, on average, it would take 240 years to utilize the accumulated 120,000 acre-feet. (*Id.* at p. 366, ll. 1-3.)

139. Mr. Letourneau also acknowledged that even if the City faced back-to-back 1 percent droughts (16 consecutive years of drought), at most, it would need 100,000 acre-feet of water, and thus that amount was a more appropriate cap. (Testimony of Letourneau, R. Vol. VII, p. 1698, ll. 13-23.)

140. Through its modeling, the City failed to identify the impacts to minimum desirable streamflow (“MDS”) of lowering to the New Minimum Index Levels. (*See* City’s Exhibit 1.)

141. Likewise, the City also did not consider the consequences of withdrawing AMCs to MDS. (*See* City’s Exhibit 1.)

142. The City’s modeling also did not address how lowering to the New Minimum Index Levels would impact water quality. (*See* City’s Exhibit 1.)

143. Likewise, the City’s modeling did not identify how withdrawing AMCs would effect water quality. (*See* City’s Exhibit 1.)

144. However, quite alarmingly, Mr. Henry indicated in his expert report that “short duration uses of ASR credits during drought will accelerate the plume’s progress by as much as 40 percent.” (Henry Expert Report.) In his testimony, Mr. Henry maintained that the withdrawal of recharge credits could accelerate movement of the chloride by that same percentage. (Testimony of Henry, R. Vol. III, p. 597, l. 1-6.) Significantly, he agreed that this withdrawal of recharge credits would pose a “detriment to the aquifer.” (*Id.* at p. 597, ll. 7-14.)

145. There were also many errors identified in the contingencies the City added to its Proposal. (Testimony of Letourneau, R. Vol. VI, p. 1470, l. 2 – p. 1472, l. 9.) A contingency is used in models to account for unknown variables and precision of the variables. (Testimony of Clement, R. Vol. V, p. 962, l. 25 – p. 963, l. 12.) Mr. Letourneau agreed with Mr. McCormick’s testimony that, at least in some cells, the proposed contingencies were “significantly” off from the actual drop. (Testimony of Letourneau, R. Vol. VI, p. 1470, l. 2 – p. 1472, l. 9.) Once again, his official recommendation was that this aspect needed to be reanalyzed by the DWR’s modelers. (*Id.* at 1471, l. 19 – 1472, l. 9.)

146. The City did not model how withdrawing AMCs along with lowering to the New Minimum Index Levels would impact the overall viability of the Aquifer. (*See* City’s Exhibit 1.)

147. Likewise, the City did not consider the impacts of its Proposal to the sustainability of individual wells owned by other users in the Aquifer. (*See* City’s Exhibit 1.)

148. The MODFLOW Model, looks at 400-foot by 400-foot grids and the City did not evaluate drawdowns to individual wells. (Testimony of McCormick, R. Vol. XIV, p. 3,507, l. 24 – p. 3,508, l. 16.)

ii. The Modeling of the District and the Intervenors

a. Overview

149. In contrast, the District’s and the Intervenor’s experts identified numerous concerns with the City’s Proposal on water quality, minimum desirable streamflow, and impairment. Each will be addressed below.

150. Mr. Romero is extremely qualified regarding water-related models, including working on in excess of 100 models, and helping write/develop at least 30 models. (Testimony of Romero, R. Vol. IX, p. 2431, l. 19 – p. 2432, l. 9.)

151. Mr. Romero was very familiar with the MODFLOW model, having previously developed a model for Kansas Groundwater Management District No. 5, and that model has been used by the Chief Engineer and the DWR, to assist in investigating impairment. (*Id.* at p. 2435, l. 3 – p. 2436, l. 4.)

152. Mr. Romero’s analysis of the City’s Proposal found that it did not include any information regarding the impact to rivers or wells from the drawdown caused by the City’s drought pumping and proposed minimum index levels. (*Id.* at p. 2465, l. 4 – p. 2468, l. 1., p. 2468, l. 23 – p. 2470, l. 14.)

153. Mr. Romero testified that the City diverting groundwater below the current minimum index level (1993 water levels) would be a new diversion of groundwater from a technical standpoint. (*Id.* at p. 2468, ll. 2-22.)

154. The City's Proposal did not include any information regarding the impact to rivers or wells from the AMC proposed pumping during the simulated drought. (*Id.* at p. 2476, ll. 4-9.)

155. Mr. Romero modified the MODFLOW model to evaluate the impacts of the City's proposal on rivers and wells. (*Id.* at p. 2476, ll. 10-16.)

b. Undefined Source of Water

156. Aquifer Maintenance Credits (AMC's) are not defined in DWR or District rules and regulations. (Testimony of Boese, R. Vol. VII, p. 2253, ll. 9- 15.)

157. The City's AMC proposal would change the source of supply from a defined source (recharge credit) to an undefined source (AMC). (*Id.* at p. 2254, ll. 1 – 23.)

c. Water Quality

158. Dave Romero advised that the Proposal did not address potential impacts to water quality, and he identified that lowering the water level to the New Minimum Index Level could result in the harmful migration of Chlorides further in the Aquifer towards the lowered water table area. (Testimony of Romero, R. Vol. X, p. 2547, l. 18– p. 2551, l. 9; GMD2 Exhibit 68.)

159. Likewise, Mr. Boese also testified that lowering the water level to the New Minimum Index Levels through pumping of recharge credits, would increase the migration of Chloride plumes from the Arkansas River area and the Burrton area and would adversely impact the public interest. (Testimony of Boese, R. Vol. VII, p. 2184 l. 7 – p. 2186, l. 5; District Exhibit 44).

160. Mr. Austin also testified that lowering the water levels below the current Minimum Index Levels would accelerate the movement of Chlorides in the Aquifer. (Testimony of Austin, R. Vol. XII, p. 3204, ll. 8-12.)

161. Mr. Austin testified that arsenic is present in clays in the Aquifer and could be released under certain conditions and that the City should evaluate what impacts the Proposal has on arsenic in the Aquifer. (*Id.* at p. 3208, l. 15 – p. 3209, l. 14.)

d. Impairment

162. Mr. Letourneau identified in his testimony that the City must demonstrate that its Proposal won't cause impairment to existing water rights. (Testimony of Letourneau, R. Vol. VII, p. 1669, ll. 20-23.) He testified that to meet this burden, the City would have to show that its Proposal met three elements: 1) that there was not an unreasonable raising or lowering of the static water level, 2) that it would not cause an unreasonable increase or decrease of streamflow, and 3) that it would not cause an unreasonable deterioration of water quality. (*Id.* at p. 1671, ll. 8-25.) Mr. Letourneau identified that it was the District's function to make a determination if the Proposal resulted in a regional lowering of the water table. (*Id.* at 1925, 11-25.)

163. Dave Romero carefully modeled the impact of lowering to the New Minimum Index Level on the overall health of the Aquifer. He indicated that it would adversely impact the Aquifer, as the City pumping recharge credits to the New Minimum Index Levels resulted in Aquifer storage depletion of 33,100 acre-feet compared to Aquifer storage depletion of only 5,200 based on the current minimum index levels. (Testimony of Romero, R. Vol. IX, p. 2501, ll. 8-16; GMD2 Exhibit 68.)

164. Mr. Romero's modeling showed that lowering water levels to the New Minimum Index Levels in the 1 percent drought simulation expands the City's ability to pump accumulated

recharge credits by an additional 79,500 acre-feet—from 14,900 acre-feet under the current Minimum Index Levels restriction to 94,000 acre-feet under the New Minimum Index Levels. (*Id.* at p. 2,503, l. 13 – p. 2,504, l. 19; GMD2 Exhibit 68.)

165. Mr. Romero opined that the City’s Proposal could have drastic impacts to individual wells and that the City should have conducted this focused analysis. (*Id.* at p. 2467, l. 5 – p. 2,468, l. 1; GMD2 Exhibit 68.)

166. Mr. Romero, using the MODFLOW model, analyzed the impact of the City pumping down to the proposed minimum index levels and he found that at least six additional wells would lose their water column, and therefore be impaired, and he further advised that the number of wells that would be impaired may be higher, as older wells that are not in the Kansas Geological Survey database were not identified in his evaluation. (*Id.* at p. 2,531, l. 15 – p. 2,536, l. 4; GMD2 Exhibit 68.)

167. Mr. Romero demonstrated that domestic wells located greater than 660 feet from a City pumping well can also be impaired by the City’s pumping; therefore, the protection and remediation afforded to domestic wells may need to be expanded past 660 feet. (GMD2 Exhibit 68; Testimony of Romero, R. Vol. X, p. 2,545, ll. 8-20.)

168. Simply drilling a well deeper if impaired by the City’s pumping may not be a viable option if there are clays or other poor water producing layers deeper in the aquifer and further analysis is needed. (*Id.* at p. 2,546, l. 7 – p. 2,547, l. 17; GMD2 Exhibit 68.)

169. Dr. Masih Akhbari, another highly credentialed witness for the District that had written a leading book on groundwater hydrology and modeling, agreed with Mr. Romero’s conclusions in this regard. (Testimony of Akhbari, R. Vol. II, p. 383, l. 10 – p. 389, l. 25.) In fact, he analogized the City’s modeling approach of “root versus square” in comparing data for

the entire Aquifer storage basin with individual wells as just as problematic as looking at weather data averaged for the entire nation and applying that data equally to Chicago or San Diego. (*Id.* at p. 389, ll. 11-25.) He indicated that on average there was “30 percent of error at the location of each index level... [a]nd that could be as high as even 68 percent of error.” (*Id.* at p. 390, ll. 7-11.)

170. Thus, Dr. Akhbari discovered vast discrepancies between the simulated data produced by the City and the actual data applicable to each index cell. (*Id.* at p. 390, l. 1 – p. 392, l. 20.) He looked at observed data from 1952 to 2008 to arrive at his conclusions. (*Id.*) Remarkably, he scrutinized 20 of the City’s monitoring wells and determined that “60 percent of these wells, are underestimating groundwater levels in the simulated results.” (*Id.* at p. 392, ll. 13-15; District’s Exhibit 64.)

171. Consequently, Dr. Akhbari opined that the USGS model is “incapable” of determining drawdowns at individual wells and would require “more refinement and a lot longer comparison of simulated versus observed data” to allow for this analysis. (Testimony of Akhbari, R. Vol. II, p. 396, ll. 7-21.)

172. Mr. Pope also opined that, due to the lack of physical recharge, the withdrawal of AMCs could harm the Aquifer as a result of “substantially more water use and effect during that period.” (Testimony of Pope, R. Vol. X, 2725, ll. 24-25.)

e. Spacing and Safe Yield

173. As a direct extension of its impairment analysis, the District presented extensive evidence on safe yield and spacing.

a. Spacing

174. The City's own witnesses indicated that the Proposal would be subject to the same spacing waivers and the same conditions under which those spacing waivers were granted. (Testimony of Henry, R. Vol. III, p. 620, l. 12 – p. 622, l. 3; Testimony of Pajor, R. Vol. II, p. 322, ll. 15-21.)

175. Lane Letourneau, the sole witness and expert for DWR, testified that the conditions under which the spacing waivers were granted were important conditions that should continue to apply. (Testimony of Letourneau, R. Vol. V, p. 1307, l. 17 – p. 1312, l. 11; District Exhibit 53; District Exhibit 57.)

176. Mr. Letourneau agreed that well holders at the time of ASR Phase II were asked to concede to the spacing waivers under the promise and condition that the minimum index level would not drop below the 1993 level. (Testimony of Letourneau, R. Vol. V, p. 1308, ll. 1-6; District Exhibit 57.)

177. He further testified that the City made this assurance at the time to both well holders and to the District. (Testimony of Letourneau, R. Vol. V, p. 1311, ll. 2-7, p. 1313, l. 22 – p. 1314, l. 1; District Exhibit 53.)

178. Consequently, Mr. Letourneau indicated that the District also granted the spacing waivers under the condition that the minimum index level standard would not drop below the 1993 levels. (Testimony of Letourneau, R. Vol. V, p. 1311, ll. 8-14.)

179. Ultimately, because the City is now seeking to drop the minimum index level below the 1993 standard, new spacing waivers should be sought and considered as a prerequisite to the City's Proposal being granted. (*Id.* at p. 1311, l. 15 – 1312, l. 5.)

180. In setting up the testimony of Mr. Boese, Mr. Letourneau agreed that the recommendation of a groundwater management district with respect to spacing would “carry a lot of weight to the Division of Water Resources.” (Testimony of Letourneau, R. Vol. VII, p. 1928, ll. 3-7.)

181. The District recommended spacing waivers for the ASR Phase II applications that did not meet spacing requirements to domestic wells and non-domestic wells, in part, pursuant to the ASR Phase II MOU between the District and the City. (Testimony of Boese, R. Vol. VIII, p. 2154, l. 15 – p. 2157, l. 3; District Exhibit 27.)

182. The ASR Phase II MOU, Section B(1) states, in part:

GMD2 and the City further agree as follows: As to any water permit applications filed by the City which in all other respects comply with the regulations of GMD2, and for which the proposed wells are to be used for the purposes of both aquifer recharge as defined by regulation and withdrawal of water for an authorized use, GMD2 agrees to recommend that such proposed applications be granted a waiver of the applicable well spacing requirements. A petition for waiver of the well spacing requirement shall be submitted to GMD2 and shall be granted by GMD2 upon a finding that the conditions set out above do exist and that the granting of the waiver will not unreasonably impair the public interest.

(See District Exhibit 27 – ASR Phase II MOU.)

183. Pursuant to the ASR Phase II MOU Section B(1), the granting of spacing waivers by the District was for ASR Phase II wells that would be used for both **aquifer recharge** as defined by regulation and withdrawal of recharge credits. (See District Exhibit 27). Since AMCs do not recharge the Aquifer and AMCs are not defined as aquifer recharge, Mr. Boese determined that the spacing waivers previously granted do not apply to AMC withdrawals, and new spacing waivers from the District would be required. (Testimony of Boese, R. Vol. VIII, p. 2154, l. 15 – p. 2157, l. 3; District Exhibit 27.)

184. Additionally, since the granting of spacing waivers by the District was also based on recharge credits not being withdrawn when the groundwater levels dropped below the 1993 Minimum Index Levels, new spacing waivers from the District would also be required if the minimum index levels were lowered as proposed by the City and the City would have to show the New Minimum Index Level would not cause impairment. (Testimony of Boese, R. Vol. V, p. 2165, l. 18 – p. 2166, l. 19.)

b. Safe Yield

185. As eluded to previously, safe yield was another critical theme advanced by the District during the Hearing. Mr. Letourneau simply defined “safe yield ... in simple terms, [as] the amount of water the aquifer will safely provide.” (Testimony of Letourneau, R. Vol. VII, p. 1673, ll. 14-15.)

186. As identified in the Hearing, the District’s Safe Yield Regulation K.A.R. 5-22-7(b)(7) exempts an “aquifer storage and recovery well” from having to comply with the District’s Safe Yield Regulation K.A.R. 5-22-7(a). (Testimony of Boese, R. Vol. VIII, p. 2211, ll. 4-9.)

187. As explained by the District, an AMC, specifically the withdrawal of an AMC, is not exempt from the District’s Safe Yield Regulation K.A.R. 5-22-7(a) because an AMC does not add any outside source of water to the Aquifer. (*Id.* at p. 2211, ll. 10-25.)

188. Further, the withdrawal of physical recharge credits is exempt from the District Safe Yield Regulation because an outside water source is added to the Aquifer, whereas an AMC is not exempt. (*Id.* at p. 2213, l. 3 – p. 2214, l. 2.)

189. The City’s existing 30 ASR Phase II permitted recharge credit withdrawal wells are all in locations where the Aquifer is over-appropriated and were approved based on the

exemption stipulated in K.A.R. 5-22-7(b)(7), because the wells were to be used for both recharge and recovery. (*Id.* at p. 2213, ll. 3-18). Mr. Boese demonstrated this by reviewing the safe yield calculations the District performed on all 30 Phase II well locations, which showed that they were all grossly over-appropriated. (*Id.* at p. 2214, l. 3 – p. 2222, l. 10; District Exhibit 59).

190. Thus, the existing 30 ASR Phase II permitted well locations would not meet safe yield requirements under the AMC Proposal and would have been recommended for denial by the District. (*Id.* at 2223, l. 19 – p. 2224, l. 8.)

191. Safe Yield calculations performed by the District on the City's additional 30 new ASR Phase II permit applications for recharge credit withdrawal, which were all voluntarily dismissed by the City, also indicated that the applications' well locations were also over-appropriated. (District Exhibit 41.)

192. Mr. Letourneau agreed with Mr. Boese's testimony on safe yield. He even testified that when K.A.R. 5-22-7(b) was passed, it only contemplated physical recharge as being exempt from safe yield that could later be appropriated for a beneficial use. (Testimony of Letourneau, R. Vol. V, p. 1321, l. 5 – p. 1323, l. 6, p. 1327, l. 18 – p. 1328, l.10.)

193. Mr. Letourneau indicated that the whole reason it was exempt pursuant to that statute was due to the physical recharge and water being injected into the aquifer from a new source. (*Id.* at p. 1323, ll. 19-23.) The following exchange occurred: "Q: Let me see if I understand. Is the reason that it's exempt because water from an outside source is being added to the water supply in the aquifer? A: Yes." (*Id.*) Later testimony of Mr. Letourneau further clarified the point: "Q: So by it not being new water, you believe it's exempt in the sense that new water is being put into the aquifer from an outside source and already existing water isn't

being taken from the aquifer, is that why you believe it's exempt? A: Yes.” (*Id.* at p. 1328, ll. 11-17.)

194. Mr. Letourneau also testified that it was the District's initial decision regarding whether AMCs meet the safe yield requirements. (Testimony of Letourneau, R. Vol. VI, p. 1512, ll. 1-5.)

f. Minimum Desirable Streamflow (MDS)

195. Mr. Romero also conducted a detailed analysis of the City's Proposal on river flow and MDS. (*See* GMD2 Exhibit 68.)

196. Based on Mr. Romero's analysis, the City's pumping of recharge credits in the 1 percent drought scenario results in a 30,100 acre-foot combined depletion from the Little Arkansas River and the Arkansas River. (Testimony of Romero, R. Vol. IX, p. 2486, l. 6 – p. 2487, l. 2.; District Exhibit 68.)

197. Mr. Romero testified that the river depletion would obviously be greater if the City pumped the suggested recharge credit cap of 120,000 acre-feet during the simulated drought. (*Id.* at p. 2489, l. 5 – p. 2490, l. 7; District Exhibit 68.)

198. Based on Mr. Romero's analysis, the City pumping to the New Minimum Index Levels resulted in river depletion of 43,800 acre-feet compared to river depletion of only 10,200 based on the current Minimum Index Levels. (*Id.* at p. 2499, l. 24 – p. 2501, l. 16; GMD2 Exhibit 68.)

199. Based on Mr. Romero's analysis, the City pumping to the New Minimum Index Levels resulted in Little Arkansas River and Arkansas River combined flow reduction of about 10 cubic feet per second (“cfs”) compared to about 3 cfs reduction based on pumping down to the current minimum index levels. (*Id.* at p. 2511, l. 14 – p. 2514, l. 5; District Exhibit 68.)

200. The city pumping down to the New Minimum Index Levels compared to the current minimum index levels will result in less river flow, more days MDS is not met for the Little Arkansas River (approximately one extra month per two-year period), and therefore adversely impacts MDS. (*Id.* at p. 2514, l. 6 – p. 2517, l. 15; District Exhibit 68.)

201. River flow depletion caused by the City’s drought pumping of recharge credits continues for years after the drought pumping ends. (Testimony of Romero, R. Vol. X, p. 2551, l. 19– p. 2553, l. 22; District Exhibit 68.)

202. Mr. Boese also opined that lowering the water levels to the New Minimum Index Levels would reduce river flow and negatively impact MDS. (Testimony of Boese, R. Vol. VIII, p. 2187, l. 24 – p. 2188, l. 23.)

e. The Lack of Initial Modeling and Analysis by DWR

203. At the hearing, Mr. Letourneau—the DWR’s sole witness—testified that he had not performed any modeling of the City’s Proposal nor had any analyzed any of the City’s modeling. (Testimony of Letourneau, R. Vol. V, p. 1344, l. 17 – p. 1360, l. 8.) He verified that he had not completed a detailed analysis to determine the impact of the City’s Proposal on impairment, water quality, minimum desirable streamflow, or other factors. (*Id.* at p. 1359, l. 12 – p. 1360, l. 8.)

204. Mr. Letourneau also did not know if the DWR had actually completed any modeling to analyze the City’s Proposal nor did he know the extent to which the DWR had even reviewed the City’s modeling for the Proposal, or if at all. (*Id.* at p. 1360, l. 9 – p. 1363, l. 13.) He indicated that he didn’t believe the DWR took measurements or completed additional calculations to analyze the Proposal. (*Id.*)

205. However, Mr. Letourneau later indicated that he did not believe the DWR attempted to replicate any of the City's modeling. (*Id.* at p. 1376, l. 4 – p. 1380, l. 19.) He also indicated that the DWR did not perform any independent modeling. (*Id.*) Finally, he indicated that the DWR didn't attempt to "pick apart the City's modeling" and just made a determination that the inputs and the modeling looked "reasonable." (*Id.*) For example, the DWR didn't analyze through any kind of scientific analysis the extent to which the City's Proposal would impact water quality. (*Id.*) In fact, Mr. Letourneau admitted to never seeing any analysis or research in this regard at all. (Testimony of Letourneau, R. Vol. VII, p. 1684, ll. 1-8.) He certainly hadn't seen data as to the impacts to the Aquifer when the water associated with AMCs would be withdrawn. (*Id.* at p. 1690, ll. 7-14.)

206. However, he acknowledged that if 120,000 acre-feet of credits were withdrawn over the course of a number of years, at a rate of 18,000 acre-feet per year, it would indeed "have an impact on the aquifer." (*Id.* at 1693, ll. 4-19.) First, Mr. Letourneau recognized that it could have the potential to cause impairment. (*Id.* at p. 1700, ll. 13-23.) Next, he agreed that it could adversely impact water quality and cause further migration of the Burrton Chloride Plume. (*Id.* at p. 1700, l. 24 – p. 1701, l. 5.) Third, he acknowledged that it could impact minimum desirable streamflow. (*Id.* at 1701, ll. 8-12.) Consequently, he concluded that, under this scenario and recognizing the above potential impacts, that "if there was an impact, then it would not be in the public interest." (*Id.* at p. 1701, ll. 13-21.)

207. He also conceded that the DWR had performed no modeling to determine the impacts of the City's Proposal on minimum desirable streamflow. (*Id.* at p. 1680, ll. 2-9.) In fact he admitted that the DWR hadn't even considered the impacts of the City's Proposal on minimum desirable streamflow when the water subject to AMCs was diverted from the Aquifer:

Q: And did the Division of Water Resources consider what the impact would be on minimum desirable streamflow at the point that these aquifer maintenance credits are cashed in?

A: No.

(*Id.* p. 1681, ll. 18-22.) In fact, Mr. Letourneau indicated that the potential impacts of the Proposal to minimum desirable streamflow were brought to the DWR's attention for the first time during the Hearing. (*See id.* at p. 1876, ll. 7-9.)

208. Mr. Letourneau, however, did recognize that both groundwater diversions and surface water diversions can undermine minimum desirable streamflow. (*Id.* at p. 1757, ll. 20-23.)

209. Mr. Letourneau indicated that DWR performed no modeling as it related to lowering the minimum index level. (Testimony of Letourneau, R. Vol. VI, p. 1527, l. 19 – p. 1528, l. 17.) When asked if this modeling occurred, Mr. Letourneau answered: “DWR can only speak for itself. DWR did not perform any such independent calculations or modeling.” (*Id.* at p. 1528, ll. 6-8.)

210. However, with respect to lowering the minimum index level, Mr. Letourneau testified that the many errors and concerns identified during the Hearing with the City's Proposal resulted in the need for DWR to perform more analysis. (*Id.* at p. 1530, ll. 6-10.) The following conversation occurred in the Hearing:

Q: [A]re you saying that perhaps some independent calculations and some independent verification should occur with respect to the effect of lowering the minimum index levels?

A: Yeah, we will review based on the errors that we found, definitely.

(*Id.*) To date, there is no indication that this additional review has occurred.

211. Ultimately, Mr. Letourneau recognized the many errors made by the City caused him “concern.” (Testimony of Letourneau, R. Vol. VI, p. 1425, l. 19 – p. 1427, l. 1.) He

indicated that the City would need to submit a “corrected proposal” before the DWR could make an ultimate determination. (*Id.*) He said the DWR would need to analyze the “corrected proposal” before it could make an ultimate recommendation for or against the City’s Proposal. (*Id.*)

f. The Concept of Practical Saturated Thickness

212. Extensive time during the Hearing was devoted to the concept of practical saturated thickness. Consequently, although this argument is related to the City’s modeling, it merits a separate section in the stated facts.

213. The City based much of its analysis on its assumption that there was plenty of water left in the Aquifer based on saturated thickness. (*See, e.g.*, City’s Exhibit 1.)

214. Originally, Mr. Letourneau agreed. (Testimony of Letourneau, R. Vol. VI, p. 1531, l. 21 – p. 1532, l. 9.) For example, he originally opined that the drop to the New Minimum Index Level was “not that significant compared to the practical saturated thickness of the aquifer.” (*Id.*)

215. However, he indicated that the significance of a drop in the minimum index level is a direct function of “how much aquifer is there.” (*Id.* at p. 1534, l. 9.) In comparing to Wichita County where the saturated thickness was minimal, Mr. Letourneau indicated that the Equus Beds Aquifer was “very blessed.” (*Id.* at p. 1534, ll. 14-19.)

216. The saturated thickness looked at by the City and presented in the Proposal was based on the USGS MODFLOW modeled results and individual well locations and practical saturated thickness was not modeled or represented in the Proposal. (Testimony of Clement, R. Vol. IV, p. 986, l. 14 – p. 998, l. 3.)

217. However, the City and DWR never considered individual well logs. (Testimony of Letourneau, R. Vol. V, p. 1405, ll. 16-20.)

218. The District-generated hydrographs for all of the Index Cells' deep monitoring wells (IW monitoring wells) represented actual site-specific well data, and many of the hydrographs indicated there was less remaining saturated thickness at the actual monitoring well location than what the MODFLOW model and Proposal indicated. (Testimony of Boese, R. Vol. XI, p. 2973, l. 2 – p. 2979, l. 14, District Exhibit 60, City Exhibit 1).

219. Mr. Letourneau had vast experience with analyzing well logs and had done so for many years for an oil well logging company. (Testimony of Letourneau, R. Vol. VI, p. 1535, ll. 7-12.)

220. Mr. Letourneau drew a distinction between saturated thickness and practical saturated thickness. (*Id.* at p. 1536, ll. 15-20.) He recognized that even if the saturated thickness of a portion of the Aquifer was 100 feet, it does not mean that much water is actually available. (*Id.* at p. 1536, l. 21 – p. 1537, l. 24.) The reason for this difference in available water is due to the fact that “non-water bearing formations,” such as shale or clay, must be excluded from the analysis. (*Id.*) Thus, for example, even if the saturated thickness of a portion of an aquifer boasted 100 feet, if there is a clay layer of 50 feet, the practical saturated thickness is only 50 feet—which is the critical determination in scrutinizing the availability of water. (*Id.*)

221. In applying this distinction to the City's Proposal, Mr. Letourneau acknowledged that the City's Proposal did not take into account practical saturated thickness and the City's modeling only looked at saturated thickness. (*Id.* at p. 1540, ll. 18-23.)

222. During the Hearing, the District then had Mr. Letourneau analyze a number of official monitoring wells of the City of Wichita in representative index cells and apply the

concept of practical saturated thickness. (*See* Exhibit 80; Testimony of Letourneau, R. Vol. VI, p. 1549, ll. 13-15.) Mr. Letourneau testified that these monitoring wells were accurate and the City submits periodic reports based on the validity of these monitoring wells. (Testimony of Letourneau, R. Vol. VIII, p. 1969, ll. 1-25.) Each index cell analyzed was a 2-mile by 2-mile area. (*Id.* at 1558, ll. 5-8.) This analysis and the key attributes of these monitoring wells are outlined below.

223. The following attributes of IW1C were found:

- i. Location in the Aquifer: Northern part. (*Id.* at 1560, l. 8.)
- ii. Saturated thickness at end of drought pumping identified by City in index cell: 163 feet. (Figure 10 of the City's Exhibit 1; Testimony of Letourneau, R. Vol. VI, p. 1557, ll. 5-10.)
- iii. Saturated thickness if drop to new minimum index level. 131 feet (Figure 11 of the City's Exhibit 1; Testimony of Letourneau, R. Vol. VI, p. 1561, ll. 9-13.)
- iv. Practical saturated thickness: a "maximum" of 30 feet. (District's Exhibit 80; Testimony of Letourneau, R. Vol. VI, p. 1555, l. 21 – p. 1556, l. 24.)
- v. Mr. Letourneau indicated there was a "cause for concern" with the City's analysis with respect to this index cell. (*Id.* at p. 1559, ll. 2-4.)

224. The following attributes of IW2C were identified:

- i. Location in the Aquifer: "Smack dab in middle" of the Aquifer. (*Id.* at p. 1562, ll. 3-14.)
- ii. Saturated thickness at end of drought pumping identified by the City in index cell: 187 feet. (*Id.* at p. 1565, ll. 14-18.)

- iii. Saturated thickness if drop to new minimum index level: 171 feet. (*Id.* at p. 1566, ll. 4-8.)
- iv. Practical saturated thickness: 40 feet. (District’s Exhibit 80; Testimony of Letourneau, R. Vol. VI, p. 1563, ll. 10-14.)
- v. For this index well, this variance caused Mr. Letourneau to be “concerned.” (*Id.* at p. 1568, ll.14-24.)

225. The following attributes of IW10C were explained in the hearing:

- i. Location in the Aquifer: In the upper middle of the City’s well field. (*Id.* at p. 1569, ll. 11-18.)
- ii. Saturated thickness at end of drought pumping identified by the City in index cell: 175 feet. (Figure 10; Testimony of Letourneau, R. Vol. VI, p. 1572, ll. 14-20.)
- iii. Saturated thickness if drop to new minimum index level: 165 feet. (*Id.* at p. 1573, ll. 10-19.)
- iv. Practical saturated thickness: 76 feet. (District’s Exhibit 80; 1572, ll. 21-25.)
- v. For this index well, this also caused concern for Mr. Letourneau and required Mr. Letourneau to recommend more modeling and analyzing. (*Id.* at p. 1575, ll. 2-19.)

226. The following attributes existed for IW21C:

- i. Location in the Aquifer: Middle, eastern edge of City’s well field—“in the heart of it.” (*Id.* at p. 1576, ll. 7-17.) In fact, a number of the City’s

recovery wells are located right in and around this index cell. (*Id.* at p. 1576, ll. 18-25.)

- ii. Saturated thickness at end of drought pumping identified by the City in index cell: 154 feet. (*Id.* at p. 1579, ll. 8-15.)
- iii. Saturated thickness if drop to new minimum index level: 146 feet. (*Id.* at p. 1583, ll. 3-15.)
- iv. Practical saturated thickness: 46 feet. (District’s Exhibit 80; Testimony of Letourneau, R. Vol. VI, p. 1582, ll. 13-18.)
- v. For this index well, this variance caused Mr. Letourneau “definitely” to have a cause for concern and again testified that the modelers needed to look into this discrepancy. (*Id.* at p. 1583, l.14 – p. 1584, l. 4.)

227. Based on these four index cells analyzed, Mr. Letourneau indicated that he wished to revise his previous testimony that lowering to a new minimum index level would not be that significant. (*Id.* at p. 1589, ll. 2-12.) He specifically indicated that his answers in the discovery requests and in his deposition would also change. (*Id.* at p. 1589, l. 21 – p. 1590, l. 2.)

228. Based on the index cells analyzed with regard to practical saturated thickness, Mr. Letourneau testified that it caused “concern” for the City’s analysis in the entire Aquifer and that he would want his modelers to go back and explain the “difference.” (*Id.* at p. 1585, l. 5 – 1586, l. 15.)

229. He also indicated that if DWR engaged in further analysis and repeated this exercise for other index cells with the “same type of effect,” it would certainly cause him concern about dropping to a new minimum index level. (*Id.* at p. 1590, ll. 3-12.)

230. He also indicated that, based on what he saw during his testimony, that “if we drop the minimum index level below the 1993 levels, it’s very possible that individuals could complain about impairment.” (*Id.* at p. 1591, ll. 8-10.)

231. In light of the discussion on practical saturated thickness, Mr. Letourneau indicated that DWR needed to “reevaluate” the effects of dropping the minimum index levels anywhere from 9 to 23 feet. (1587, ll. 14-19.) For example, in index cell 1, the drop in the minimum index level would only leave a remaining practical saturated thickness of 7 feet. (*Id.* at p. 1587, l. 20 – 1588, l. 4.)

232. The discussion of practical saturated thickness was also particularly interesting in light of Mr. Letourneau’s previous opinions on a contingency. He said that a contingency of 40 feet would be too much based on the saturated thickness of the Aquifer. (*Id.* at p. 1469, ll. 3-12.)

233. Ultimately, Mr. Letourneau testified that, despite his previous testimony and opinions, he could not say that the New Minimum Index Level was in the public interest. (*Id.* at p. 1604, ll. 3-16.) He said that this determination could not be made without more analysis of the City’s Proposal. (*Id.*) Indeed, this additional analysis was never advanced at the Hearing and the DWR is now precluded from raising it.

234. Mr. Letourneau concluded:

Q: So as you’re sitting here today, would it be your recommendation, then, in the future to look at some of those production wells and look at some other well log data to ensure that the static water level is protected by the City’s proposal?

A: Yeah ... that would be good to look at.

(Testimony of Letourneau, R. Vol. VII, p. 1685, ll. 11-18; *see also* Testimony of Letourneau, R. Vol. VI, p. 1765, ll. 8-15.)

235. Even though Mr. Letourneau testified to the need for the City to conduct further analysis based on the well logs analyzed at that juncture in the hearing, Mr. Oleen accused the

District of “cherry picking” results. (*See, e.g., id.* at p. 1586, ll. 1-3.) Thus, during further cross-examination the District introduced even more monitoring wells, with the below attributes.

236. IW14C:

- i. Location: Western part of basin storage area.
- ii. Saturated thickness at end of drought pumping reported by City: 205 feet.
- iii. Saturated thickness if drop to New Minimum Index Level: 194 feet
- iv. Practical saturated thickness: 94 feet.
- v. Mr. Letourneau admitted that the practical saturated thickness was only half of the amount touted by the City.

(Testimony of Letourneau, R. Vol. VIII, p. 1972, l. 2 – p. 1975, l. 6; District’s Exhibit 81.)

237. IW8C:

- i. Location: Western half of Aquifer.
- ii. Saturated thickness at end of drought pumping reported by City: 205 feet.
- iii. Saturated thickness after dropping to New Minimum Index Level: 196 feet.
- iv. Figure 10 practical saturated thickness: 135 feet.
- v. Figure 11 practical saturated thickness: 125 feet.

(Testimony of Letourneau, R. Vol. VIII, p. 1975, l. 11 – p. 1977, l. 5; District’s Exhibit 81.)

238. After these logs were analyzed and a proffer that other well logs contained over a hundred feet of clay in the lithologic data, Mr. Letourneau reiterated his conclusion that this data needed to be looked into and it “raised a question.” (Testimony of Letourneau, R. Vol. VIII, p. 1978, ll. 6-13.)

239. Later, during cross-examination by Ms. Wendling, Mr. Letourneau was even more blunt with his assessment about whether the City's assessments of available water were "called into question," and stated: "Absolutely. All this well log information brings into question everything, I mean, that's what we were hoping that the model had taken care of." (*Id.* at p. 1989, ll. 4-7.)

g. The City's Solutions to Impairment

240. Daniel Clement testified that if impairment occurred to another user, the City could drill the impacted well(s) deeper, however, he could not guarantee the Aquifer would yield sufficient water or acceptable quality just by drilling deeper. (Testimony of Clement, R. Vol. IV, p. 998, l. 4 – p. 1002, l. 4.).

241. He failed to identify any other solution.

242. Mr. Letourneau indicated that, based on the well log data he analyzed, it's not as simple as just digging a deeper well. (Testimony of Letourneau, R. Vol. VI, p. 1592, ll. 4-24.) The reason this is a problematic solution is because that, based on the lithologic data he reviewed, digging deeper may reach a clay layer. (*Id.*)

h. The City's Accounting Methodology

243. As indicated, the City has proposed a simplified accounting methodology for AMCs. (*See* City's Exhibit 1.)

244. In contrast to the existing accounting approach for physical recharge credits, the new approach for AMC accounting only applies an initial loss of 5 percent and then an annual gradational loss of 1 to 5 percent, depending upon the Index Cell location of the AMC. (Testimony of McCormick, R. Vol. V, P. 1186, ll. 1-5; City Exhibit 1.)

245. In fact, in simplifying the City's Proposal conceptually, Mr. Letourneau testified that AMCs were "just a different form of accounting." (Testimony of Letourneau, R. Vol. VII, p. 1629, ll. 7-11.)

246. A reason for the new accounting method is because the old method is impractical because it relies on "actual metered physical recharge values compared to actual water levels." (Testimony of Letourneau, R. Vol. VI, p. 1443, ll. 14-21.) In contrast, this would be impossible with AMCs because the "recharge would be theoretical." (*Id.* at p. 1,443, l. 23 – p. 1,444, l. 1.)

247. The City's proposed AMC accounting is based on low groundwater levels (1998 water levels) as the basis for the gradational losses. (Testimony of McCormick, R. Vol. V, p. 1187, ll. 12-23; City's Exhibit 1.)

248. Mr. Romero indicated that this would result in minimizing recharge credit losses while optimizing AMC credit retention. (*See* District Exhibit 68.)

249. Mr. Romero emphasized the need to account for both low and high water levels in the accounting. (Testimony of Romero, Vol. X, p. 2555, l. 13 – 2257, l. 13; Exhibit 68.)

250. Mr. McCormick admitted that during a wetter year, there was variance in the two accounting methodologies of 1,000 acre feet of water and the variance would be greater as the water level increased. (Testimony of McCormick, R. Vol. V, p. 1204, l. 4 – p. 1205, l. 15.) Mr. Letourneau agreed that this variance was "significant." (Testimony of Letourneau, R. Vol. VI, p. 1616, ll. 5-11.) In fact, he said it warranted further analysis and discussion with the City. (*Id.* at p. 1,618, l. 22 – 1,619, l. 8.)

251. The City established gradational losses based on low 1998 water levels as the City determined that the 1998 water levels were optimal for physical recharge. (Testimony of McCormick, R. Vol. V, p. 1187, ll. 12-23, City's Exhibit 1.)

252. The District proved that the City had made numerous errors in calculating actual losses. The City highlighted a projection of 85 percent retention of physical water they injected into the aquifer from 2006 - 2015 on page 4-2 of its Proposal. (City's Exhibit 1; Testimony of Letourneau, R. Vol. VI, p. 1424, ll. 20-25.) However, the City acknowledged that this percentage was in error and it should have been closer to 73 percent at the time. (Testimony of Letourneau, R. Vol. VI, p. 1457, ll. 8-18; Testimony of McCormick, R. Vol. V, p. 1188, l. 11 – p. 1190, l. 10.)

253. In real life, by its own admission, the City was only retaining about 63-64 percent of the water it injected into the Aquifer from 2006 – 2017 based on the new accounting reports. (Testimony of Letourneau, R. Vol. VI, p. 1424, ll. 20-25; Testimony of McCormick, R. Vol. V, p. 1176, l 4 – p. 1180, l. 24.)

254. Mr. McCormick agreed that there were several errors in the City's Proposal that were noted during the Hearing. These included table 2-5 (projected recharge credit pumping in year 5 of the simulated drought), showing Cheney Reservoir starting at 110 percent full compared to 100 percent full, and the incorrect reporting that 85 percent of physically injected source water remained as a recharge credits for the years 2006-2015. (Testimony of McCormick, R. Vol. V, p. 1190, l. 11 – p. 1190, l. 24.)

255. Expressing shaky confidence, Mr. McCormick further advised that he was unaware of any other errors in the City's Proposal and proclaimed: "That's why they're being identified now." (Testimony of McCormick, R. Vol. V, p. 1191, l. 25 – p. 1192, l. 7.)

256. These specific errors indeed caused Mr. Letourneau, DWR's sole witness and expert, concern. (Testimony of Letourneau, R. Vol. VI, p. 1458, ll. 15-22.) He indicated that it

forced the need for the City to submit a corrected Proposal so DWR could reanalyze its validity.

(*Id.*) He stated:

[A]nd we are picking up some errors. And this hearing process was to gather more information, and we are gathering more information, and we will commit to, once these things are corrected, to take another review of all of this, definitely. But it does—yes, it raises a question and we will review.

(*Id.*) Again, to date, no “corrected” Proposal has been submitted.

257. This all raised concerns for the validity of the City’s 1, 3, and 5 percent calculations for gradational losses. (*Id.* at p. 1459, l. 23 – p. 1461, l. 21, p. 1465, l. 16 – p. 1466, l. 1.)

258. With respect to gradational losses, DWR officially took the opinion that more review was required. (*Id.* at p. 1462, ll. 8-14.) The following exchange occurred with Mr.

Letourneau:

Q: And so if you were to make an official recommendation, would you, as you’re sitting here today, would your recommendation be that this, at least this part of the proposal, requires some additional review?

A: Yes.

(*Id.*)

259. The City’s accounting is based on an annual approach that aggregates pumping and looks at water levels in January. (*Id.* at p. 1336, ll. 17-19.)

260. Mr. Letourneau was instrumental in helping the City change the date when these accounting measurements would occur from summer to January. (*Id.* at p. 1335, l. 18 – p. 1336, l. 7.) In essence, January water levels would be higher than in the summer when more pumping occurs. (*Id.* at p. 1337, ll. 10-17.) Thus, he said that the effect of the change to January was beneficial to the City because it allowed the City to be able to recover more recharge credits. (*Id.* at p. 1337, ll. 18-21.)

261. The City's accounting approach fails to take into account peak pumping periods. (See City's Exhibit 1.)

i. The Testimony of the Intervenors

262. The Intervenors produced various landowners that testified against the Proposal.

263. These landowners indicated that they had purchased land based on knowledge that it contained water rights. (See, e.g., Testimony of Carp, R. Vol. XIII, p. 3448, ll. 13-19.)

264. These landowners further testified to the significant enhancements to the land that these water rights added. (See, e.g., *id.* at p. 3445, l. 19 – p. 3447, l. 10.) In fact, testimony identified that the value could be tens of thousands or even hundreds of thousands of dollars, depending on the situation. (See *id.*)

265. The landowners indicated that they had investment expectations based on the future use of their water rights and domestic wells. (See, e.g., Testimony of Carp, R. Vol. XIII, p. 3368, l. 1-4; Testimony of Basore, R. Vol. XII, p. 3317, l. 3-16.)

266. The landowners indicated that they have not given the City permission to take their water. (See, e.g., Testimony of Carmichael, R. Vol. XIII, p. 3367, ll. 18-24; Testimony of Carp, R. Vol. XIII, p. 3448, l. 7)

267. They also testified that they felt like the rules were not being equally applied to them and to the City. (See, e.g., Testimony of Carp, R. Vol. XIII, p. 3416, l. 1 – p. 3,418, l. 25.)

j. Further Testimony on the Takings Clause

268. Mr. Letourneau testified that “you can have a lowering of the water table as long as you do not take water that somebody else has the right to.” (Testimony of Letourneau, R. Vol. VII, p. 1672, ll. 1-3.) However, when asked about Takings as it related to AMCs, Mr. Letourneau testified that the subsequent withdrawals of AMCs were not a taking of Equus Beds

water but rather a different source of water: namely basin storage area water. (*Id.* at p. 1677, l. 9 – p. 1679, l. 14.) In contrast, a convoluted discussion emerged where Mr. Letourneau identified that if irrigators were pumping within the basin storage area or if the City of Wichita was pumping its native rights, the source of water would be Equus Beds. (*Id.*)

269. Mr. Letourneau did reiterate the fundamental principal that with a water right you don't own the water, just the right to use the water. (Testimony of Letourneau, R. Vol. VII, p. 1799, ll. 16-19.)

270. Mr. Pope also elaborated in detail that the City's Proposal constituted an unauthorized taking among other users:

It's really—and, again, using the analogy of a surface water reservoir, once water is lawfully diverted under a water right, stored in that reservoir, it's considered property of the right owner. If that same thing is true for artificial recharge, then that's—that's fine because the City would have control over the water they physically recharged. But under the AMC proposal where they're not physically recharging water, arguably they could claim ownership of that amount of credits that they would have accrued under AMCs and that's water they never physically put there. And so they have to be taking water, since they didn't physically put it there, they have to be taking water, then, that the water right holders were entitled to pump because that's their source of supply. And that's where you would get into this injury issue of adversely affecting other water right holders in that area.

(Testimony of Pope, R. Vol. X, 2726, l. 11 – p. 2727, l. 7.)

k. Testimony on the Illegality of AMCs

271. All parties agreed that AMCs were not defined in statute or regulation.

(Testimony of Pajor, R. Vol. I, p. 239, ll. 4-11.) Both David Pope and Tim Boese testified that AMCs are illegal. (*See, e.g.*, Testimony of Pope, R. Vol. X, p. 2711, ll. 13-16; GMD2 Exhibit 39.) Mr. Pope indicated that AMCs were not authorized by any of the Kansas statutes or regulations. (*See id.*) In fact, due to a detailed statutory analysis that he performed, Mr. Pope

opined that AMCs were prohibited and not consistent with the Water Appropriation Act and related regulations. (*Id.* at p. 2712 l. 2 – p. 2714, l. 2, p. 2728, ll. 8-23; GMD2 Exhibit 1.)

272. Mr. Boese also provided a detailed review of the ASR regulations and definitions and concluded that AMCs were not defined or allowed by the Kansas Water Appropriation Act and the associated regulations. (Testimony of Boese, R. Vol. VIII, p. 2230, l. 7 – p. 2248, l. 7; GMD2 Exhibit 39.)

273. Both Mr. Pope and Mr. Boese were highly qualified to render these conclusions. Mr. Pope, for instance, was the Chief Engineer of the Division of Water Resources for approximately a quarter of a century and, during that time, created the regulations applicable to the Aquifer Storage and Recovery Program for the State of Kansas. (Testimony of Pope, R. Vol. X, p. 2699, l. 10 – p. 2702, l. 15.)

274. Likewise, Mr. Boese had spent over 28 years working for the District, including being employed by the District when the ASR regulations were promulgated and approved, and he concluded that the current ASR regulations require a physical injection of source water in order to establish a recharge credit. (Testimony of Boese, R. Vol. 2252, l. 7 – p. 2253, l. 8.)

275. Mr. Pope based his conclusions on the illegality of AMCs on a number of specific terms found in the regulations. One word listed in the regulations is the word “storage.” (R. Vol. XI, 2836, l. 16 – p. 2846, l. 24.) To provide context to the concept of “store,” Mr. Pope analyzed a definition of that term introduced by Mr. Oleen. (*Id.*) In looking at all the definitions of store, he concluded that all the definitions should be construed in the context of humans physically placing something into storage for later use. (*Id.*) Mr. Pope then applied this discussion to the concept of AMCs and indicated that, by definition, through AMCs no storage

could occur because the City was not artificially recharging the Aquifer and placing water in the basin storage area. (*Id.* at p. 2848, l. 6 – p. 2849, l. 8.)

276. Mr. Pope further highlighted that the Aquifer Storage and Recovery Regulations should be construed in the context of artificial recharge. (Testimony of Pope, R. Vol. X, p. 2712, ll. 8-22.) He noted that “artificial recharge means the use of source water to artificially replenish the water supply in the aquifer.” (*Id.* at p. 2712, l. 24 – p. 2713, l. 1.) He also attached significance to the terms “recharge credit” and “source water” in the context of placing that source water in the Aquifer by artificial means for subsequent appropriation. (*Id.* at p. 2713, ll. 2-19.)

277. The former Chief Engineer, David Barfield, previously as early as 2017, and before the City submitted the Proposal and prior to this Hearing, determined that AMC’s were a “functional equivalent” of physical recharge. (Testimony of Letourneau, p. 1393, l. 24 – p. 1394, l. 5; GMD2 Exhibit 33.)

278. Mr. Pope also opined that an applicant cannot expand the consumptive use of a water right after it’s established. (Testimony of Pope, R. Vol. X, p. 2716, l. 11 – p. 2717, l. 1.) Moreover, he testified that AMCs expand the consumptive use of the City’s existing water rights. (*Id.* at p. 2718, ll. 21-25.)

279. Mr. Pope also testified that the City’s Proposal could open the floodgates for other water users to “manipulate the system” and get future credit for pumping surface water rights in lieu of groundwater rights. (*Id.* at p. 2721, ll. 10-22.) He explained that the City’s Proposal is no different conceptually from a situation where other water users have sought a credit for not pumping one source due to having another water source available to pump. (*Id.* at p. 2720, ll. 11-18.) He indicated that if this precedent was set, it would “have an adverse effect on the

aquifer, it can cause more stream depletion, potential impairment between users, matters of that nature.” (*Id.* at p. 2721, l. 23 – p. 2722, l. 1.) He discussed a parade of evils in the context of other major river systems in the state and concluded “so those are the kinds of other situations in the state where getting credit for not pumping a well can really lead to unintended consequences.” (*Id.* at p. 2722, ll. 2-24.)

280. Mr. Pope ultimately opined that the City’s Proposal “should not be approved.” (*Id.* at p. 2731, l. 24 – p. 2732, l. 1; District’s Exhibit 1; District’s Exhibit 2.)

281. The City’s expert on the concept of a functional equivalent, Joe Pajor, admitted that he had no legal expertise to make that determination. (Testimony of Pajor, R. Vol. I, p. 239, l. 25 – p. 241, l. 10.) Mr. Mcleod, the attorney for the City, in undermining any credibility Mr. Pajor may have had on the subject, said about Mr. Pajor: “This witness has no specific expertise to testify to laws and regulations.” (Testimony of Pajor, R. Vol. I, p. 239, ll. 22-23.)

282. The sole witness for the DWR admitted that the DWR had never applied the concept of a functional equivalent to any other situation it had encountered. (Testimony of Letourneau, R. Vol. V, p. 1395, ll. 3-6.)

283. Mr. Letourneau also indicated that the concept of “functional equivalent” is not found anywhere in statute or regulation. (*Id.* at p. 1401, ll. 1-10.) He also acknowledged that neither Mr. Barfield, nor the DWR, cited any statutory or legal support to justify the functional equivalent concept. (*Id.* at p. 1402, ll. 3-10.)

284. Mr. Boese further indicated that the term “functional equivalent” is not found in any Kansas Water Appropriation Act statutes or regulations and when reviewing a water appropriation or water right change application, the application either meets the applicable rules

and regulations, or it does not. (Testimony of Boese, R. Vol. VIII, p. 2248, l. 8 – p. 2250, l. 10.) There is no consideration if it is within the ballpark, or functionally equivalent. (*See id.*)

285. Mr. Letourneau testified that per K.A.R. § 5-22-14(f), if the City were seeking a new application for a water right, it could only base it on projected population growth for 20 years. (Testimony of Letourneau, R. Vol. V, p. 1365, ll. 12-13.) Mr. Letourneau distinguished the Proposal as a modification of existing permits but acknowledged that the initial application for those permits would be subject to the 20-year window. (*Id.* at p. 1365, l. 2 – p. 1367, l. 19.) Although the 20-year perfection period can be extended on a new application, a City cannot ask for additional water. (Testimony of Letourneau, R. Vol. VI, p. 1414, ll. 6-12.)

286. Nonetheless, without a statutory basis to support such an approach, the City is basing its water projections for the Proposal based on over a 40-year window. (Testimony of Letourneau, R. Vol. V, p. 1365, l. 2 – p. 1367, l. 19.) Significantly, and in contrast, when the City of Maize attempted to base water projections on a period of longer than 20 years, both the District and the DWR denied the attempt. (Testimony of Letourneau, R. Vol. VI, p. 1415, ll. 12-20.)

287. Mr. Letourneau admitted that when water rights are fundamentally altered, there are only a handful of situations where a change application or a new application is not required. (R. Vol. VII, p. 1656, l. 17 – p. 1657, l. 3.) He summed up those alterations as “if one wanted to change the meter requirements, one wanted to reduce the amount of water used, or even divide the water right” a change application would be unnecessary. (*Id.*)

288. He clarified that a change application could not be used to “expand the amount of water to be used.” (*Id.* at p. 1657, ll. 18-21.) Moreover, he agreed that any efforts to increase the

amount of water that could be diverted pursuant to a water right would require a new application or permit:

Q: And, in fact, would you agree with me that if one's trying to expand the amount of water to be used, you can't do it unless you file a new application or for a new permit? Is that a true statement?

A: That's correct.

(*Id.* at p. 1657, l. 22 – p. 1658, l. 2.)

289. During this same discussion, Mr. Letourneau agreed that the same basic requirements that must be shown to seek a new application, must also be demonstrated if a change application is sought, such as safe yield or impact on minimum desirable streamflow.

(*Id.* at p. 1660, l. 2 – 1662, l. 14.)

290. Mr. Letourneau testified that not dropping below the 1993 level was a “fundamental aspect” of the ASR Phase I and Phase II Orders. (*Id.* at p. 1687, ll. 2-5.) Nonetheless, Mr. Letourneau agreed that the City was changing the circumstances under which its recharge credits could be withdrawn by establishing a lower New Minimum Index Level. (*Id.* at p. 1686, ll. 19-25; 1751, ll. 7-10.) He said this change was “a fundamental modification to the permit conditions” but did not require a change application. (*Id.* at p. 1687, ll. 7-11.) The rationale for this was because it was not one of the reasons justified by the statute—i.e. change in place of use. (*Id.* at p. 1803, ll. 18-22.) He also said that the City was making a “modification to the accounting.” (*Id.* at p. 1687, l. 17.)

291. Mr. Letourneau also recognized that a change in the type of use made of water requires a change application. (*Id.* at p. 1752, ll. 16-18.)

292. Mr. Letourneau also recognized that the DWR did not perform a detailed statutory analysis and did not “pick this proposal apart word by word” and analyze terms in the statutes such as “storage” or “subsequent.” (*Id.* at p. 1728, ll. 8-12.) When asked if “the storage

contemplates that water would be put in this unsaturated portion” Mr. Letourneau responded, “That’s correct.” (*Id.* at p. 1732, ll. 7-10.) He further stated that, as used in the regulation, “the unsaturated portion of the aquifer is the dewatered space in the aquifer to put a physical recharge credit in.” (*Id.* at p. 1732, l. 25 – p. 1733, l. 3.) In contrast, Mr. Letourneau readily recognized that AMCs can be accumulated when the Aquifer is “fully saturated” and no water is injected into an unsaturated portion of the Aquifer. (*Id.* at p. 1733, ll. 6-17.)

293. Mr. Letourneau also again reiterated that with AMCs, no source water was being sent directly to the City, and thus was not being placed in the Aquifer, and was not available for subsequent recovery. (*Id.* at p. 1734, l. 13 – p. 1735, l. 2.)

294. Despite his experience in interpreting statutes and regulations, Mr. Oleen objected and undermined Mr. Letourneau’s credibility in this regard by proclaiming: “I don’t think the witness can testify to what the regulation contemplates.” (*Id.* at p. 1732, ll. 12-14.) This objection by Mr. Oleen thus paved the way for the expert testimony of Mr. Pope and Mr. Boese to be the supreme authority on the interpretations of the relevant statutes and regulations.

295. However, nonetheless, despite Mr. Oleen’s concerns as to his witnesses’ credibility on the subject, Mr. Letourneau applied his experience in looking at statutes and regulations to analyze a number of terms of art in the applicable regulations. For starters, he supported the analysis that “unsaturated portion of the aquifer meant ... the portion of the aquifer where water doesn’t exist.” (*Id.* at p. 1732, ll. 2-6.)

296. He testified, “Aquifer storage means the act of storing water in an aquifer by artificial recharge for subsequent diversion and beneficial use.” (Testimony of Letourneau, R. Vol. VIII, p. 1951, ll. 22-24.) He also stated, “Aquifer storage is artificial recharge.” (*Id.* at p. 1952, ll. 18-19.)

297. In construing a critical point in the storage and recovery statutes, the following discussion also occurred:

Q: So my question is if there's a concern here about degrading water quality in the groundwater of a basin storage area, doesn't that contemplate putting this source water that we got from this overflow into an aquifer?

A: Yes, or not take it out. Either not take it out or whatever you put in has to be as good or better.

(*Id.* at p. 1958, ll. 16-23.) So, in other words, to qualify under the Aquifer Storage and Recovery Statutes, water must be injected into the Aquifer for storage. (*See id.*)

298. Mr. Letourneau summed up another portion of the relevant statutes in a manner that necessitated the need for physical recharge to qualify under the Aquifer Storage and Recovery Statutes, in stating: "Well, my thought on that is it took an appropriation to put the water in—it took an appropriation to put the recharge credit into the basin storage area, then it's a subsequent appropriation to pump it back out and use it for municipal use." (*Id.* at p. 1960, ll. 18-23.)

299. When asked, "[W]hen this aquifer maintenance credit is accumulated, how does it become source water in the aquifer if it's been sent to the City already," Mr. Letourneau simply responded, "By the accounting, by—by the annual accounting report." (*Id.* at p. 1964, ll. 15-20.) Thus, in reconciling a critical aspect of the relevant statutes, Mr. Letourneau could not logically reconcile how the City was placing source water in the Aquifer. Instead, moments later Mr. Letourneau agreed that no source water was being placed in the Aquifer through the City's Proposal:

Q: [W]hen we create this aquifer maintenance credit, would you at least agree that this act of creating this aquifer maintenance credit doesn't actually put source water into the basin storage area?

A: Yes, I can agree with that.

(*Id.* at p. 1966, ll. 5-10.)

300. Mr. Letourneau also discussed the various uses of water blessed by statute, including municipal and recharge uses. (Testimony of Letourneau, R. Vol. VII, p. 1874, ll. 19-23.) In this context, during cross-examination by Mr. Mcleod, the following illuminating exchange occurred:

Q: She pointed out that storage is not specifically mentioned there. Let me ask you this question, in recognize the exist—in recognizing the existence of water left in the aquifer for purposes of an accounting process, is that a use of water within the meaning of any of those 14 uses in the statute?

A: No.

(*Id.* at p. 1874, l. 24 – p. 1875, l. 6.)

I. Testimony on Passive Recharge Credits

301. Mr. Boese and Mr. Pope both explained the concept of a passive recharge credit.

302. Mr. Pope defined a passive recharge credit as water left in storage that the City could have otherwise pumped. (Testimony of Pope, R. Vol. X, p. 2707, ll. 11-22.)

303. Multiple witnesses acknowledged that passive recharge credits were originally considered in the context of using water from Cheney Reservoir rather than pumping from the Aquifer. (*See, e.g.*, Letourneau, R. Vol. V, p. 1272, l. 18 – p. 1273, l. 16.)

304. Both Mr. Boese and Mr. Pope argued that the City’s Proposal amounts to nothing more than passive recharge credits. (Testimony of Pope, R. Vol. X, p. 2728, l. 3 – p. 2730, l. 10; GMD2 Exhibit 39.) Mr. Pope declared that the City’s Proposal defines AMCs in the context of “water left in storage” and this is directly consistent with the definition of passive recharge credits prohibited by prior ASR Orders. (*Id.* at p. 2836, ll. 4-15.)

305. Both witnesses contended that the Proposal should not be allowed based on that conclusion. (*See id.* at p. 2728, l. 3 – p. 2730, l. 10; GMD2 Exhibit 39.)

306. The 2005 ASR Phase I Initial Order stated that “passive recharge credits should not be allowed because they are not artificial recharge as defined in K.A.R. 5-1-1 because no source water is being artificially recharged to create those credits.” (See District’s Exhibit 26, pg. 11.) The ASR Phase II Order similarly stated, “That passive recharge credits shall not be allowed.” (See District’s Exhibit 28, p. 5, no. 2.)

307. Mr. Letourneau interpreted what was meant in ASR Phase I with respect to passive recharge credits in the following testimony:

Q: So at least as it related to the ASR Phase I Order, the idea was that source water had to be physically injected into the aquifer, was that the concept of ASR Phase I?

A: Yes.

Q: And, in fact, as the statement implies, if the source water wasn’t injected into the aquifer, that was going to be considered a passive recharge credit; is that true?

A: That’s correct.

Q: And also as used in number 3, would you agree that the term recharged and—that’s used in the context of water being put into the aquifer for storage, would you agree that’s the context it’s used?

A: Yes, in number 3 it is, correct.

(Testimony of Letourneau, R. Vol. VII, p. 1631, ll. 10-25.)

308. Mr. Letourneau agreed that the ASR Phase I and ASR Phase II Orders prohibited passive recharge credits and the DWR is still opposed to passive recharge credits. (*Id.* at p. 1632, ll. 14-22; p. 1635, l. 20 – p. 1636, l. 1.)

309. He also agreed that passive recharge credits were not defined in statute or regulation and “the definition for passive recharge credits is actually obtained from the ASR Phase I and ASR Phase II orders.” (*Id.* at p. 1632, l. 23 – p. 1633, l. 6.) That corresponding definition of passive recharge credits was the notion of receiving a credit for “water which the City could have legally pumped but did not pump.” (District’s Exhibit 26, p. 2; Testimony of

Letourneau, R. Vol. VII, p. 1634, ll. 4-9.) Mr. Letourneau summed this up in his testimony as follows:

Q: So in other words, the idea that the City could have diverted water out of the aquifer but chose not to, that was considered a passive recharge credit, at least at the time of this ASR Phase I Order. Is that a true statement?

A: That's true.

(*Id.* at p. 1634, ll. 10-15.) Later, he agreed that under the Phase I Order, “passive recharge credits were defined as credits for not pumping the City wells in the basin storage area.” (*Id.* at p. 1635, ll. 9-13; *see also* District's Exhibit 26, p. 9.)

310. He further testified that the same definitions of passive recharge credits found in the ASR Phase I Order also applied to ASR Phase II. (*Id.* at p. 1636, ll. 2-12.)

311. Moments later, in light of the above definitions, the following exchange occurred with Mr. Letourneau in reference to the City's Proposal:

Q: The City is seeking credit for not pumping water from the aquifer and leaving that water in storage under the AMC proposal; is that true?

A: That's true, we call that management, management of the of the groundwater.

(*Id.* at p. 1641, l. 22 –p. 1642, l. 2.) He admitted the City had a legal right to pump the water under which it was seeking AMCs. (*Id.* at p. 1642, ll. 3-6.)

312. Originally, the DWR classified the City's AMC Proposal as passive recharge credits before later changing its position. (p. 1643, ll. 8-17.) Mr. Letourneau testified:

Q: At least initially, when the City first came to you with a concept of an aquifer maintenance credit, there was concern among DWR staff that these—that these aquifer maintenance credits were passive recharge credits; is that true?

A: Sure.

(*Id.* at p. 1643, ll. 8-14.) He also testified in his deposition that initially there was “quite a bit of concern” that AMCs were passive recharge credits. (*Id.* at p. 1643, ll. 18-24.) And although the

DWR took “a long, hard look at this” concept, it ultimately determined that AMCs were not passive recharge credits because the same ASR infrastructure as to treatment was still being utilized with AMCs. (*Id.* at p. 1645, l. 16 – p. 1646, l. 15.)

313. Mr. Letourneau agreed with Mr. McCormick that, as in the case of Cheney, pumping water out of El Dorado Reservoir and seeking a credit for not pumping the Aquifer would also be seen as a passive recharge credit. (*Id.* at p. 1649, l. 21 – p. 1651, l. 8.) He agreed that El Dorado water could be technically treated at the ASR treatment facility and, even if that occurred, it would still be considered a passive recharge credit. (*Id.* at p. 1651, l. 21 – p. 1652, l. 24.) He indicated that the same logic applied to diversions from the Big Arkansas River to the City. (*Id.* at p. 1652, l. 25 – p. 1653, l. 9.) Mr. Letourneau summed up his position as follows, “[E]verything other than diversions from the Little Ark through the ASR diversion works would be considered passive recharge credits right now.” (*Id.* at p. 1655, ll. 1-4.) Thus, he admitted that ultimately the *only* distinction with respect to the City’s Proposal that exempted it from the definition of a passive recharge credit was the source of water as “coming from the Little Ark.” (*Id.* at 1655, ll. 16-21.)

m. Other Drought Planning Approaches Available to the City

314. The City testified that it had other approaches available to mitigate water concerns during drought. For example, the City could desalinate water from the Burrton plume. (Testimony of Henry, R. Vol. III, p. 556, ll. 15-25; Exhibit 17, p. 6.) Or the City could reclaim more industrial water. (Testimony of Henry, R. Vol. III, p. 567, ll. 7-12; Exhibit 17.) Another option was to construct more bank storage wells. (Testimony of Henry, R. Vol. III, p. 568, ll. 13-17.)

315. The City is also contemplating constructing more recharge basins in the Aquifer. (Testimony of Pajor, R. Vol. I, p. 234, ll. 4-7.) Mr. Letourneau testified that recharge basins allow the City to pump water from the Little Arkansas River and recharge the Aquifer even when it is 100 percent full. (Testimony of Letourneau, R. Vol. V, p. 1334, l. 17 – p. 1335, l. 4.) Consequently, if the City wanted a mechanism to generate more recharge credits during a situation where the Aquifer was at or near capacity, it could simply construct more recharge basins. (*Id.* at p. 1335, ll. 5-17; Testimony of Letourneau, R. Vol. VI, p. 1499, ll. 13-20.)

316. Mr. Letourneau testified that not enough information currently exists in the Proposal regarding how the City plans to utilize recharge basins. (Testimony of Letourneau, R. Vol. VI, p. 1513, ll. 8-20.) Consequently, he testified that he was not prepared to make a recommendation on the Proposal as it applied to recharge basins. (*Id.*)

317. The City is also in the process of constructing a water treatment plant that can accommodate treating water from other sources, such as El Dorado Reservoir. (Testimony of Henry, R. Vol. III, p. 559, ll. 19-23; Testimony of Pajor, R. Vol. I, p. 157, ll. 6-7; Exhibit 17, p. 6.)

318. Mr. Henry testified that according to surveys, the citizens of Wichita were willing to pay good money to secure alternative sources of water. (Testimony of Henry, R. Vol. III, p. 563, ll. 17-18; Exhibit 18.)

319. The City also admitted that it looked into multi-year flex accounts (“MYFAs”) but could not originally recall the exact reason that MYFAs were discounted. (Testimony of Pajor, R. Vol. I, p. 232, l. 4 – p. 233, l. 2, p. 357, ll. 10-14.) Later, the City testified that it discounted the concept over fear that its 40,000 acre feet of native rights would become junior. (Testimony of Pajor, R. Vol. II, p. 358, ll. 3-9.) However, Mr. Pajor later acknowledged that

K.A.R. 5-16-7 actually indicated, when pressed, that under MYFAs the quantity of senior rights was protected. (*Id.* at p. 360, l. 16 – p. 361, l. 1)

320. In his testimony, Mr. Letourneau testified that he and Chris Beightel were the two individuals at DWR responsible for making a determination on whether MYFAs were feasible for the City. (Testimony of Letourneau, R. Vol. V, p. 1332, ll. 12-23.) He indicated that the primary reason MYFAs were discounted by DWR was due to the duration of only five years. (*Id.* at p. 1332, l. 24 – p. 1333, l. 3.) In fact, when asked if there was another concern, Mr. Letourneau did not identify one. (*Id.* at p. 1333, ll. 4-6.) Then asked if it could be a viable option if the period was extended for municipalities, Mr. Letourneau concluded that he hadn't considered that option and it would have to be studied by DWR. (*Id.* at p. 1333, ll. 7-17.)

n. Necessary Conditions of the City's Proposal

321. During his testimony, Lane Letourneau testified to many permit conditions that should be imposed on the City. He indicated that, at the very least, all the conditions and restrictions found inherent in the ASR Phase II MOU should be included as permit conditions in the order related to the City's Proposal. (Testimony of Letourneau, R. Vol. VI, p. 1610, l. 16 – p. 1611, l. 7.)

322. Mr. Henry testified on behalf of the City that the Permit conditions imposed if the Proposal is granted should be equal to or more stringent than those imposed in ASR Phase I or ASR Phase II. (Testimony of Henry, R. Vol. III, p. 601, l. 21 – p. 602, l. 9.)

323. Mr. Pajor agreed when questioned by Mr. Oleen that AMCs should only be withdrawn "in some certain defined drought situation." (Testimony of Pajor, R. Vol. II, p. 311, ll. 8-14.) However, neither the City nor DWR *defined* what this "defined drought situation" would look like.

324. Mr. Pajor stated that it should be a condition that all native water rights are withdrawn before any AMC credits can be utilized. (Testimony of Pajor, R. Vol. II, p. 317, ll. 4-7.) However, the City failed to put this condition in its Proposal and this condition was omitted from the draft order submitted by DWR. (Testimony of Pajor, R. Vol. II, p. 318, ll. 8-16.)

325. Mr. Letourneau testified that another very beneficial permit condition would be to require that all other available sources of water (such as Cheney Reservoir) are first exhausted before AMCs are withdrawn. (Testimony of Letourneau, R. Vol. VI, p. 1526, l. 14 – p. 1527, l. 6.)

326. Another important condition that was not included with the City’s Proposal was the concept of rotational pumping, where the City would withdraw the water accumulated through AMC credits from different locations within the City’s wellfield at different times. (*Id.* at p. 363, ll. 6-22.)

327. Mr. Letourneau also testified that if impairment occurred with the City’s Proposal to other water users, the City should “make them whole, however they do it, whether they drill them a well, provide them water, something to make them whole.” (Testimony of Letourneau, R. Vol. VII, 1702, ll. 6-8.)

328. He also indicated that it would be good to “figure ... out” how to impose “more specific” permit conditions that required the City to withdraw AMCs and manage the Aquifer in a manner beneficial to all users. (*Id.* at 1704, ll. 11-18; p. 1705, ll. 11-20.)

II. Arguments and Conclusions of Law

a. Burden of Proof and Standard of Review

In an agency action of this nature, under Kansas law it is clear that the City of Wichita has the burden of proof. Indeed, the hearing schedule indicated that the City must show “by a

preponderance of the evidence that the proposed change to the project should be approved.” *See* Order to Modify Hearing and Schedule, Sept. 27, 2018; Pre-Hearing Conference Order, July 23, 2018; Prehearing Order, May 1, 2019. At a bare minimum, the City must demonstrate that its Proposal does not “impair an existing water right or prejudicially and unreasonably affect the public interest.” *Clawson v. State*, 49 Kan. App. 2d 789, 798, 315 P.3d 896 (2013). In doing so, the City should have produced evidence that its Proposal will not undermine water quality, will not unreasonably interfere with minimum desirable streamflow, harm safe yield, decrease water quality, or cause impairment, among other factors. Thus, the City has the burden of proof to demonstrate that each element, outlined above, is adequately addressed and there is no impairment to existing water rights, or detriment to the public interest.

b. The City’s Proposal Is Flawed Because It Is Based on a Number of Hypothetical Assumptions

During the Hearing, it became apparent that the City’s arguments and Proposal are based on many hypothetical assumptions. For example, a big assumption is that the City will manage the Aquifer in a manner that aspires to keep the Aquifer full. Although this was a prerequisite of many of the City’s arguments, there is no guarantee of this fact. Even this argument lacks merit. Consider a scenario where the City pumps down the Aquifer using its Native Water Rights by 10,000 acre feet and then fully recharges the Aquifer in the same year. Now consider a scenario where, during that same year, the City accumulates 10,000 acre feet in AMCs by diverting surface water to the City, then pumps down the Aquifer by 10,000 acre feet using its Native Water Rights. The City can then withdraw another 10,000 acre feet of groundwater in the future based on the accumulated AMCs, doubling the impacts to the Aquifer. This is a very plausible scenario and there is no way to preclude the City from pursuing such an approach. Thus, again, the City’s entire premise is based on a fallacy that doesn’t hold “water.”

c. Numerous Errors and Concerns Existed with the City’s Modeling

i. MODSIM and Drought Modeling

Although a mere drop in the ocean of the District’s concerns with the City’s modeling and Proposal, the District uncovered a number of concerns with the MODSIM and drought modeling performed by the City. With respect to MODSIM, foremost, the City employee that was asked to complete this modeling had little training and admitted it was a “learning” experience. A number of errors were uncovered during the Hearing including, but not limited to, the fact that Cheney was erroneously reported as starting at 110 percent full, the population projections did not align with the historic reality, and the City ignored other sources of water supply. Additionally, there was no explanation for the need to project into 2060, which was in conflict with the District’s Maximum reasonable quantity for beneficial use regulation K.A.R. 5-22-14(f), which allows for a maximum 20 years water use projection. This latter point is yet another reason to deny the Proposal as unlawful and was acknowledged by Mr. Letourneau.

With respect to the drought modeling, the testimony of Mr. Winchester made it very clear this was an imprecise forecast at best. He indicated that, based on the lack of viable data and other factors, the modeling could be unreliable and subjective in nature. Moreover, the City’s simulated drought, created by repeating the 2011 and 2012 drought years for a total of eight years, created a drought forecast more severe than anything seen within the last 100 years. He also admitted that a 1 percent drought would not have to be 8 years. These, and other concerns, compounded the arbitrary foundations of the City’s assumptions applied to later modeling.

ii. MODFLOW

Many errors were also uncovered with the MODFLOW modeling, which lies at the heart of the justification for the City’s Proposal. As identified above, the District identified numerous

errors in the tables and data produced by the City in response to this modeling. Further, the City admitted that the model had not been recalibrated since before 2013 despite incorporating updated data. The City also based its modeling on many unexplained assumptions such as Cheney starting at 100 percent full and the Aquifer starting at 91 percent full.

d. The City Failed to Model Critical Required Components

A critical concern identified during the testimony was the fact that the City failed to consider many critical events in its modeling. For example, in lowering to a New Minimum Index Level, the City failed to model impacts to minimum desirable streamflow (sometimes referred to as “MDS”), water quality, or the forms of impairment identified by the District. Likewise, the City omitted an analysis of these same components based on withdrawing AMCs. As a consequence, the only modeling and corresponding viable testimony on these subjects was provided by the District and the Intervenors.

e. The City’s Proposal Is Not in the Public Interest

The City must also demonstrate that its Proposal will not prejudicially and unreasonably impact the public interest. The Kansas Water Appropriation Act does not provide a succinct definition of “public interest.” However, the Kansas Supreme Court has helped to define the broad scope of the “public interest where no apparent definition exists. *Harris Enterprises, Inc. v. Moore*, 241 Kan. 59, 66, 734 P.2d 1083 (1987). The Court has indicated that a public interest must “be a matter which affects a right or expectancy of the community at large and must derive meaning within the legislative purpose embodied in the statute.” *Id. Wheatland Elec. Coop., Inc. v. Polansky*, 46 Kan. App. 2d 746, 754, 265 P.3d 1194 (2011) further supports a liberal standard in demonstrating impact to the public interest when the court indicated that “public interest could be hindered by the increased drain on a shared water resource” and that the “chief

engineer [should] consider these real-world concerns.” Thus, the breadth of the “public interest” is extensive and the Chief Engineer should give broad consideration to any factors that demonstrate that the public interest will be impacted.

Fortunately, the Kansas legislature has adopted a statute that outlines the playbook the Chief Engineer must follow when considering the public interest. K.S.A. 2012 Supp. 82a-711(b), states:

- In ascertaining whether a proposed use will prejudicially and unreasonably affect the public interest, the chief engineer shall take into consideration:
- (1) Established minimum desirable streamflow requirements;
 - (2) the area, safe yield and recharge rate of the appropriate water supply;
 - (3) the priority of existing claims of all persons to use the water of the appropriate water supply;
 - (4) the amount of each claim to use water from the appropriate water supply; and
 - (5) all other matters pertaining to such question.

Thus, applying these factors, it is very clear the City did not establish that its Proposal was in the public interest. As will be established, the City grossly failed this burden. The District demonstrated that, per the *Wheatland* case, the City’s Proposal would cause an increased drain on the Aquifer and harm the other users of the Aquifer. Indeed, for example, as supported by the discussion on saturated thickness and practical saturated thickness, the City’s Proposal grossly exaggerated the available water after a projected drought and after establishing a New Minimum Index Level in each index cell. This alarming discrepancy was never countered by the City.

f. The City’s Proposal Would Adversely Impact Minimum Desirable Streamflow

The next factor the District identified is the adverse impacts to minimum desirable streamflow. Several statutes address minimum desirable streamflow. *See e.g.*, K.S.A. 82a-703a, 703b, and 703c. The Chief Engineer must carefully examine and apply each of these statutes. Indeed, K.S.A. 82a-703c defines minimum desirable streamflow for the Little Arkansas River,

for example. As indicated above, the District produced extensive modeling and testimony from its experts indicating that the City's attempts to establish a New Minimum Index Level and withdraw AMCs would have dire consequences for MDS. For example, Dave Romero indicated that the City's pumping in the simulated 1% drought depleted the Little Arkansas River and Arkansas River ("Rivers") by a combined 30,100 acre-feet; pumping recharge credits to the New Minimum Index Levels caused an additional 33,600 acre-feet depletion in the Rivers compared to pumping to the current Minimum Index Levels (43,800 acre-feet versus 10,200 acre-feet), and caused a streamflow reduction of about 10 cubic feet per second in the Rivers; River flow depletion would last for years after the drought pumping ceased, and MDS would be met less often on the Little Arkansas River. Thus, the District undoubtedly demonstrated that the City's Proposal would undermine MDS.

g. The City's Proposal Would Negatively Interfere with Water Quality

Vast testimony from witnesses from all parties exemplified that the City's Proposal had the potential to undermine water quality in the Aquifer. The City's witnesses acknowledged that significant Aquifer drawdowns could accelerate the movement of the Burrton Chloride Plume by as much as 40 percent. Moreover, the District and Intervenor's experts—once again the only experts that provided viable analysis on the subject—produced data and documentation to support the consequences of establishing a new bottom coupled with the City withdrawing water that it did not inject into the basin storage area. As indicated above, the clear results highlighted the certainty of negatively interfering with water quality if the City's Proposal is adopted.

h. The City's Proposal Would Result in Multiple Forms of Impairment

The District and the Intervenor's demonstrated that multiple forms of impairment would occur if the City's Proposal was adopted: to the overall welfare of the Aquifer and to individual

well users. This analysis will thus address both forms of impairment. Again, while the City failed to address the impacts to individual wells, Dave Romero indicated that multiple wells would dry up if the City's Proposal is adopted. Further, although it seems to be axiomatic, the overall health of the Aquifer will be detrimentally impacted if a New Minimum Index Level is established and the City is able to withdraw water never injected in the Aquifer.

i. Overall Health of Aquifer

Kansas law undoubtedly requires the City to demonstrate that its actions will not cause impairment to the overall health of the Aquifer. K.S.A. 82a-711(c) clarifies that “impairment shall include the unreasonable raising or lowering of the static water level or the unreasonable increase or decrease of the streamflow or the unreasonable deterioration of the water quality at the water user’s point of diversion beyond a reasonable economic limit.” The Kansas Court of Appeals very recently twice addressed the definition of impairment in the companion cases of *Garetson Brothers v. American Warrior, Inc.*, 51 Kan. App. 2d 370, 347 P.3d 687 (2015); *Garetson Bros. v. Am. Warrior, Inc.*, 56 Kan App. 2d 623, 628, (Ct. App. Jan. 11, 2019). In those cases, the court adopted a very broad definition of the word “impairment” as it relates to water rights. *Id.* Two panels of the court held that an aggrieved party need only show that the offending party’s approach “diminishes, weakens, or injures” the aggrieved party’s rights. *Id.* Thus, this standard is now entrenched law.

Only a minimal showing is required that the City’s Proposal causes impairment. As demonstrated in the hearing by the expert testimony of the District and the Intervenors, there is ample evidence that the Proposal will unreasonably lower the static water level, adversely impact streamflow, and diminish water quality. Regardless, it was the City’s burden of proof on this issue. The City failed to produce any credible expert testimony that its Proposal—especially

during periods of withdrawals of AMCs below the New Minimum Index Level—would not result in impairment.

ii. To Individual Wells

The District also produced vast expert testimony and analysis on the impacts of the City’s Proposal to individual wells. As indicated above, Dave Romero identified a number of individual wells that would lose their water column if the Proposed Minimum Index Level is adopted and credits are withdrawn by the City. He also indicated that the drawdowns would impact numerous domestic wells located greater than 660 feet from the City’s ASR Phase II pumping wells, which is critical because there is no remedy proposed by the City for impaired domestic wells located farther than 660 feet from a City ASR Phase II well. Thus, the District clearly proved that this type of impairment would occur if the City’s Proposal is adopted.

i. The City’s Proposal Would Not Meet Other Statutory and Regulatory Requirements

i. Safe Yield

AMCs would allow additional appropriation of groundwater where there is no groundwater available for appropriation due to the safe yield regulations. This is not in the public interest as provided by K.A.R. 5-3-9 (b), which states that “Unless otherwise provided by regulation, it shall be considered to be in the public interest that only the safe yield of any sources of water supply...shall be appropriated.” K.A.R. 5-22-7(a) provides, subject to certain exceptions, “The sum of prior appropriations shall not exceed the allowable safe-yield amount for that area of consideration.” K.A.R. 5-22-7(b) does exempt the application for an aquifer storage and recovery well from the safe yield regulation, but only based on the ASR regulations and Memorandums of Understanding (MOUs) in place at the time this regulation was adopted.

The District provided ample evidence that the City's Proposal would result in grossly undermining safe yield in the ASR basin storage area. Again, the City failed to address this point. However, the District highlighted how the City would be withdrawing groundwater that is already dedicated to prior water rights in areas that are sometimes overappropriated by fourfold. As indicated, the City's Proposal, because it fails to qualify as an Aquifer Storage and Recovery system, is subject to safe yield.

ii. Spacing

Again, in contrast to the total lack of refutation or analysis by the City, the District produced ample evidence that the City's Proposal will be in contravention of spacing requirements. K.A.R. 5-22-2(a) clarifies the importance of meeting spacing. A well owner, such as the City, can seek a spacing waiver during the application process. However, in this case, any initial spacing waivers are wholly invalid as they were conditioned on remaining at the 1993 levels and utilizing artificial recharge. The City's failure to meet spacing is yet another hurdle the City was unable to overcome and thus fatal to the City's Proposal moving forward.

j. The City's Position Regarding the Benefits of Keeping the Aquifer Full Is Wholly Inapplicable to Lowering to a New Minimum Index Level

The City's only argument for the benefits of its Proposal were conditioned on the notion that it would be incentivized to keep the Aquifer levels higher initially as it conditioned AMCs. However, it merits noting—and this is very significant—that this argument does not apply to establishing a New Minimum Index Level. Establishing a new bottom is wholly irrelevant to the City's motivation to keep the Aquifer full. The *only* justification advanced by the City is that it could wait longer to withdraw recharge credits during a drought event without fear that credits would be stranded. However, there was no analysis or modeling produced by the City that demonstrated how waiting longer to withdraw credits would somehow benefit the Aquifer during

an extreme drought. Consequently, the sole benefit of establishing a New Minimum Index Level would be to the citizens of the City while no advantage was identified to the Aquifer itself. Regardless, as established below, the District showed numerous harms with the concept of lowering below the established 1993 levels. Thus, under no circumstances should this part of the Proposal be given any serious consideration. Indeed, the August 8, 2005, ASR Phase I Findings and Order clearly states that the public interested is protected by the City not withdrawing Equus Beds groundwater below the current minimum index levels.

k. The Potential for Harm Is Greater in the Future

Another theme advanced by the District was the fact that the harm of the City's Proposal can be accelerated in the future. As admitted by the City, the City has the potential to accumulate AMCs faster in the future through the construction of more bank storage wells. Further, a decision in favor of the City would pave the way for more permits and would allow the City to accelerate accumulation of recharge credits (AMCs) and therefore, withdrawals. Consequently, the harms demonstrated now have the potential to be compounded in the future.

l. The City's Cap of 120,000 Acre Feet Was Erroneously Established

The City and the DWR were unable to justify the basis for the new cap. Conflicting testimony existed regarding whether the cap was based on the basin storage area or double the needs of the City in a projected 1 percent drought. Again, it became clear this was just an arbitrary number. While the District does support a cap, the District believes the cap should be 50,000 acre feet, or the amount of recharge credits the City projects it needs during a 1 percent drought scenario. In fact, this is the *only* part of the City's Proposal that the District recommends for approval, subject to this modification, and applied to ASR Phase I and ASR Phase II permits.

m. The City Failed to Justify the Contingency

The City also could not explain how it determined the contingencies applied to the New Minimum Index Levels in its Proposal. Mr. Letourneau agreed that the cross-examination of Mr. McCormick highlighted that the contingencies were arbitrary in nature and perhaps too aggressive. Again, this is yet another part of the Proposal cast in doubt during the Hearing.

n. The City's New Accounting Method Has Numerous Flaws

Another concern with the City's Proposal had to do with discrepancies in the application of the new accounting methodology for AMCs. Expert witnesses for both the District and the City agreed that because the recharge is only theoretical, this resulted in potential discrepancies in the accounting. For example, the City's new accounting methodology failed to take into account the different responses of the Aquifer under low and high water levels and is proposed to be based, in part, on the 1998 water levels, which allows for AMCs to be retained at a much higher rate than the physical recharge credits have been historically retained. Consequently, this resulted in a fluctuation of over 1,000 acre feet in some situations between the old and the new accounting approach. Alarming, Mr. Romero indicated that this would result in minimizing recharge credit losses while optimizing AMC credit retention. Mr. McCormick also agreed with some of these concerns. Consequently, as acknowledged by Mr. Letourneau, this is yet another area of the Proposal that requires further development.

o. The City Failed to Meet Procedural Burdens in Pursuing Its Proposal

i. The City Failed to File a New Application or a Change Application

In this case, the City has not filed a change application with DWR. *Clawson* makes it clear that "a person seeking to appropriate water, other than for domestic use, must file an application

with the chief engineer.” *Clawson*, 49 Kan. App. 2d at 798. K.S.A. 82a-708b provides the sole legal authority for making changes to any existing water right. That statute promulgates:

- (a) Any owner of a water right may change the place of use, point of diversion or the use made of the water, provided such **owner shall**:
 - (1) Apply in writing to the chief engineer for approval of such proposed change,
 - (2) **Demonstrate** to the chief engineer that any proposed change is **reasonable** and **will not impair existing rights.**"
 - (3) Demonstrate to the chief engineer that any proposed change relates to the **same local source of supply** as that to which the water right relates."
 - (4) ...The chief engineer shall approve or reject the application for change in accordance with the **provisions and procedures** prescribed **for processing original applications to appropriate water**....

Id. (Emphasis supplied). If an applicant desires to change a water right pursuant to K.S.A. 82a-708b, the provisions for processing a new application to appropriate water, found at K.S.A. 82a-708a, 82a-709 through 714, and the appropriate regulations, must also be followed.

In Kansas, once a water right is acquired, the only three attributes of a water right that may be changed are the: (1) the authorized point of diversion, (2) the authorized place of use, and (3) the use made of the water. K.S.A. 82a-708b. Otherwise, no other changes to a water right are expressly authorized by the Kansas Water Appropriation Act hereinafter “(KWAA).” This requirement is there to prevent any change in the operation of a water right to the detriment of all water rights, permits, and applications in existence as of the date of the change application (senior water rights).

The proposed AMC program will have the effect of allowing the City to use its water to accumulate AMCs—arguably not a beneficial use recognized by law—and to increase its consumptive use under its existing water rights, without filing either a new or change application. This is something that could not be done even if the City filed a change application, so it should be unlawful to do so without filing a new application. Any change in the operation of an existing

water right cannot impair a water right in existence at the time the change is requested. K.S.A. 82a-708b(a)(2).

At the very least, on the face of the City's Proposal, the City will alter the methodology in which water is diverted from the Aquifer. The City will be allowed to first divert water directly from the Little Arkansas River and pump the water directly to the City. Later, the City will be allowed to divert, via accumulated AMCs, native groundwater from the Aquifer directly to the City without first adding to the groundwater supply by injecting source water from the Little Arkansas River into the Aquifer. In the case of the City's existing 30 ASR recharge credit withdrawal permits, this amounts to up to 18,000 acre-feet per year. This constitutes two sources of water and at least two points of diversion. Thus, at the very least, this is tantamount to changing the point of diversion and the source of supply.

De minimus changes can be made to existing water rights without the filing of a change application through a Finding and Order issued by the Chief Engineer, but such changes are usually to correct errors, like obtaining better information as to where a well or place of use is actually located or correcting typos. Additionally, other type of changes can be made through Findings and Orders, such as dividing a water right into two or more rights and reducing a water right's place of use, quantity, etc. However, none of these types of changes allow expansion of a water right, altering the point of diversion, or changing the local source of supply. The maximum annual quantity cannot be increased, and the consumptive use cannot expand (for example, in the case of an irrigation water right, the irrigated acres may be increased only a nominal amount, e.g. 10 acres or 10 percent of the base acres, whichever is less). The priority date also cannot be changed.

DWR has adopted the proper change application form that must be filed if a water user wishes to change a permit or water right. DWR has also adopted the proper new appropriation

form that must be filed if a person wishes to apply for a permit to appropriate water. These forms can be found on DWR's website. The City has failed to file a new or change application. Thus, the City's Proposal must be dismissed as facially defective.

ii. The City Cannot Retroactively Change Permit Conditions

The Kansas Court of Appeals has made it abundantly clear that water rights or permits may not later be altered by the Chief Engineer after they have been granted. *See Clawson v. State*, 49 Kan. App. 2d 789, 792, 315 P.3d 896 (2013). Indeed, this conclusion makes sense as it offers predictability to both the applicant and the surrounding water users. In *Clawson*, Mary Clawson "obtained 10 approvals and permits from the chief engineer of the DWR to appropriate water." *Id.* At 792. In doing so, the chief engineer imposed a monitoring plan to retain jurisdiction to alter aspects of the permits, as deemed necessary, at a later time. *Id.* Ms. Clawson argued that that the chief engineer lacked authority to later alter her permits. *Id.* At 793. The Kansas Court of Appeals agreed. *Id.*

In reaching this conclusion, the Court of Appeals labored to examine various statutes and laws germane to water rights. As stated in *Clawson*, "[T]he KWAA does not give the chief engineer carte blanche authority to alter water appropriations." *Id.* at 807. The *Clawson* case only identifies a handful of reasons the chief engineer can alter a permit or water right, absent a change application being filed, including abandonment and the ability to suspend a water right. *Id.* Instead, the court concludes that "the KWAA does not authorize the chief engineer to reevaluate and reconsider an approval once a permit has been issued." *Id.*

In this situation, the City is seeking to alter water permits after they have been previously approved subject to a variety of conditions. Indeed, the City is seeking to lower the established aquifer minimum index levels that govern when the City can pump groundwater recharge credits,

alter the nature of the source water, change how the water is diverted, and eliminate the need to physically recharge the Aquifer to establish recharge credits. If the City's Proposal is approved, the City would be allowed to obtain multiple beneficial uses for any surface water diverted from the Little Arkansas River when the Aquifer's artificial recharge capacity is limited as determined by the City. By necessity, this fundamentally requires an altering of the water permits already granted to the City. There is certainly no other way to construe the City's Proposal. Thus, based on *Clawson*, the City's Proposal must be dismissed on its face. To the extent the City or DWR argues that no change application is required because the City is merely altering a water permit, this argument is to no effect under *Clawson*. The City's Proposal must be dismissed on its face.

Moreover, Mr. Letourneau repeatedly testified that if the City's Proposal is granted, the conditions under which AMCs can be withdrawn will be determined at a later time. This approach is fatal pursuant to *Clawson*. The Chief Engineer cannot determine these issues in a piecemeal fashion. In order to properly retain jurisdiction, all issues must be adjudicated at the same time.

p. The City Lacks Standing

Standing is a jurisdictional issue that was properly previously asserted by the District in a motion to dismiss. See *Moorhouse v. City of Wichita*, 259 Kan. 570, 574 (1996). “[I]f a person does not have standing to challenge an action or to request a particular type of relief, then ‘there is no justiciable case or controversy’ and the suit must be dismissed.” *Bd. of County Comm'rs v. Bremby*, 2008 Kan. LEXIS 392, 402 (Kan. 2008) (citing *Kansas Bar Ass'n v. Judges of the Third Judicial Dist.*, 270 Kan. 489, 490, 14 P.3d 1154 (2000)). When a party lacking standing to pursue an adjudication nevertheless seeks relief, “it is tantamount to a request for an advisory opinion.” *Id.* The interest or prospective injury to the party cannot be speculative. *Varney Bus. Servs. v. Pottroff*, 275 Kan. 20, 30 (Kan. 2002).

The City undoubtedly lacks standing to pursue its Proposal. As indicated previously, the City cannot seek to alter a water right or permit without properly filing for a change application. Further, per *Clawson*, absent a change application being filed, the Chief Engineer has no authority to alter a permit. Additionally, the City has not filed a new groundwater appropriation application for additional groundwater withdrawal. DWR and the City have indicated that the circumstances under which an AMC is withdrawn can be determined at a later time. Thus, the City is simply seeking what is tantamount to an advisory opinion from the hearing officer. Further, numerous details of the City's proposal are theoretical and speculative. These facts are further fatal to the City's standing per established law such as the *Pottroff* case. Finally, as will be demonstrated in great detail below, there is no regulatory or statutory framework to support the City's Proposal. Until new regulations are adopted, the City has no standing to pursue its Proposal. Thus, based on the law cited above—and based on many other reasons—the City does not have standing to advance its Proposal.

q. The City Should Have First Sought Review with the District

The City proposes to modify two of the most fundamental conditions of the ASR water permits: how recharge credits can be accumulated and under what conditions the recharge credits can be withdrawn. While K.S.A. 82a-706 defines the Chief Engineer's duties related to the beneficial use of water and the priority of appropriation of water rights, the District is conferred the power of management of the groundwater resources pursuant to K.S.A. 82a-1020. Specifically, the Kansas Legislation recognized the need for the formation of special districts to manage the groundwater resources. In the case of the Equus Beds Groundwater Management District, the District was formed in 1975 to properly manage the Equus Beds Aquifer. An aquifer storage and recovery (ASR) project is clearly aquifer management. While the chief

engineer can effectuate an ASR project by issuing water permits, the management of the aquifer, and therefore the ASR project, is clearly in the purview of District. In fact, K.S.A. 82a-1020 clearly advises that the groundwater management district's formation is "...to establish the right of local water users to determine their destiny with respect to the use of the groundwater insofar as it does not conflict with the basic laws and policies of the state of Kansas." Determining how recharge credits can be accumulated and when they can be used is clearly the role of the District and not the role of a hearing officer to decide.

Thus, from a procedural standpoint, the City failed to pursue proper administrative channels and it should have started its review with the District. The Kansas Administrative Procedures Act, found at K.S.A. 77-501 *et seq.*, embodies this principal. Indeed, the City should have first brought its Proposal before the District. Instead, the City excluded the District from the conversations about the Proposal. K.S.A. 77-506 allows for the conversion of a proceeding to be heard by another agency. In this case, it should have been the District that first considered the City's Proposal. This is yet another reason the City's Proposal must be dismissed.

r. AMCs Are Illegal and Not a Creature of Current Statutes or Regulations

i. AMCs Are Fictitious

All witnesses in the hearing agreed that AMCs are not defined by Kansas statutes or regulations. Thus, it was well established that AMCs are merely a fictitious concept conjured by the City. Based on the District's research, no other jurisdiction has adopted a similar concept, especially without an explicit regulatory scheme supporting it. Frankly, this makes sense as AMCs stand in direct contravention to established water law principles adopted across the United States as AMCs allow the doubling of a consumptive use, appropriate water dedicated to other users, and violate the "first in time, first in right principal," among many other concerns.

ii. AMCS Are Not Allowed

Perhaps one of the most compelling arguments against the adoption of AMCs—and there are obviously many—is the fact that AMCs are precluded by the current statutory and regulatory scheme in Kansas. Mr. Pope and Mr. Boese provided a masterful analysis of why AMCs are illegal. In short, K.A.R. 5-12-1(a) reads: “An operator may store water in an aquifer storage and recovery system under a permit to appropriate water for artificial recharge if the water appropriated is source water.” “Source Water,” as defined by K.A.R. 5-1-1(yyy), “means water used for artificial recharge that meets the following conditions: (1) is available for appropriation for beneficial use; (2) is above-base flow stage in the stream; (3) is not needed to satisfy minimum desirable streamflow requirements; and (4) will not degrade the ambient groundwater quality in the basin storage area.” As supported by the testimony of the DWR and the District, the proposed accumulation of AMC’s does not meet the definition of “Source Water” found in K.A.R. 5-1-1(yyy), as the source water from the Little Arkansas River is not being used for artificial recharge when AMCs are accumulated, as it is instead being used directly for municipal use. Additionally, the definition of source water does not include an offset for water not pumped from the Aquifer, as proposed by the City with its Proposal.

“Artificial Recharge” as defined by K.A.R. 5-22-1(f) and K.A.R. 5-1-1(g) “means the use of source water to artificially replenish the water supply of the aquifer.” Again, as supported by the testimony of Mr. Letourneau and other parties, the proposed accumulation of AMCs does not meet the definition of “Artificial Recharge,” as the source water from the Little Arkansas River is not being used to artificially replenish the water supply of the Aquifer, but is instead being diverted directly to the City. “Aquifer storage” as defined by K.A.R. 5-22-1(c) and K.A.R. 5-1-1(e) “means the act of storing water in the unsaturated portion of an aquifer by artificial recharge

for subsequent diversion and beneficial use.” The proposed accumulation of AMCs does not meet the definition of “Aquifer Storage” because AMCs, by definition, are accumulated when the Aquifer is fully saturated, as again admitted to by Mr. Letourneau. “Aquifer storage and recovery system,” as defined by K.A.R. 5-22-1(d) and K.A.R. 5-1-1(f), “means a physical infrastructure that meets the following conditions: (1) Is constructed and operated for artificial recharge, storage, and recovery of source water; and (2) Consists of apparatus for diversion, treatment, recharge, storage, extraction, and distribution.” Here, it was uncontroverted during the Hearing that with the accumulation of AMCs no artificial recharge or storage of source water will occur. “‘Recharge credit’ means the quantity of water that is stored in the basin storage area and that is available for subsequent appropriation for beneficial use by the operator of the aquifer storage and recovery system.” K.A.R. §§ 5-1-1(mmm), K.A.R. 5-22-1(ee). As universally acknowledged during the Hearing, there is no water stored through the accumulation of AMCs. Mr. Letourneau and Mr. Pope both acknowledged that, as a consequence, there is no water placed in the Aquifer and available for *subsequent* recovery.

Further, K.A.R. 5-22-1(f) and K.A.R. 5-1-1(g) both refer to artificially replenishing the aquifer. Further, the entire set of regulations deal with “aquifer storage and recovery.” *See, e.g.,* K.A.R. 5-12-1 *et seq.* A regulation can be construed by looking at titles and plain language. Indeed, there would be no reason to even refer to the term “aquifer” in the regulations if there was no need to actually store water in an aquifer. These regulations further specify that an accounting method must be used to quantify the water injected into the aquifer. K.A.R. 5-12-2 defines the accounting of water in the context of water “entering and leaving the basin storage area.” Mr. Letourneau indicated that, with the accounting of AMCs, there is no metering of water and the accounting is only theoretical.

Additionally, K.A.R. 5-12-2 requires the accounting to include the amount of “artificial recharge.” K.A.R. 5-1-1(k) and K.A.R. 5-22-1(l) indicate that a “basin storage area” means “the portion of the aquifer used for aquifer storage...” Again, this further clarifies that the source water must actually be put in the aquifer to accumulate recharge credits that can be later withdrawn from the aquifer. The regulations are also predicated on the use of “source water” per K.A.R. 5-1-1(g) and K.A.R. 5-22-1(f). The definition of source water found in K.A.R. 5-1-1(yyy) further contemplates that the water will be stored in the aquifer, because a condition is that the injected source water “will not degrade the ambient groundwater quality of the basin storage area.” Again, there would be no mandate regarding the quality of water in the aquifer if it wasn’t contemplated that the water was actually entering into the aquifer. K.A.R. 5-1-1(e) and K.A.R. 5-22-1(c) also refers to “artificial recharge” and the plain language indicates that an aquifer will be recharged. The ordinary meaning of “recharge” refers to the “act of recharging” or “restoring.” *Webster’s Dictionary*. In this case, both Mr. Pope and Mr. Letourneau acknowledged that the City is attempting to capitalize on water that naturally entered the Aquifer. Mr. Pope also provided a detailed construction of the word “store,” after it was brought up by Mr. Oleen, and conclusively demonstrated that, by any interpretation of the definition, no storage of water will occur under the City’s Proposal. Thus, as indicated above, it is abundantly clear that AMCs are contrary to current statutes and regulations.

iii. There Is No Such Thing as a Functional Equivalent

It is very clear that the concept of AMCs being a “functional equivalent” to actual recharge credits should not receive any traction, despite being fervently argued by the City and DWR. In fact, it is perplexing that the District must even devote space in this document to addressing this concept. Both the City and the DWR admitted that this notion was simply made

up and not found in statutes or regulations. The DWR conceded that it had never applied the notion of a functional equivalent—or close enough—in other situations it had encountered. Moreover, the witnesses for both the DWR and the City that testified to the notion of a functional equivalent were disqualified as experts on this subject by their own respective attorneys. Regardless, the most credentialed witnesses on the subject, David Pope and Tim Boese, both testified that AMCs are not a functional equivalent to physical recharge credits. Mr. Boese, for example, testified that in almost three decades of construing water regulations, he had never applied the concept of functional equivalent and unduly expanded the nature of a regulation he was interpreting.

s. AMCs Violate the Water Appropriation Act

i. AMCs Are Contrary to the Concept of First in Time, First in Right

Kansas public policy, unchanged since 1945, mandates the use of the prior appropriation doctrine when there is insufficient water available for all appropriators. The prior appropriation doctrine permeates the Kansas Water Appropriation Act, K.S.A. 82a-701, *et seq.*, and is fundamental Kansas public policy that is binding on all water users and government agencies, including the Chief Engineer, the DWR and the District. K.S.A. 82a-703b(b); 82a-706; 82a706b; 82a-706e; 82a-707(b), (c), and (d); 82a-708b; 82a-710; 82a-711(b)(3); 82a-711a; 82a712; 82a-716; 82a-717a; 82a-742; 82a-745; 82a-1020; 82a-1028(n) and (o); 82a-1029; 82a1039; and the April 13, 2018, Order, pp. 4-5, ¶ 4. Fundamental to this Act is the concept of prior appropriation or “first in time, first in right.” Attempted modifications of a water right that encroach on the rights of senior users must be denied. *Wheatland*, 46 Kan. App. 2d at 754 (“*The chief engineer must deny any change application that will materially injure senior water-rights holders*, K.A.R.

5-5-8(a), and the chief engineer is allowed to place the terms, conditions, and limitations on the application that he or she deems necessary to protect the public interest.”) (emphasis added).

The City’s Proposal flies in the face of the Kansas Water Appropriation Act. Through AMCs, the City will accumulate credits, to later divert native groundwater, while never injecting any source water into the Aquifer. This native groundwater the City diverts may be subject to the priority of established senior or vested rights of other users. This stands the concept of prior appropriation and “first in time, first in right” on its head. Moreover, Kansas has adopted a statutory system to recognize new water rights through a sophisticated permitting process. As indicated, the City is attempting to circumvent this entire process. Thus, the very essence of the City’s Proposal drains the lifeblood out of years of established Kansas water law. Thus, based on the face of the Proposal, it must be dismissed.

ii. AMCs Seek a New Form of Consumptive Use

The City’s Proposal further seeks an entirely new, undefined form of consumptive use. In Kansas, beneficial water uses include, but are not limited to, domestic, municipal, irrigation, industrial, and recreational. K.S.A. § 82a-707(b). Any beneficial use not authorized by this statute is prohibited in Kansas. *See id; Wheatland*, 46 Kan. App. 2d at 748. Here, the City is seeking a new, completely undefined form of beneficial use of water: AMCs. Consequently, per the clear guidance of K.S.A. § 82a-707(b) the City’s Proposal must be denied. Further, AMCs would likely fall low on the list of priorities, certainly below domestic uses. *See* K.S.A. § 82a-707(b). This factors further into the analysis below.

iii. AMCs Seek to Improperly Expand the Consumptive Use

Another bedrock principle of Kansas water law is that once a permit is granted, no changes may be made to it that would expand the quantity of water diverted or the quantity of

water consumed. “The extent of consumptive use shall not be increased substantially after a vested right has been determined or the time allowed in which to perfect the water right has expired, including any authorized extension of time to perfect the water right.” *See* K.A.R. 5-5-3. Kansas regulations also prohibit material expansion of the authorized place of use for irrigation. Expanding the authorized place of use for irrigation would allow the water right owner to consistently apply a higher percentage of his water right more frequently than he would have been able to do had the place of use not been expanded. Consequently, a Kansas regulation provides generally that an application to increase an irrigation place of use may not be enlarged by 10 acres or 10 percent of the base acres, whichever is less. *See* K.A.R. 5-5-11.

Kansas Courts have also opined that the water use of a water right cannot increase at a later date. For example, in the *Wheatland* case, the court discussed the above regulations to arrive at this conclusion. *See* 46 Kan. App. 2d at 754-55. There, Wheatland Electric Cooperative sought to change the type of beneficial use from irrigation to municipal to sell water to Garden City. *Id.* at 748. In addressing the concerns this posed, the Kansas Court of Appeals wrote:

Changing the use from irrigation to municipal use, where the company would treat the water it diverted and sell it to the city, would likely allow Wheatland to divert and use as much water as any permit would allow because the place of use would no longer impose a practical limitation: the city needs lots of high-quality water, while only so much irrigation can be done on a limited acreage. *Not only could the increased diversion affect existing appropriation rights, but the public’s interest could also be hindered by the increased drain on a shared water resource.*

Id. at 754 (emphasis added). The *Wheatland* Court also quoted a Kansas Attorney General Opinion: “If approval of a change application would substantially increase the gross pumpage under that water right by allowing the right to be pumped to its maximum quantity every year . . . the consumptive use would also increase and nearby well owners who depend on that same

source of water supply would be injured by the change approval.” *Id.* at 754-55 (*quoting* Att’y Gen. Op. No. 95-92, 1995 Kan. AG LEXIS 95 (opining that the consumptive use of a water right cannot be expanded)). With these principles in mind, the Kansas Court of Appeals determined that the DWR was well within its rights to limit the consumptive use of the existing water right and that the DWR should take affirmative steps to ensure that the authorized use of a water right is not increased. *Id.* at 755.

The United States Supreme Court also recently ruled that one cannot expand a consumptive use of a water right in the case of *Montana v. Wyoming*, 563 U.S. 368, 379, 131 S. Ct. 1765 (2011). In that case, the Court analyzed years of established jurisprudence in water law to arrive at that conclusion. *See id.* Thus, this concept is not only entrenched in Kansas law, but also a bedrock of water law principles established throughout the United States.

As established during the Hearing, there are two real types of water in the Aquifer: 1) native water and 2) physical recharge credits. The first type of water in the Aquifer is native water that has naturally entered into the Aquifer, which is subject to the priority system. The second type of water is physical recharge credits, which are accumulated by the City physically injecting an outside source of water into the Aquifer.

What the City is proposing to do to accumulate AMCs is to divert surface water from the Little Arkansas River, treat it and send it directly to the City for municipal use. Thereby, by use of AMCs, the City will get permission from the Chief Engineer to later divert native water from the Equus Beds Aquifer that the City never put there in the first place. Water Permit No. 46,627 authorizes the use of water for two beneficial uses: 1) artificial recharge and 2) municipal use. The permit does not authorize AMCs as a beneficial use, because AMCs are neither artificial recharge nor municipal use. However, if the accumulation of AMCs is approved, the City would

be authorized to divert surface water from the Little Arkansas River, treat it, and pump it to the City for municipal use, which is clearly already allowed. However, at the same time the treated surface water was being used for municipal use, the same surface water would be counted as a recharge credit (minus any initial loss and gradational losses). It is impossible for the same water to be used simultaneously for two different uses—in this case, for municipal use and for the accumulation of AMCs. The City has effectively doubled its water consumption and this concept was clearly supported by the testimony of Mr. Letourneau, among others. Such an approach shocks the conscience of years of established water law holding that one cannot expand the beneficial use of a water right after it is initially approved. This is yet another reason that the AMC concept must be denied.

iv. AMCs Are a Different, Undefined Source of Supply

The source of water for the ASR Phase II withdrawal permits is identified in the permits as “groundwater recharge credits accumulated in the Equus Beds Aquifer.” Since AMCs are clearly not “groundwater recharge credits accumulated in the Equus Beds Aquifer,” AMCs are an undefined different source of supply that has no definition in the Kansas Water Appropriation Act statutes and regulations—unlike “groundwater”, “surface water”, and “recharge credits”, which are all defined in K.A.R. 5-1-1. There is no support for a source of supply based on existing, native water “left in storage.”

t. Dropping to the New Minimum Index Levels Are Illegal

It was also established during the Hearing that the City’s attempts to retroactively seek a New Minimum Index Level are illegal. The City is taking this approach in violation of prior memorandums of understanding. The City has thumbed its nose at prior orders from the DWR. The City has walked away from prior commitments made to landowners. Additionally, as

established elsewhere, retroactive modifications to a water right or permit are illegal based on the manner under which the City has pursued them. Thus, the City is legally precluded from dropping to the New Minimum Index Level.

u. The City's Proposal Amounts to an Unauthorized Taking of Water and Real Property Rights

Lowering the minimum index groundwater levels and allowing the City to deplete the Aquifer further based on recharge credits accumulated for source water never injected into the Aquifer, will violate the Takings Clause of the Federal and State Constitution.³ The Takings Clause of the Fifth Amendment of the United States Constitution ensures that “private property [shall not] be taken for public use, without just compensation.” U.S. Const. Amends. V, XIV. The Kansas Supreme Court and Kansas statutory authority has afforded broad deference to this federal protection. *See* K.S.A. 26-513(a); *Estate of Kirkpatrick v. City of Olathe*, 289 Kan. 554, 558, 215 P.3d 561 (2009). As stated in *Creegan v. State*:

Even though fundamental principles of State property law may define property rights, the Takings Clause nevertheless limits a State's authority to redefine preexisting property rights. Thus, ‘a State, by *ipse dixit*, may not transform private property into public property without compensation,’ *Webb's Fabulous Pharmacies, Inc. v. Beckwith*, 449 U.S. 155, 164, 101 S. Ct. 446, 66 L. Ed. 2d 358 (1980), nor can it ‘sidestep the Takings Clause by disavowing traditional property interests long recognized under state law,’ *Phillips*, 524 U.S. at 167, 118 S. Ct. 1925.

305 Kan. 1156, 1170, 391 P.3d 36 (2017). In *Creegan*, the Court construed broadly what types of rights are subject to the Takings Clause and ruled that “[the bottom line is that it matters not whether the right held by [the aggrieved party] . . . is further identified as a real property interest or a contract right.” *Id.* at 1171. Rather, any interference by the state with such rights sets up the state for an inverse condemnation claim and the need to pay just compensation. *Id.* Multiple

³Neither the City nor DWR has pursued any action under the Kansas Eminent Domain Procedure Act.

Kansas court cases have opined that “water rights are property that can be taken.” *Wheatland*, 46 Kan. App. 2d at 755 (citing *Durkee v. Bourbon County Comm’rs*, 142 Kan. 690, 694, 51 P.2d 984 (1935)). In the *Wheatland* case, the court outlined how if an injury could be shown to water right holders based on the actions of a governmental entity, just compensation would be required. *Id.* In *Wheatland*, the Court did not find that a Taking had occurred because “*Wheatland*... offered no evidence to show how the reductions in water usage... decreased its water rights’ values or interfered with its investments. *Id.* at 756. As will be specified below, the facts in this case are in stark contrast to *Wheatland* and a clear Taking has occurred.

This City’s Proposal, if approved by the Chief Engineer, will undoubtedly constitute a taking of private property of the surrounding groundwater water users. The groundwater being “taken” in exchange for the surface water diverted to the City, will be native groundwater already inherently in the Aquifer. This is water to which all the surrounding groundwater users have prior rights to. The City’s proposal will allow the City to take this groundwater while never actually physically injecting source water into the Aquifer for storage. This constitutes a taking of private property and subjects both the City and DWR to inverse condemnation claims. For this reason, the City’s Proposal must be dismissed on its face.

Various landowners testified during the Hearing on behalf of the Intervenors. They made it clear that they had purchased land overlying the Aquifer with an investment-based expectation of the water rights accompanying the land. They indicated that the City’s Proposal had the potential to cause hundreds of thousands of dollars in diminution in value to their land. Not surprisingly, these landowners had not given the City permission to take their water.

Additionally, the City’s Proposal essentially changes a contractual obligation entered into by the City with the District in the form of prior MOUs. As indicated in the prior ASR Phase II

MOU, the District agreed to grant well spacing waivers for proposed recharge and recovery wells that otherwise comply with all other District regulations. The City, in Phase II MOU Issue No. 6, specifically states that the City can only pump recharge credits when the groundwater levels are above the historic low level (i.e. the currently established minimum index levels). These two conditions of the ASR Phase II MOU are connected – The City agrees that the recharge credits won't be pumped below the established minimum index water levels, and the District agrees to grant spacing waivers based, in part, on this guarantee. As indicated in *Creegan*, this violation of a contractual obligation triggers the Takings Clause. The City's Proposal clearly triggers the Takings Clause and must be dismissed pursuant the Takings Clause of the United States Constitution and Kansas law.

v. The City has Other Drought Planning Tools Available

As testified to during the hearing, a multi-year flex account term permit could accomplish the City's objectives, while providing a shorter duration and more room for monitoring. Per *Wheatland*, the Chief Engineer could potentially seek to significantly alter the City's Proposal into one of these approaches. There is no reason to pursue a completely new, undefined, and illegal concept like AMCs. The City must first demonstrate an attempt to pursue options available to it that are supported by current law. At the very least, if the Chief Engineer approves the City's Proposal, it must do so with a very limited duration in mind so further evaluation and study can occur.

w. The City Should Not Receive Preferential Treatment and the Rules Should Apply Equally to All Users

Through its Proposal, the City is essentially seeking preferential treatment. Mr. Pajor testified that if other users can demonstrate that they are obtaining water from sources other than the Aquifer and thus leave water in the Aquifer, the argument for additional credits is "parallel"

to that of the City. However, as identified by David Pope, this would open the floodgates to other users—including other municipalities, irrigators, and industrial users alike—to bank fictional credits in the Aquifer that would allow for the entire supply in the Aquifer to be depleted if all “cashed” in at the same time and used in conjunction with native credits. In fact, several landowners during the Hearing expressed great frustration with this potential preferential treatment. Thus, the City should be treated equally and the same as other users of the Aquifer.

x. In the Event the City’s Proposal Is Considered, Future Modeling Is Needed, Numerous Permit Conditions Should Be Imposed, and Statutory and Regulatory Changes Are Needed

i. Future Modeling

As indicated previously, even if arguendo all the other hurdles outlined by the District are ignored (although they clearly should not be), the City will have to perform extensive additional modeling for its Proposal to be worthy of serious consideration. Mr. Letourneau’s testimony was replete with conclusions that more modeling was needed before the DWR could make an official recommendation. For example, the City needs to fix the identified errors in its modeling, recalibrate the model to allow for examining data in individual index cells, take into account practical saturated thickness, among numerous other concerns identified during the Hearing. By the close of the Hearing, and to date, that modeling remains outstanding.

ii. Permit Conditions

During the hearing, an entrenched concept that all parties agreed upon was the need to place conditions on the City’s Proposal and the withdrawal of AMCs. The *Wheatland* case further specifies the Chief Engineer’s ability to set limitations on the City’s use of the water up front, prior to modifying a permit or water right. 46 Kan. App. 2d at 753. It merits noting that *Wheatland* further supports the argument that the City must file a change application. *Id.*

However, the case also indicates that when changes are made to a water right the Chief Engineer can impose new restrictions including, but not limited to, changing the quantity and rate of diversion. *Id.* In that case, citing K.A.R. 5-5-8(b), the Court of Appeals opined that “the chief engineer is allowed to place *the terms, conditions, and limitations* on the application that he or she *deems necessary to protect the public interest.*” *Id.* (emphasis added). This is because “[d]ifferent uses demand different quantities of water and return different amount of water back into the ecosystem.” *Id.* Thus, the Chief Engineer must consider “existing water rights and the public” in shaping new restrictions. *Id.* *Wheatland* dealt with a vested right—a right superior to the City’s permit—and still held that “a vested right does not confer upon the owner the supreme right to make *any* use of the water.” *Id.* (emphasis in original).

Thus, certainly in this case, the City does not have an unfettered right to alter how it diverts and uses the water. *See id.* Notwithstanding all the prior arguments made by the District, if the City’s Proposal is entertained for some reason, there should be multiple conditions placed on the withdrawal of AMCs and restrictions imposed on the City’s Proposal. *See id.* In the Hearing, the parties agreed (including a witness from the City) that, at the very least, the permit conditions applicable to the Proposal should be equal to or more stringent than those applicable to ASR Phase II. The City and the DWR supported placing conditions on when the AMCs could be withdrawn during a drought, requiring that other sources of available water first be exhausted, adopting rotational pumping, and mandating that native water rights first be withdrawn. However, it was conceded that the nature of these permit conditions was not outlined in the Proposal and would have to be determined at a later date. As indicated, the Chief Engineer has the power to impose a monitoring plan that, per the *Clawson* case, must be reasonably defined.

It was established that if impairment occurred, the City would remedy the situation, and enforcement of the monitoring plan must be the function of the District.

iii. Statutory and Regulatory Changes

As indicated, there is no statutory or regulatory mechanism allowing for the approval of AMCs or for retroactively lowering to a New Minimum Index Level. Thus, the City must seek extensive changes to Kansas statutes and regulations before the Proposal can move forward. Currently, there is no basis under which the City can pursue its Proposal.

III. Conclusion

For all the compelling reasons articulated above, the District respectfully asks that the Hearing Officer deny the City's Proposal in its entirety. In short, the City's modeling is inadequate and inaccurate, the City's Proposal has the potential for vast harms to the Aquifer and to its constituents, procedural hurdles bar the City's Proposal, and the City's Proposal is facially illegal. Adopting the City's Proposal would open the floodgates to future harms to the Aquifer and would undermine years of established precedent in Kansas water law. AMCs are a phantom concept that are very tenuously related to physical recharge credits, at best, and don't capture the benefits of artificial recharge. Regardless, under no circumstance was there even an argument advanced regarding how establishing a New Minimum Index Level would somehow benefit the Aquifer. For these reasons, it is abundantly obvious that the City's Proposal must be denied.

RESPECTFULLY SUBMITTED:

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CERTIFICATE OF FILING AND SERVICE

We, Thomas A. Adrian and David J. Stucky, do hereby certify that a true and correct copy of the above was served by (___) mail, postage prepaid and properly addressed by depositing the same in the U.S. mail; (___) fax; (x) email; and/or (___) hand delivery on the 30th day of July, 2021, to:

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