

**In the Matter of the City of Hays’ and the City of Russell’s
Applications for Approval to Change the Place of Use, the Point of Diversion or the
Use Made of the Water Under an Existing Water Right,
regarding the following existing water rights:**

FILE NOS.

**21,729-D1; 21,729-D2; 21,730; 21,731; 21,732-D1; 21,732-D2; 21,733; 21,734; 21,841; 21,842;
22,325; 22,326; 22,327; 22,329; 22,330; 22,331; 22,332; 22,333; 22,334; 22,335; 22,338; 22,339;
22,340; 22,341; 22,342; 22,343; 22,345; 22,346; 27,760; 29,816; 30,083; and 30,084.**

**MASTER ORDER CONTINGENTLY APPROVING
CHANGE APPLICATIONS REGARDING R9 WATER RIGHTS**

The Chief Engineer of the Division of Water Resources, Kansas Department of Agriculture, after giving careful consideration to the Change Applications submitted by the Cities in the above matter, makes the following factual findings, legal conclusions, and order, which are contingent on the approval of the Cities’ Water Transfer Application and on other conditions, as explained herein.

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DRAFT PROPOSED MASTER ORDER DATED 5-4-18; FOR DISCUSSION ONLY

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DEFINITIONS

The following terms, as used in this Master Order and in the Change Approvals, are defined as follows:

1. **“Cities”** mean, collectively, the City of Hays, Kansas, the City of Russell, Kansas, and the respective successors and assigns of any of such Cities’ ownership interests in the R9 Water Rights. **“City”** means either the City of Hays, Kansas, or the City of Russell, Kansas, as the case may be, along with such City’s successors and assigns of any of such City’s ownership interest in the R9 Water Rights.
2. **“Change Applications”** means the applications that the Applicants originally submitted to the Chief Engineer on June 26, 2015, as later amended by various amendments, which applications request contingent approval to change the use made of the water, the places of use, and the points of diversion under the R9 Water Rights.

3. **“Change Approvals”** means the individual contingent approvals of the Change Applications, which approvals concern the various individual R9 Water Rights, are signed and issued by the Chief Engineer, and are attached to this Master Order as **Exhibits 1-32** and incorporated herein.

4. **“DWR”** means the Division of Water Resources of the Kansas Department of Agriculture.

5. **“GMD5”** means the Big Bend Groundwater Management District No. 5.

6. **“Hays”** means the City of Hays, Kansas.

7. **“KAPA”** means the Kansas Administrative Procedure Act, K.S.A. 77-501, *et seq.*

8. **“KJRA”** means the Kansas Judicial Review Act, K.S.A. 77-601, *et seq.*

9. **“Limitation”** means a term or condition imposed by the Chief Engineer on a water right pursuant to K.S.A. 82a-707(e), K.S.A. 82a-708b, K.A.R. 5-5-8, and/or K.A.R. 5-5-9 (1994 version), that, depending on the particular circumstances, limits the authorized rate(s) of diversion and/or the authorized annual quantity(ies) of water when a junior water right(s) is combined with a senior water right(s), to a rate of diversion or annual quantity of water that is less than the sum of the combined water rights’ individual authorized rates of diversion or annual quantities of water.

Depending on the particular circumstances, Limitations might be added, removed, or modified in an approval of an application to change the characteristics of a water right.

Limitations are binding conditions unless and until they are removed or modified in a subsequent final order issued by the Chief Engineer.

10. **“Master Order”** means this document signed and issued by the Chief Engineer, including its **Appendices A** through **G**, and **Exhibits 1-34**, all of which are incorporated into this Master Order.

11. **“Project”** means the diversion and transportation infrastructure planned by the Cities, including any future infrastructure expansions, to divert water from the R9 Water Rights and to transport it for municipal use in the City of Hays, Kansas, and its immediate vicinity as well as related areas in the Northeast Quarter (NE/4) of Section 19 and the Northwest Quarter (NW/4) of Section 36, in Township 13 South, Range 18 West, Ellis County, Kansas; and in the City of Russell, Kansas, and its immediate vicinity. The Project’s transportation infrastructure, to the extent that it delivers water for municipal use in the aforementioned areas, and to other users upon approval of future change applications, amounts to a “common distribution system” as that term is used in K.A.R. 5-1-1(vv).

12. **“R9 Ranch”** means that ranch historically known as such and comprised of various parcels of land located in Edwards County, Kansas, as visually depicted on the map attached as **Exhibit 33** and as more specifically described in the legal description attached as **Appendix A**.

13. **“R9 Water Rights”** means the existing, certified water appropriation rights with points of diversion on the R9 Ranch and assigned file numbers 21,729-D1; 21,729-D2; 21,730; 21,731; 21,732-D1; 21,732-D2; 21,733; 21,734; 21,841; 21,842; 22,325; 22,326; 22,327; 22,329; 22,330; 22,331; 22,332; 22,333; 22,334; 22,335; 22,338; 22,339; 22,340; 22,341; 22,342; 22,343; 22,345; 22,346; 27,760; 29,816; 30,083; and 30,084.

14. **“Region Five”** means Phillips, Rooks, Ellis, Rush, Pawnee, Edwards, Kiowa, and Comanche Counties in Kansas.

15. **“Region Six”** means Smith, Jewell, Osborne, Mitchell, Russell, Lincoln, Ellsworth, Barton, Rice, Stafford, Reno, Pratt, Kingman, Barber, and Harper Counties in Kansas.

16. **“Russell”** means the City of Russell, Kansas.

17. **“Secretary”** means the Secretary of the Kansas Department of Agriculture.

18. **“Transfer Application”** means the Cities’ application, as amended, to transfer water for the Project, which application originally was filed on January 6, 2016.

19. **“Transfer Order”** means an order issued by the water transfer hearing panel pursuant to the Kansas Water Transfer Act, K.S.A. 82a-1501, *et seq.*

20. **“Treatment Losses”** means the quantity of the waste stream from the treatment of the water from the R9 Water Rights (whether treatment takes place on the R9 Ranch or before or after delivery to any water user) in order to meet regulatory standards and aesthetic concerns.

21. "USGS" means the United States Geological Survey.

GENERAL APPLICABLE LAW

22. The Chief Engineer is charged with the responsibility "to control, conserve, regulate, allot and aid in the distribution of the water resources of the state for the benefits and beneficial uses of all of its inhabitants in accordance with the rights of priority of appropriation." K.S.A. 82a-706.

23. The Chief Engineer is permitted to adopt, amend, and enforce reasonable rules, regulations, and standards to achieve the purposes of the Kansas Water Appropriation Act. K.S.A. 82a-706a.

24. In approving a new application or change application, the Chief Engineer may approve an application for a smaller amount of water than requested and may approve an application "upon such terms, conditions, and limitations as he or she may deem necessary for the protection of the public interest." K.S.A. 82a-712; *see also* K.S.A. 82a-708b.

25. The Kansas Water Appropriation Act permits owners of water appropriation rights to apply for permission to change the place of use, the point of diversion, or the use made of the water without losing priority of right. K.S.A. 82a-708b(a).

26. In order to change these characteristics, an applicant must demonstrate that the change is reasonable, that it will not impair existing rights, and that water will be diverted from the same local source of supply. *Id.*

27. Applicable DWR regulations govern the quantities addressed in this Master Order, including prohibiting an increase in consumptive use as a result of the change in use, *see, e.g.*, K.A.R. 5-5-9(a) (1994 version); prohibiting the authorized quantity for the new use from exceeding the maximum annual quantity for the original use that was authorized by the particular water right, K.A.R. 5-5-9(a)(4) (1994 version); and imposing a reduction or placing a Limitation on the quantity reasonably needed for the new use, K.A.R. 5-5-9(a)(6) (1994 version).

28. Approval of a change application is not permitted if a proposed change will cause the extent of consumptive use to increase substantially. K.A.R. 5-5-3.

29. Approval of a change from irrigation to another type of beneficial use is not permitted if the change will cause the net consumptive use from the local source of water supply to be greater than the net consumptive use from the local source of water supply by the original irrigation use. K.A.R. 5-5-9(a) (1994 version).

30. Appropriation rights in excess of the reasonable needs of the appropriator are not allowed. K.S.A. 82a-707(e).

31. For perfected (certified) water rights being changed to a new use, no statute or regulation specifically defines the time period that the Chief Engineer must consider when determining the appropriator's reasonable needs.

32. Approvals of applications to change a point of diversion generally require that new wells be "completed substantially as shown on aerial photograph, topographic map, or plat" as defined at K.A.R. 5-1-1(q).

33. A well with a source of supply in an alluvium that is in a basin that is fully appropriated or is in an area closed to new appropriations may not be moved more than 10 percent closer to the centerline of the stream. K.A.R. 5-5-13.

34. Regulations recommended by GMD5 and adopted by the Chief Engineer for applicability within GMD5 include several well-location requirements:

- a. The municipal wells may not be moved more than 2,640 feet from the currently authorized points of diversion. K.A.R. 5-25-2a(a).
- b. All municipal wells must be completed in the aquifer or aquifers in which the currently authorized wells were authorized to be completed. *See* K.A.R. 5-25-2a(d).
- c. All municipal wells must be more than 1,320 feet from wells that carry an earlier priority except those wells owned by the Cities. K.A.R. 5-25-2(a).
- d. All municipal wells must be more than 660 feet from all existing domestic wells, except those domestic wells owned by the Cities. *See id.*

MIXED FINDINGS OF FACT AND CONCLUSIONS OF LAW

I. Background

A. General Background

35. The Cities have determined that they need access to an additional source of water to meet their future, long-term needs, due to existing water shortages, projected population increases, and other regional water needs. To help meet these increased water needs, the Cities purchased the R9 Ranch and the R9 Water Rights and conceived of the Project. The R9 Ranch is within the boundaries of GMD5.

36. Before the Project can be lawfully realized, changes to the use made of the water, the places of use, and the points of diversion for the R9 Water Rights must be contingently approved by the Chief Engineer. Then, the actual intended transfer of the water from the R9 Ranch to the Cities and otherwise in accordance with the Project, must be approved by the water transfer hearing panel in accordance with the Water Transfer Act, K.S.A. 82a-1501, *et seq.*

37. The approvals made by the Chief Engineer in this Master Order are contingent and conditioned upon certain factors as provided herein, including the Cities later receiving a Transfer Order as provided herein.

B. The Change Applications

38. On June 26, 2015, the Applicants submitted the original Change Applications, which applications, as amended, seek contingent approval of changes of

the use made of water, the places of use, and the points of diversion under the R9 Water Rights.

39. The Change Applications were filed in anticipation of the Cities' desired transfer, in accordance with the Project and pursuant to the Water Transfer Act, of more than 2,000 acre-feet of water per year from the R9 Ranch to Schoenchen, Kansas, and then on to Hays and to Russell.

40. On January 6, 2016, the Cities filed the Transfer Application, which application necessarily was incomplete when filed because the Change Applications had not yet been contingently approved by the Chief Engineer as required by K.A.R. 5-50-2(x)(2)(A)–(C) and K.A.R. 5-50-7(b)(1)–(3).

41. The original Change Applications sought the Chief Engineer's contingent approval to convert 7,625.70 acre-feet of water per calendar year from irrigation to municipal use.

42. After extensive discussion between the Cities and the Chief Engineer, the Cities agreed with nearly all of the terms set out in this Master Order, including an agreement to lower the total quantity that the Cities initially requested be converted from irrigation to municipal use from 7,625.7 acre-feet of water per calendar year to 6,756.8 acre-feet of water per calendar year.

43. The Cities' Change Applications were specifically conditioned upon:

- a. the entry of this Master Order as a final, non-appealable order; and

- b. a final, non-appealable order approving the Transfer Application for a quantity of at least 6,756.8 acre-feet of water per calendar year.

The Cities later withdrew such conditions, in the course of their extensive discussions with the Chief Engineer.

44. The Change Applications seek to make the following changes to the R9 Water Rights:

- a. Change the use made of water under each of the R9 Water Rights from irrigation to municipal use.

- b. Change the places of use for the R9 Water Rights, from the R9 Ranch to:

- i. the City of Hays, Kansas, and its immediate vicinity as well as related areas in the Northeast Quarter (NE/4) of Section 19 and the Northwest Quarter (NW/4) of Section 36, Township 13 South, Range 18 West, Ellis County, Kansas; and

- ii. the City of Russell, Kansas, and its immediate vicinity.

- c. Change the points of diversion for each of the R9 Water Rights as authorized in their respective certificates of appropriation and approved changes, if any, that predate this Master Order, and as set out in Table 1 attached as

Appendix B. The approximate locations of the proposed municipal wells are shown on the map attached as **Exhibit 33** and are more specifically described in each of the Change Applications and the maps attached thereto.

45. The Change Applications originally were filed before K.A.R. 5-5-9 was amended by changes effective September 22, 2017. Accordingly, the Cities based the Change Applications on the 1994, pre-amended version of K.A.R. 5-5-9.

46. Given the timing of when the Change Applications originally were filed, the Chief Engineer finds that K.A.R. 5-5-9, as it existed in 1994 on the date when the Change Applications originally were filed, should be and is applied to the changes in use requested by the Cities. *See Appendix C.*

C. Review of the Change Applications

47. The Chief Engineer and DWR staff have carefully reviewed the original Change Applications and all of their amendments and attachments, the Burns and McDonnell modeling report and the related modeling files discussed below, the documents in DWR's files for each of the R9 Water Rights, and other documents and sources of information normally consulted when considering similar change applications, all in light of the applicable statutory and regulatory requirements of K.S.A 82a-708b and K.A.R. 5-5-1 through K.A.R. 5-5-16.

48. In the course of such review, the Chief Engineer and DWR met with the Cities, their attorneys and engineers, and otherwise gave careful consideration to the merits of the Cities' requested changes.

49. DWR also provided the Change Applications, the Burns and McDonnell modeling report and the related modeling files, and proposed drafts of this Master

Order and the Change Approvals to GMD5 for its review under K.A.R. 5-25-1 through K.A.R. 5-25-21. These documents also were made available to the public via DWR's website.

50. Further, the Chief Engineer held an informational public meeting in Edwards County on **[insert date]**, to explain the issues being considered regarding the Change Applications and to receive comments from the public. The Chief Engineer accepted public comments through **[insert date]**.

51. After such careful review and consideration, the Chief Engineer finds that the Change Applications should be contingently approved for the reasons and on the terms and conditions set out in this Master Order, which includes the various Change Approvals attached as **Exhibits 1-32** that are incorporated herein.

II. Change in Beneficial Use

52. The Chief Engineer finds that conversion of the R9 Water Rights from irrigation to municipal use is reasonable and should be contingently approved on the terms and conditions set out in this Master Order.

III. Quantities for Municipal Use

53. Because approving a change in the authorized beneficial use of a water right may, under K.A.R. 5-5-9 (1994 version) and its concept of consumptive use, effectively result in a reduction in the authorized quantity for the water right for its new

use, the Chief Engineer must apply that regulation here in the course of contingently approving the changes in use requested by the Cities.

54. Changing the use made of water from irrigation use to municipal use may be approved if the change does not cause the net consumptive use from the local source of water supply for the new use to exceed the net consumptive use from the same local source of water supply by the original irrigation use. K.A.R. 5-5-9(a) (1994 version).

55. The maximum annual quantity of water allowed to be changed from irrigation to municipal use is the net irrigation requirement ("NIR") for the 50% chance rainfall for the county of origin, multiplied by the maximum acreage legally irrigated under the authority of the water right in any one calendar year during the perfection period. K.A.R. 5-5-9(a)(1) (1994 version).

56. The applicant, however, may attempt to demonstrate to the Chief Engineer a more accurate estimate of the historic net consumptive use than the net consumptive use calculated under the methodology set forth in K.A.R. 5-5-9(a)(1). K.A.R. 5-5-9(b) (1994 version).

57. The NIR for the 50% chance rainfall for Edwards County, Kansas, is 13.0 inches for corn and 20.9 inches for alfalfa.

58. A review of the information in DWR files, as supplemented by information provided by the Applicants, shows that the R9 Ranch was principally an alfalfa operation during the perfection periods for the R9 Water Rights.

59. Accordingly, pursuant to K.A.R. 5-5-9(b) (1994 version) and as set out in Table 1 attached as **Appendix B**, the NIR for alfalfa was used for the R9 Ranch irrigation circles that were planted to alfalfa during the perfection periods for each of the R9 Water Rights and, pursuant to K.A.R. 5-5-9(a) (1994 version), the NIR for corn was used for the remaining acreage of the R9 Ranch.

60. The Chief Engineer finds that approval of the Change Applications, which will permit the diversion of a total of up to 6,756.8 acre-feet of water per calendar year from all of the R9 Water Rights combined, will not cause the net consumptive use from the local source of water supply for the new municipal use to exceed the net consumptive use from the same local source of water supply by the original irrigation use.

61. The resulting total authorized quantity for municipal use for each R9 Water Right, after the changes contingently approved herein, must be the lesser of the net consumptive use or the maximum annual quantity authorized (i.e., certified, in the case of each of these R9 Water Rights) for irrigation use for each such R9 Water Right. K.A.R. 5-5-9(a)(4) (1994 version).

62. Accordingly, the Chief Engineer finds that because of the changes contingently approved herein, and subject to the Limitations and conditions provided herein, the total authorized quantities that may be diverted for municipal use for each R9 Water Right are the amounts listed in Table 1 attached as **Appendix B**, which listed

amounts are the lesser of the net consumptive use or the maximum annual quantity authorized (certified) for irrigation use for each R9 Water Right. For all R9 Water Rights combined, this contingently authorized total quantity for municipal use is 6,756.8 acre-feet of water per calendar year (subject to the Limitations and conditions as further provided herein).

IV. Limitations on Quantities for Municipal Use

A. Ten-Year Rolling Aggregate Limitation

63. The Kansas Water Appropriation Act provides that any owner of a water right may change the place of use, the point of diversion, or the use made of the water, without losing priority of right, provided such owner demonstrates to the Chief Engineer that any proposed change is reasonable and will not impair existing rights. K.S.A. 82a-708b.

64. Furthermore, the Kansas Water Appropriation Act provides the Chief Engineer with authority to control, conserve, regulate, allot, and aid in the distribution of the water resources of this state for the benefits and beneficial uses of all of its inhabitants in accordance with the rights of priority of appropriation. K.S.A. 82a-706.

65. The Chief Engineer finds that the aforementioned considerations and authority of K.S.A. 82a-706 and 82a-708b; along with the unique aspects of the Project, including but not limited to (a) its being subject to the Water Transfer Act, (b) the need to make as clear as possible the expected nature of impacts into the long-term future,

and (c) Applicants' request for a procedure to allow the reasonable quantity for municipal use to inflate over an indefinite time; necessitate a realistic assessment of the long-term impacts of the Project on the R9 Ranch wellfield and the surrounding area and a finding that the long-term withdrawals for municipal use allowed pursuant to this Master Order are consistent with the quantity of water that reasonably can be diverted from the water resources on the R9 Ranch wellfield over the long-term without unreasonable effects to the area.

66. Thus the Chief Engineer finds that it is appropriate to allow the Cities to divert in any calendar year, or a series of calendar years, the full amount of 6,756.8 acre-feet of water for municipal use from all R9 Water Rights combined, as determined herein and consistent with the R9 Ranch's historic consumptive use, while imposing a Limitation on the quantity of water that can be diverted from the combined R9 Water Rights for municipal use during any rolling 10-year period, based on an estimate of the quantity that can be reasonably diverted from the water resources on the R9 Ranch wellfield over the long-term without unreasonable effects to the area.

67. To establish this Limitation, the Chief Engineer required the Cities to develop modeling work to form the basis of the Limitation and to assess the impact of this pumping of the R9 Water Rights on the surrounding area. Based on the model results explained below in Subsection IV.B., the Chief Engineer finds that 48,000 acre-feet of water during any, each, and every ten consecutive calendar years (i.e., a ten-year

rolling aggregate of 48,000 acre-feet) is a reasonable maximum quantity for the long-term yield from the R9 Water Rights. In other words, the quantity diverted during a calendar year from all of the R9 Water Rights combined, plus the total of the quantities diverted from all of the R9 Water Rights combined during each of the 9 previous calendar years, should not exceed 48,000 acre-feet of water.

68. If this Limitation is applied on such a rolling-aggregate basis, then based on the model results, the overall mass-balance of water extracted versus water entering the area demonstrates that the effects on the area of pumping from the R9 Water Rights will not be unreasonable.

69. Accordingly, the Chief Engineer finds that an annual quantity of water from the combined R9 Water Rights of 6,756.8 acre-feet per calendar year, limited to 48,000 acre-feet of water during any, each, and every ten consecutive calendar years (the "Ten-Year Rolling Aggregate Limitation"), is the quantity that has been demonstrated to be reasonably diverted over the long-term from the R9 Water Rights, and thus the Ten-Year Rolling Aggregate Limitation should be imposed on the combined R9 Water Rights.

70. The Ten-Year Rolling Aggregate Limitation is imposed for the exclusive benefit of the public as a whole and not for the benefit of any other water right, person, or entity. The Ten-Year Rolling Aggregate Limitation is not intended to benefit any

other water right, person, or entity and does not confer any benefits or create any rights in any third party.

71. The Ten-Year Rolling Aggregate Limitation does not impose a Limitation on, and thus does not restrict, the quantity of water that may be diverted by the Cities from additional sources outside the current boundaries of the R9 Ranch, which sources might be developed in the future via acquisition and conversion of other water rights, applications for new water appropriation rights, or some form of augmentation.

72. The imposition of the Ten-Year Rolling Aggregate Limitation is based, in large part, on:

a. the fact that the Arkansas-Pickerel Subbasin of the Upper Arkansas River Basin is closed to new appropriations;

b. the underlying concerns and on the restrictions of the Arkansas River IGUCA Order issued by the Chief Engineer on September 29, 1986, as amended on March 6, 1987, and again on October 14, 2013; and

c. the Chief Engineer's review and consideration of the results of groundwater modeling discussed below in Subsection IV.B., which modeling represents the best science currently available, at a reasonable cost, to estimate the long-term water supply of the R9 Ranch and surrounding area. Based on DWR's participation in GMD5's robust model-development process, including review by DWR's groundwater modeling expert, Steve Larson of S.S. Papadopoulos and

Associates, the Chief Engineer believes it is reasonable to rely on such modeling results to determine the Ten-Year Rolling Aggregate Limitation.

73. The Chief Engineer finds that changes in the aforementioned bases, as well as additional data collection, further refinement and/or calibration of the existing groundwater model discussed below in Subsection IV.B. (including upgrades to the existing model), or the creation of an entirely new model, could result in changes to the conclusions that form the basis for the Ten-Year Rolling Aggregate Limitation, in which case it may be appropriate to increase such Limitation or to remove it entirely. Accordingly, this Master Order sets out below in Subsection XII.A. the circumstances under which the Ten-Year Rolling Aggregate Limitation may be increased or removed.

74. The Cities contend that the Chief Engineer does not have the authority to impose the Ten-Year Rolling Aggregate Limitation. The Chief Engineer acknowledges but does not agree with the Cities' contention.

B. Modeling Supporting the Ten-Year Rolling Aggregate Limitation

75. As found above in Subsection IV.A., the Chief Engineer's finding that the Ten-Year Rolling Aggregate Limitation should be imposed on the combined R9 Water Rights because it is a reasonable maximum quantity for the long-term yield from the R9 Water Rights, is based on the following model results obtained by the Cities and confirmed by the Chief Engineer.

a. The GMD5 Model

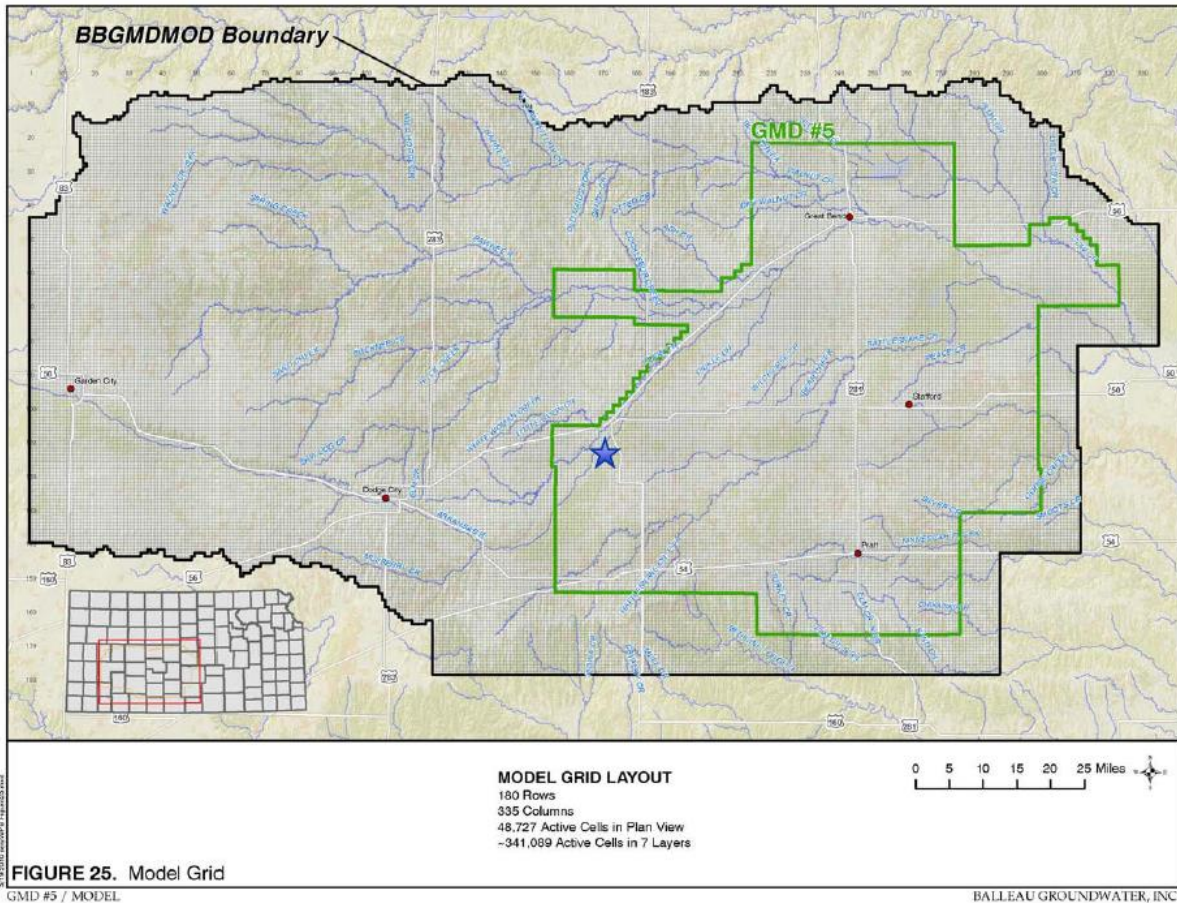
76. Quantifying and analyzing the effects of the 48,000 acre-feet of water figure (or 4,800 acre-feet of water per calendar year, on average), which figure the Chief Engineer has imposed as the Ten-Year Rolling Aggregate Limitation, was accomplished by the Cities' modelers using a three-dimensional groundwater flow model developed by Balleau Groundwater, Inc. ("BGW") for GMD5.

77. A detailed report describing the construction and calibration of the GMD5 model can be found in the BGW report titled *Hydrologic Model of Big Bend Groundwater Management District No. 5*, dated June 2010 (the "BGW Report").

78. The Cities' modelers, Burns & McDonnell, acquired the BGW Report and model files from DWR through a Kansas Open Records Act ("KORA") request. The results of the Burns & McDonnell modeling are discussed in their modeling report dated February 13, 2018, which report was submitted to the Chief Engineer that day. On or about February 16, 2018, the Burns & McDonnell modeling report was posted on KDA-DWR's website and the related groundwater modeling files were made available to interested parties.

79. As shown in the GMD5 Model Grid below, the GMD Model area encompasses the entire Groundwater Management District, a substantial area up-gradient of the District, and additional area down-gradient from the District.

GMD5 Model Grid



80. The GMD5 model utilizes USGS' MODFLOW™2000 three-dimensional groundwater-flow modeling code. It includes the recharge, streamflow, pumping, and other pertinent data for the 68-year period from December 1939 through December 2007.

81. Burns & McDonnell imported the model construction, hydrogeological parameters, and well-pumping data contained in the GMD5 root MODFLOW files into Groundwater Vistas Version 6.0 ("GWV"), pre- and post-processing software, to run the

GMD5 model. GWV provides a graphical user interface to streamline data entry and processing of model results.

82. Burns & McDonnell completed an initial run to verify that the GMD5 model was correctly imported and set up in GWV. Burns & McDonnell did not make any changes to the data or hydrogeological parameters of the GMD5 model during the verification process.

83. Verification was accomplished by direct comparison of the mass-balance results, drawdown values, and water-level contours to the values from the BGW Report and the model output files obtained from DWR.

84. The water-level, drawdown, and mass-balance results calculated during the evaluation run correlated very well with the values reported for the base case in the BGW Report and output files.

85. To evaluate the long-term yield from the water resources on the R9 Ranch, the internal Hydrostratigraphic Units (“HSU”) package in GWV was utilized for the computation of sub-regional water balances instead of the USGS ZONEBUDGET package.

86. These two packages perform the same function and provide equivalent results, essentially calculating the mass budget for a sub-region of the model.

87. The model was utilized to estimate the amount of water that flows into and out of the R9 Ranch HSU. Properties evaluated include recharge,

evapotranspiration, well pumping, lateral groundwater flow into and out of the HSU from the surrounding aquifer, streamflow, and groundwater storage.

88. The model simulates a period of time from December 1939 through December 2007. As Balleau points out in the BGW Report, DWR has metered records of the volumes pumped from individual wells after 1990. Since those metered quantities for 1991 to 2007 provide the highest quality data, Burns & McDonnell utilized this time period to complete the initial evaluation of the aquifer.

b. The Modeled Scenarios

89. Burns & McDonnell completed multiple model runs using an iterative process to determine a maximum average quantity of water that could be diverted without adverse effects on the aquifer. The pumped quantities from the proposed municipal wells were increased and decreased in successive model runs and the effects of the changes on the model output parameters and water levels were evaluated. In consultation with DWR, it was determined that the aquifer could sustain an average of 4,800 acre-feet per year with reasonable changes in water levels.

90. *“Short-Term Baseline Irrigation Scenario”*: Burns & McDonnell first developed a “baseline” 1991–2007 scenario within GWV (the *“Short-Term Baseline Irrigation Scenario”*), which included all of the existing irrigation and irrigation return wells on the R9 Ranch as in the GMD5 model. (Irrigation return wells were utilized in the GMD5 model development to simulate the volume of water that infiltrates back into

the aquifer during irrigation operations. See the BGW Report for further description and explanation of how the return flows were calculated.)

91. *“Short-Term Maximum Average Scenario”*: A second 1991–2007 scenario was developed in which those irrigation and irrigation return wells were then removed from the model and replaced with the proposed municipal wells (the *“Short-Term Maximum Average Scenario”*). Pumping in the portion of the R9 Ranch HSU outside the R9 Ranch remained unchanged. The municipal wells were pumped at 4,800 acre-feet of water on a 24-hour per day, 365.25-day per year basis for the 17-year period. According to the model, at the end of the 17-year period, pumping 4,800 acre-feet of water per calendar year resulted in approximately 0.5 feet of additional drawdown at the R9 Ranch boundary.

92. To simulate the effects of long-term municipal pumping, Burns & McDonnell used the data from the model runs for 1991–2007 to simulate a 51-year period.

93. The hydrologic data for the 17-year period from 1991 to 2007 was used for years 1 through 17, repeating the same data to simulate years 18 through 34, and repeating the data again for years 35 through 51.

94. All but two of the hydrogeologic parameters in the 51-year model remained unchanged.

a. The Arkansas River gauge at the Dodge City and the former Kinsley gauge reflect a significant decrease in flow after 2006. To recognize diminished flows in the Arkansas River, Burns & McDonnell set the upstream flow contribution in the Arkansas River to zero after year 16 in the 51-year model.

b. In the GMD5 model, the elevation of the Arkansas River declined linearly each year to account for erosion of the bottom of the channel. Since flow in the stream channel was removed, continued down-cutting of the riverbed elevation would not take place.

95. *“Long-Term Baseline Irrigation Scenario”*: As with the 17-year model, after setting up the 51-year model, Burns & McDonnell ran the model with the irrigation and irrigation return wells on the R9 Ranch to arrive at the *“Long-Term Baseline Irrigation Scenario”*.

96. *“Long-Term Maximum Average Scenario”*: To demonstrate the long-term effects of withdrawing the maximum Ten-Year Rolling Aggregate Limitation available from the R9 Ranch under this Master Order, an additional 51-year scenario was developed by removing the irrigation and irrigation return wells on the R9 Ranch and inserting the proposed municipal wells (the *“Long-Term Maximum Average Scenario”*). Pumping in the portion of the R9 Ranch HSU outside the R9 Ranch remained unchanged. The model was then run pumping at 4,800 acre-feet of water, 24 hours per day on a 365.25-day per year basis for the 51-year period resulting in approximately 1.0

feet of additional drawdown at the R9 Ranch boundary after 51 years of pumping versus the *Long-Term Baseline Irrigation Scenario*.

97. “*Long-Term Projected Operations Scenario*”: To demonstrate the long-term effects of the Cities’ projected actual withdrawal of water from the R9 Ranch, an additional 51-year scenario was developed by assigning municipal wells pumping rates equal to the projected operation of the R9 Ranch as a municipal water supply (the “*Long-Term Projected Operations Scenario*”). The wells were installed in phases and pumping was cycled among the wells operating at the actual projected rates. Production was stepped up over time based on the projected increase in municipal demand. Pumping was also increased in June, July, and August of each year to reflect increased demand during the hot summer months.

98. The *Long-Term Projected Operations Scenario* produced higher water levels over most of the R9 Ranch and the surrounding area than the *Long-Term Baseline Irrigation Scenario*. When compared to the *Long-Term Baseline Irrigation Scenario*, there was a water level rise of approximately 1.0 feet at the R9 Ranch boundary to the north and east after 51 years of pumping.

99. “*Long-Term Projected Operations with 2% Drought Scenario*”: At DWR’s request, a 2% drought scenario (the “*Long-Term Projected Operations with 2% Drought Scenario*”) was inserted in the 51-year model. Data for the 1952 to 1957 historical period was extracted from the GMD5 model and inserted as years 35 through 39 in the 51-year

simulation. This placed the drought two-thirds of the way through the 51-year model and after water demand has increased.

100. Burns & McDonnell ran the model using the assigned pumping rates equal to the projected operation of the R9 Ranch as a municipal water supply described above for the previous model run but with substantially increased pumping during the drought. After the drought, the pumping returned to the previous pattern.

101. The *Long-Term Projected Operations with 2% Drought Scenario* maximized the quantity pumped from the R9 Ranch during the drought without exceeding the Ten-Year Rolling Aggregate Limitation.

102. “*Long-Term Baseline Irrigation with 2% Drought Scenario*”: To evaluate the long-term effects of municipal pumping on the R9 Ranch in the event of a 2% drought, Burns & McDonnell developed an additional long-term baseline irrigation scenario adjusted for the recharge parameters related to the drought sequence (the “*Long-Term Baseline Irrigation with 2% Drought Scenario*”).

103. The *Long-Term Projected Operations 2% Drought Scenario* resulted in higher water levels over most of the R9 Ranch and the surrounding area versus the *Long-Term Baseline Irrigation with 2% Drought Scenario*. When the *Long-Term Projected Operations with 2% Drought Scenario* was compared to the *Long-Term Baseline Irrigation with 2% Drought Scenario*, there was a water level rise of approximately 0.5 feet at the R9 Ranch boundary to the north and east after 51 years of pumping.

104. Based on the model results and as found above in Subsection IV.A., the Chief Engineer finds that the Ten-Year Rolling Aggregate Limitation is a reasonable maximum quantity for the long-term yield from the R9 Water Rights. If this quantity is applied on a rolling-aggregate basis, then based on the model results, the overall mass-balance of water extracted versus water entering the area demonstrates that the effects on the area of pumping from the R9 Water Rights will not be unreasonable.

C. Reasonable-Need Limitations

105. The Project will provide a long-term supply of water to the Cities and to other communities in the region; the Project is expected to have a design life of at least 50 years and to be productive even longer.

106. The Kansas Water Appropriation Act limits appropriation rights to the reasonable needs of appropriators. K.S.A. 82a-707(e). An applicable DWR regulation requires that the approval for a change in the use made of water shall be subject to a Limitation to that quantity that is reasonable for the proposed new use. *See* K.A.R. 5-5-9(a)(6) (1994 version).

107. Accordingly, in making the contingent approvals provided herein, the Chief Engineer must impose a Limitation on each City's use of water from all municipal water rights for which the City is the place of use, to an amount that represents the total reasonable municipal needs of that City. This means that a City's municipal use of water from the total authorized quantity for the R9 Water Rights as determined and

found above by the Chief Engineer in Section III., when such use is combined with that City's use of water from all other municipal water rights for which the City is the place of use, must be an amount that is reasonable for municipal use by that City (the respective "Reasonable-Need Limitations").

108. DWR's traditional method of determining the reasonable needs of municipal users, based on a 20 to 40 year timeframe, is appropriate for most growing municipal users, principally because most users are close to sufficient alternative sources to address their short-, medium-, and long-term needs.

109. Unlike most other Kansas cities, the Cities must look far afield to find reliable water sources.

110. The Cities state that they have considered numerous alternative sources, including Wilson Reservoir and the Smoky Hill River in eastern Russell County. The Cities assert that extensive hydrology and engineering studies have shown that these alternatives are unworkable or too expensive.

111. The Cities further assert that financing for the Project is likely to require amortization over the entire design life of the infrastructure, and that as a practical matter, the Cities cannot afford to build a pipeline from Edwards County if they must seek change-application approval, in stages, for increasing quantities of water for municipal use only as those quantities prove to be needed by the Cities. The Cities further assert that they cannot risk the multiple transfer proceedings that would be

required for such incremental change-application approvals. The Cities believe that it is unlikely that they can obtain long-term financing for the Project if the full sustainable reasonable quantity of water for municipal use that is available from the R9 Ranch is not approved with an objective method for reasonable increases as municipal water needs increase.

112. Based on the above assertions and concerns of the Cities, which the Chief Engineer finds are reasonable, and having determined that no waivers of applicable regulations are required, the Chief Engineer finds that DWR's traditional method to determine the "reasonable needs" of municipal users is not appropriate in this case. Thus a longer planning horizon is a practical necessity in this case and is consistent with the overall purposes of Kansas water law and its underlying policies, so long as the longer planning horizon does not permit the Cities to use water in excess of their reasonable municipal needs. *See* K.A.R. 5-5-9(a)(6) (1994 version).

113. For these reasons and others, the Cities have requested contingent approval of the Change Applications, with objective standards to establish the reasonable quantities for municipal use for each of the Cities into the future, based on actual and projected population changes, the reasonable needs of additional users, and other measurable indices that allow approved quantities to increase as needs and demand change.

114. More specifically, for purposes of determining the reasonable quantities for municipal use for each of the Cities into the future, the Cities have requested the use of the method outlined below in Subsection XII.B.b. (titled “Method to Establish Reasonable-Need Limitations”) of this Master Order.

115. Because of the Chief Engineer’s findings in this Subsection IV.C. and because the Cities have purchased the R9 Water Rights (which are certified water rights) and seek to change them from irrigation to municipal use, the Chief Engineer finds that the Cities’ proposed method to determine the Reasonable-Need Limitations is acceptable for use in this particular situation and should be approved.

116. The Chief Engineer finds that, based on the method outlined below in Subsection XII.B.b., Hays’ Reasonable-Need Limitation should be 5,670.23 acre-feet of water per calendar year, for all of the R9 Water Rights combined with all other municipal water rights for which Hays is the place of use. The calculation for such initial estimate is shown on **Appendix E**.

117. Similarly, the Chief Engineer finds that, based on the method outlined below in Subsection XII.B.b., Russell’s Reasonable-Need Limitation should be 1,841.3 acre-feet of water per calendar year, for all of the R9 Water Rights combined with all other municipal water rights for which Russell is the place of use. The calculation for such initial estimate is shown on **Appendix F**.

V. Treatment Losses

118. The Cities have not determined whether treatment, if any, of the water from the R9 Ranch should take place before or after delivery of water to any users.

119. Current treatment technologies consume a portion of the raw water and generate non-potable wastewater but new treatment technologies are likely to develop over the life of the Project.

120. The reasonable quantity of water that may be diverted from the R9 Ranch for municipal use must include a reasonable quantity of water for Treatment Losses.

121. All water from the R9 Water Rights must be metered at the wellhead, as it leaves the pump station, and as it is delivered to any user. In addition, all Treatment Losses must be accurately quantified and reported.

VI. Change in Places of Use

122. The authorized places of use for the R9 Water Rights, as contingently changed by this Master Order from irrigation to municipal use, should be:

- a. the R9 Ranch;
- b. the City of Hays, Kansas, and its immediate vicinity as well as related areas in the Northeast Quarter (NE/4) of Section 19 and the Northwest Quarter (NW/4) of Section 36, Township 13 South, Range 18 West, Ellis County, Kansas; and
- c. the City of Russell, Kansas, and its immediate vicinity.

VII. Rates of Diversion

A. Rates of Diversion for Consolidated Municipal Wells

123. Each of the R9 Water Rights was perfected and certified by individual wells, as reflected in the relevant certificates of appropriation.

124. The Change Applications propose to consolidate quantities from multiple R9 Water Rights and multiple wells into 14 proposed consolidated municipal wells (consolidated municipal wells A through N) as reflected in Table 1 attached as **Appendix B**, because it is more effective and efficient to divert the consolidated quantities from fewer wells.

125. Because of the contingent nature of the Change Approvals, the actual design of the proposed municipal wells has not yet been undertaken by the Cities.

126. The Change Applications propose that the rates of diversion for each of the new consolidated municipal wells be the greatest rate of the following:

a. the rate required to divert the full annual quantity allowed for each new well during a 180-day period of continuous operation;

b. the highest perfected rate of the irrigation wells being combined into a new municipal well;

c. the estimated rate that the water resources on the R9 Ranch are likely to be capable of producing based on existing saturated thickness and transmissivity data and before any additional hydrologic testing; and

d. a minimum rate of 700 gpm.

127. Such requested rates of diversion for each of the new consolidated municipal wells, as determined above, are summarized below in Table 2:

Table 2		
Consolidated Municipal Well	Consolidated Quantity (acre-feet)	Consolidated Rate (gallons per minute)
A	752.0	945
B	593.0	885
C	365.8	1360
D	591.3	1500
E	414.0	1270
F	285.0	1040
G	368.0	1040
H	608.0	765
I	519.8	805
J	540.0	700
K	471.3	700
L	377.9	950
M	449.3	950
N	421.4	1040
	6,756.8	

128. The Chief Engineer finds that the quantities from multiple R9 Water Rights and multiple wells should be consolidated into 14 consolidated municipal wells (consolidated municipal wells A through N) as reflected in Table 1 attached as **Appendix B** and also in Table 3 attached as **Appendix D**.

129. The Chief Engineer finds that the consolidated rate for each of the 14 consolidated municipal wells (consolidated municipal wells A through N) is reasonable and should be the consolidated rates as reflected in Table 2 and Table 3.

B. Reductions of Rates of Diversion for R9 Water Rights

130. The Change Applications propose that each of the individual irrigation wells authorized by the R9 Water Rights be assigned to the new consolidated municipal well or wells, as set forth in Table 1 attached as **Appendix B**.

131. To result in a rate of diversion that is reasonable when each of the irrigation wells is assigned to one or more of the aforementioned consolidated wells, the individual rates of diversion for each of the R9 Water Rights either should be retained as the authorized rate of diversion set forth in the certificate of appropriation for such water right, or should be reduced to the rate or rates of diversion for the consolidated municipal well or wells as set out above in Table 2, whichever is less. The outcome of this comparison is shown in Table 3 attached as **Appendix D**.

132. Accordingly, the Chief Engineer finds that the individual rates of diversion for each of the R9 Water Rights either should be retained as the authorized rate of diversion set forth in the certificate of appropriation for such water right, or should be reduced to the rate or rates of diversion for the consolidated municipal well or wells as set out above in Table 2, whichever is less. The Chief Engineer finds that the

outcome of this comparison is shown in Table 3, Column E, "Rate by Well and by Right (GPM)."

C. Limitations on Rates of Diversion for R9 Water Rights When Sharing a Common Consolidated Municipal Well

133. To result in a combined rate of diversion that is reasonable for each consolidated municipal well, the Chief Engineer finds that, when multiple R9 Water Rights are authorized herein to divert water from a common consolidated municipal well, Limitations should be imposed such that the rate of diversion under the junior priority R9 Water Right(s) is limited to the rate of diversion for the consolidated municipal well as listed in Table 2, when combined with senior priority R9 Water Right(s). The Chief Engineer finds that such Limitations are shown in Table 3, Column G, "Rate Limitation by Well and by Right," attached as **Appendix D**.

134. The Cities are concerned that for one or more of the consolidated wells, they might not be able to find a suitable location for a single well within the area designated on the maps attached to the Change Applications. In addition, the Cities are concerned that more than one well may be needed or desired in the future, for example, when an original municipal well is replaced or to supplement a municipal well.

135. The Chief Engineer finds that the Cities' aforementioned concerns are reasonable. Accordingly, to (a) allow the Cities to file future applications requesting a change in the point of diversion for one or more of the 14 consolidated municipal wells

A–N; (b) allow the Cities to divert each of the annual quantities of water set out in Table 2 above from more than one consolidated municipal well; and (c) otherwise provide the Cities with operational flexibility to operate the consolidated wells singly or in combination; the Chief Engineer finds that a future approval of an application to change the point of diversion of an R9 Water Right should either remove or modify, as needed, the reasonable rate Limitation discussed above and as shown in Table 3, Column G, “Rate Limitation by Well and by Right (GPM),” depending on the new reasonable rate for the new consolidated municipal well(s). Provided, however, that an R9 Water Right’s rate of diversion that has been reduced as shown in Table 3, Column E, “Rate by Well and by Right (GPM),” should not be restored to the rate of diversion as set forth in the certificate of appropriation for such R9 Water Right (i.e., Table 3, Column B, “Authorized (Certified) Rate per Irrigation Well”).

VIII. Change in Points of Diversion

A. Municipal wells

136. The Cities have selected 14 preliminary well sites designated as municipal wells A–N. *See* Table 2, *supra*. Specific well locations are more particularly described in the Change Applications and the Change Approvals. All of the previously approved irrigation wells are consolidated into one or more of the new municipal wells as shown on the map attached as **Exhibit 33** and in Table 1 attached as **Appendix B**.

137. The Cities have reviewed the existing data to formulate a plan for the diversion and transportation of water from the R9 Ranch to the Cities. Because the transfer proceedings have not yet been completed and because of the advisability of conducting hydrologic testing as part of the design process, the Cities have not selected precise well locations at this time.

138. The well-design process may reveal that optimum well locations are more than 300 feet from the preliminary well locations set out in the Change Approvals. For these and other reasons, the Cities have requested approval to place wells within 1,000 feet of the preliminary well locations.

139. The Chief Engineer finds that the Cities' request is reasonable so long as other applicable well-location requirements and restrictions are met:

a. None of the municipal wells may be moved more than 2,640 feet from the points of diversion authorized in the certificates of appropriation or approved changes, if any, that predate this Master Order. *See* K.A.R. 5-25-2a(a).

b. All of the municipal wells must be completed in the same local source of supply in which the currently authorized wells were authorized to be completed. *See* K.S.A. 82a-708(b)(3).

c. All municipal wells must be more than 1,320 feet from wells that carry an earlier priority except those wells owned by the Cities. *See* K.A.R. 5-25-2(a).

d. All municipal wells must be more than 660 feet from all existing domestic wells, except those domestic wells owned by the Cities. *Id.*

e. For all municipal wells that have an alluvium as their source of supply, any future changes to the point of diversion must not decrease the distance between the well and the centerline of the stream by more than 10 percent. *See* K.A.R. 5-5-13.

B. Proximity to Existing Irrigation Wells Outside the R9 Ranch

140. The Cities have proposed prohibiting the location of any new municipal well within one-half mile of any existing irrigation well outside of the boundaries of the R9 Ranch. The excluded areas are shown in gray on **Exhibit 33**. Specifically, no new or replacement municipal well may be located within 2,640 feet of the authorized location, as of the date the Change Applications were filed, of any well authorized by DWR File Nos. ED30; 19,522; 24,992; 29,123; 32,661; or 33,028.

C. Summary of Findings Regarding Points of Diversion

141. The Change Applications comply with K.A.R. 5-5-13.

142. The Change Applications take into account the considerations and findings described in Subsections VIII.A. and B. above, and include maps showing:

- a. the authorized irrigation well locations;
- b. a one-half mile radius buffer around each of the authorized irrigation well locations;

- c. the preliminary municipal well locations;
- d. a 1,000-foot buffer around the preliminary municipal well locations;

and

- e. the proposed areal restrictions around the preliminary municipal well locations where such wells are authorized to be drilled without filing an application to change the point of diversion (which areal restrictions are shown separately in purple and in cross-hatching on the maps attached to the Change Applications).

143. The Chief Engineer finds that the preliminary municipal well locations set out in the Change Applications, including the areal restrictions around the preliminary municipal well locations as shown on the maps attached to the Change Applications, meet the foregoing considerations and findings, are reasonable, and should be contingently approved.

IX. Local Source of Supply

144. The Chief Engineer finds that the local sources of supply for each of the points of diversion listed in the R9 Water Rights' certificates of appropriation or approved changes, if any, that predate this Master Order, should be and are retained.

145. The Chief Engineer finds that regarding future applications that seek to increase the number of points of diversion for municipal use for one or more of the R9 Water Rights, any of such new points of diversion will relate to the same local source of

supply as required by K.S.A. 82a-708b so long as they are within the local source of supply for the points of diversion in the appropriate certificate of appropriation for such R9 Water Right.

146. The Chief Engineer finds that a new or replacement municipal well approved pursuant to a future application that seeks to increase the number of points of diversion for municipal use for one or more of the R9 Water Rights will not result in an “additional well” under K.A.R. 5-5-16; provided that the number of wells does not exceed the total number of wells in the relevant certificate of appropriation for such R9 Water Right, and that the proposed well or wells relate to the same local source of supply as to which the original R9 Water Right relates.

147. The aforementioned findings are intended to and will allow the Cities to file applications that, if otherwise approvable, will change a point of diversion to allow any of the 14 consolidated municipal wells to be divided into more than one point of diversion.

ORDER

148. The Definitions, the General Applicable Law, and the Mixed Findings of Fact and Conclusions of Law are incorporated in this Order by reference.

149. After careful review of the Change Applications filed by the Cities in anticipation of a water transfer, careful consideration of the comments received from GMD5 and the public as discussed above in Subsection I.C., and pursuant to K.S.A. 82a-

708b, K.A.R. 5-5-9 (1994 version), K.A.R. 5-50-2(x), and K.A.R. 5-50-7, the Chief Engineer orders that the Change Applications are hereby contingently approved, as set forth in the various Change Approvals attached as **Exhibits 1-32**, for the reasons and on the terms and conditions set out therein and in this Master Order.

X. Beneficial Use

150. The requested change of the R9 Water Rights from irrigation to municipal use is reasonable and the change is contingently approved as provided herein.

151. All water from the Project purchased by industrial users and diverted through the common distribution system will be deemed municipal use.

XI. Quantities for Municipal Use

152. The Chief Engineer approves the Change Applications and thus approves a total of 6,756.8 acre-feet of water for municipal use per calendar year for the combined R9 Water Rights, in the individual yearly quantities set out in Table 1 attached as **Appendix B** and in the various Change Approvals attached as **Exhibits 1-32** and incorporated herein. As provided below and in the various Change Approvals, these authorized quantities are subject to the Ten-Year Rolling Aggregate Limitation and the Reasonable-Need Limitations.

XII. Limitations on Quantities for Municipal Use

A. Ten-Year Rolling Aggregate Limitation

153. The authorized quantities of water for municipal use approved in Section XI. above are subject to a Limitation on the combined R9 Water Rights based on certain factors considered in Subsections IV.A. and IV.B. above, including the model results that estimated the long-term yield from the R9 Water Rights.

154. Accordingly, the total quantity of water that may be diverted for municipal use from the combined R9 Water Rights may not exceed the Ten-Year Rolling Aggregate Limitation of 48,000 acre-feet of water during any, each, and every ten consecutive calendar years.

155. The Ten-Year Rolling Aggregate Limitation is imposed for the exclusive benefit of the public as a whole and not for the benefit of any other water right, person, or entity. Because the Ten-Year Rolling Aggregate Limitation is not for the benefit of any other water right, person, or entity, it does not confer any benefits or create any rights in any third party.

156. The Ten-Year Rolling Aggregate Limitation does not amount to a Limitation on the quantity of water that may be diverted for municipal use from additional sources that might be developed in the future via acquisition and conversion of other water rights, applications for new water appropriation rights, or some form of augmentation from sources outside the current boundaries of the R9 Ranch.

157. Pursuant to a City's request, the Chief Engineer may increase the quantity of water that can be diverted under the Ten-Year Rolling Aggregate Limitation or may

remove the Ten-Year Rolling Aggregate Limitation entirely, if such a request is in writing, with notice to both DWR and GMD5, and the City demonstrates to the Chief Engineer's reasonable satisfaction that:

a. In the case of a request to increase the quantity, the request (1) is based on a new estimate from a groundwater model, which estimate and model are supported by data and/or methods demonstrated to be comparable or superior to the methods used for the estimate in the model approved by the Chief Engineer in this Master Order; and (2) provides a new estimate of the yield that is larger than estimated in the model approved by the Chief Engineer in this Master Order.

b. In the case of a request to remove the Limitation entirely, the request shows either that (1) a substantial portion of the Arkansas-Pickerel Subbasin of the Upper Arkansas River Basin as designated in the National Hydrography Dataset (NHD), USGS 2012, Kansas Surface Water Register, KDHE 2013, HUC 8 boundaries, USDA/NRCS/USGS 2004, within Edwards, Ford, Hodgeman, Kiowa, or Gray Counties in Kansas, including the adjacent drainages of Coon and Cow Creeks, has become re-opened to new appropriations for other than temporary or term permits, and such reopened portion is upstream or, in the case of groundwater, is upgradient, from the R9 Ranch; or (2) some of the material restrictions in the Arkansas River IGUCA Order issued by the Chief Engineer on September 29, 1986, as amended on March 6, 1987, on August 10, 2011, and again

on October 14, 2013, have been substantially lifted or reduced and have not effectively been replaced with another conservation mechanism that is equal to or more restrictive than the terms of such IGUCA order.

158. Prior to deciding whether to approve any such requested increase or removal of the Ten-Year Rolling Aggregate Limitation, the Chief Engineer may hold a hearing or hearings on the specific question of whether the City clearly has demonstrated the above requirements to the Chief Engineer's reasonable satisfaction.

159. The Ten-Year Rolling Aggregate Limitation shall be removed if either:

a. all of the Arkansas-Pickerel Subbasin of the Upper Arkansas River Basin as designated in the National Hydrography Dataset (NHD), USGS 2012, Kansas Surface Water Register, KDHE 2013, HUC 8 boundaries, USDA/NRCS/USGS 2004, within Edwards, Ford, Hodgeman, Kiowa, or Gray Counties in Kansas, including the adjacent drainages of Coon and Cow Creeks, has become re-opened to new appropriations for other than temporary or term permits; or

b. all of the restrictions in the Arkansas River IGUCA Order issued by the Chief Engineer on September 29, 1986, as amended on March 6, 1987, on August 10, 2011, and again on October 14, 2013, have been lifted and have not effectively been replaced with another conservation mechanism that is equal to or more restrictive than the terms of such IGUCA order.

B. Reasonable-Need Limitations

a. Imposition of the Reasonable-Need Limitations

160. Pursuant to the method provided below in Subsection XII.B.b., the Reasonable-Need Limitation imposed on Hays is as follows: the maximum reasonable annual quantity of water for municipal use by Hays, for all of the R9 Water Rights when combined with all other municipal water rights for which Hays or its immediate vicinity, as well as related areas in the Northeast Quarter (NE/4) of Section 19 and the Northwest Quarter (NW/4) of Section 36, in Township 13 South, Range 18 West, Ellis County, Kansas, is the place of use, is 5,670.23 acre-feet of water; and

161. Pursuant to the method provided below in Subsection XII.B.b., the Reasonable-Need Limitation imposed on Russell is as follows: the maximum reasonable annual quantity of water for municipal use by Russell, for all of the R9 Water Rights when combined with all other municipal water rights for which Russell or its immediate vicinity is the place of use, is 1,841.3 acre-feet of water.

162. The particular calculations for the aforementioned Reasonable-Need Limitations are shown on **Appendices E and F**.

163. Upon a City's providing the Chief Engineer with written notice along with the appropriate supporting documentation referenced below in Subsection XII.B.b., the Reasonable-Need Limitation for that City will increase any time the method set out below in Subsection XII.B.b. results in a greater quantity for such City.

164. The quantities allocated to the Cities by the Reasonable-Need Limitations can be increased, not decreased.

165. Each City is responsible for compliance with its own applicable Reasonable-Need Limitation.

b. Method to Establish Reasonable-Need Limitations

166. The Reasonable-Need Limitation for each City will be based on an assumed growth rate of 2% per year for ten years. This ten-year period begins on January 1 following the submission of the appropriate supporting documentation to the Chief Engineer.

167. The Reasonable-Need Limitation for each City will be determined as follows:

a. The product of:

i. the 5-year average daily per capita municipal use by municipalities with populations that exceed 500 people in the appropriate Region (Region Five for Hays and Region Six for Russell) using the most recently published USGS data (or if such data is no longer published by USGS, its substantially equivalent data from DWR) available when the Cities submit the appropriate supporting documentation to the Chief Engineer.;

ii. 365.25 days;

- iii. $(1 + 0.02)^{10}$; and
 - iv. the actual or estimated U.S. Census population for the City,
as determined by the U.S. Census Bureau.
- b. Plus each of the following, to the extent not otherwise included in the 5-year average daily per capita municipal use referred to above in subparagraph a.i., and as supported with appropriate documentation to the Chief Engineer's reasonable satisfaction:
- i. Water sold by the City to industrial, stock, and bulk customers;
 - ii. Water sold by the City to other public water suppliers;
 - iii. Other metered water;
 - iv. Other unmetered water; and
 - v. Treatment Losses.

XIII. Summary of Quantities for Municipal Use, and Limitations Thereon

168. Given the approvals made and the Limitations imposed in this Master Order, the total quantity of water that may be diverted during any one calendar year from all of the R9 Water Rights combined shall be, effectively, the lowest of:

- a. 6,756.8 acre-feet of water to be diverted for municipal use;

- b. the amount for that year that complies with the Ten-Year Rolling Aggregate Limitation; and
- c. the combined Reasonable-Need Limitations as determined above in Subsection XII.B.

XIV. Places of Use

169. The authorized place of use for the R9 Water Rights, as contingently changed by this Master Order from irrigation to municipal use, includes the City of Hays, Kansas, and its immediate vicinity as well as related areas in the Northeast Quarter (NE/4) of Section 19 and the Northwest Quarter (NW/4) of Section 36, Township 13 South, Range 18 West, Ellis County, Kansas.

170. The authorized place of use for the R9 Water Rights, as contingently changed by this Master Order from irrigation to municipal use, includes the City of Russell, Kansas, and its immediate vicinity.

XV. Rates of Diversion

171. For the reasons discussed above in Section VIII., the quantities from multiple R9 Water Rights and multiple wells are consolidated into 14 consolidated municipal wells (consolidated municipal wells A through N) with approved consolidated rates as set out in Table 3 attached as **Appendix D**.

172. Limitations are imposed on the rates of diversion for some of the R9 Water Rights such that when wells from multiple R9 Water Rights are consolidated, the rate of

diversion under the junior priority R9 Water Right(s) is limited when combined with a senior priority R9 Water Right(s), as shown in Table 3, Column E, "Rate by Well and by Right (GPM)."

173. A future approval of an application to change the point of diversion of an R9 Water Right either will remove or modify, as needed, the reasonable rate Limitation discussed above and shown in Table 3, Column G, "Rate Limitation by Well and by Right (GPM)," depending on the new reasonable rate for the new consolidated municipal well(s). Provided, however, that an R9 Water Right's rate of diversion that has been reduced as shown in Table 3, Column E, "Rate by Well and by Right (GPM)," should not be restored to the rate of diversion as set forth in the certificate of appropriation for such R9 Water Right (i.e., Table 3, Column B, "Authorized (Certified) Rate per Irrigation Well").

XVI. Points of Diversion

174. As more fully discussed in Section VII. above, the 14 preliminary municipal well locations shown in **Exhibit 33**, in Table 1 attached as **Appendix B**, and in the Change Applications, including the areal restrictions (shown in purple and in cross-hatching) around the preliminary municipal well locations as shown on the maps attached to the Change Applications, are reasonable and are approved. The proposed municipal wells A–N are authorized to be drilled within those areas without filing an application to change the point of diversion.

175. The approved well locations comply with the following requirements:

a. None of the municipal wells may be moved more than 2,640 feet from the currently authorized points of diversion. *See* K.A.R. 5-25-2a(a).

b. All of the municipal wells must be completed in the same local source of supply in which the currently authorized wells were authorized to be completed, as provided below in Section XVII. *See* K.S.A. 82a-708(b)(3).

c. All municipal wells must be more than 1,320 feet from wells that carry an earlier priority except those wells owned by the Cities. *See* K.A.R. 5-25-2(a).

d. All municipal wells must be more than 660 feet from all existing domestic wells, except those domestic wells owned by the Cities. *Id.*

e. No new or replacement municipal well may be located within 2,640 feet of the authorized location, as of the date the Change Applications were filed, of any well authorized by DWR Files ED30; 19,522; 24,992; 29,123; 32,661; and 33,028. The excluded areas are shown in gray on **Exhibit 31**.

XVII. Local Source of Supply

176. The local sources of supply for each of the points of diversion listed in the R9 Water Rights' certificates of appropriation or approved changes, if any, that predate this Master Order, are retained so that any point of diversion approved in the future (pursuant to future applications that seek replacement wells, to increase the number of points of diversion for municipal use for one or more of the R9 Water Rights, or both)

will be deemed to relate to the same local source of supply, as required by K.S.A. 82a-708b, provided that such future approved point of diversion is within the same local source of supply as the point(s) of diversion in the appropriate R9 Water Right's certificate of appropriation or approved changes, if any, that predate this Master Order.

177. Any new or replacement municipal well approved pursuant to a future application that seeks to increase the number of points of diversion for municipal use for one or more of the R9 Water Rights will not constitute an "additional well" under K.A.R. 5-5-16; provided that the number of wells does not exceed the total number of wells in the relevant certificate of appropriation for such R9 Water Right.

XVIII. Reporting Requirements

178. In addition to providing normal annual water use reports under K.S.A. 82a-732 for each R9 Water right, the Cities also shall submit, no later than March 1 following the end of each calendar year:

a. an annual municipal water use report dedicated solely to water use from the R9 Ranch, on the form attached hereto as **Appendix G**, which form DWR may amend from time to time; and

b. an annual progress report regarding the R9 Water Rights that:

i. provides the annual and total diversion amounts for each authorized R9 Water Right point of diversion for the previous 10 years; provides the total diversion amount from all R9 Water Rights for the

previous 10 years; and otherwise demonstrates compliance with the Ten-Year Rolling Aggregate Limitation; and

ii. demonstrates compliance with the R9 Ranch Water Level Monitoring Plan, dated April 19, 2017, and attached as **Exhibit 34**, which plan may not be amended without prior written approval of the Chief Engineer.

179. Furthermore, each City shall submit, no later than March 1 following the end of each calendar year, unless extended in writing by the Chief Engineer, a report that demonstrates that City's own compliance with that City's Reasonable-Need Limitation.

180. Each City shall provide such other documentation that the Chief Engineer, with sufficient advance notice, may reasonably request of that City so that the Chief Engineer may determine that City's compliance with the conditions herein.

XIX. Effective Date and Expiration Date

181. The Cities filed the Change Applications in anticipation of a water transfer pursuant to K.S.A. 82a-1501, *et seq.*, and K.A.R. 5-50-1, *et seq.* Pursuant to K.A.R. 5-50-2(x) and K.A.R. 5-50-7, the terms and conditions of this Master Order (including its incorporated Change Approvals) remain contingent and conditioned upon, and will not become effective unless and until, both of the following occur:

a. the transfer panel issues a Transfer Order approving a transfer of water pursuant to the Kansas Water Transfer Act, K.S.A. 82a-1501, *et seq.*, and the Transfer Order becomes a final, non-appealable order under the KAPA and the KJRA; and

b. Hays enters into a written construction contract to drill one or more of the 14 proposed municipal wells (excluding test drilling) for the Project. Within five business days after the full execution of any such contract, Hays must provide DWR with a copy of the same.

182. If by December 31, 2029, or any authorized extension thereof granted by the Chief Engineer for good cause shown, either of the following has occurred, then as of the date of such occurrence, this Master Order (including its incorporated Change Approvals) shall expire and be null and void and of no further force or effect and the R9 Water Rights shall retain the characteristics set out in their respective certificates of appropriation and approved changes, if any, that predate this Master Order:

a. this Master Order has not become effective under the preceding paragraph; or

b. the Cities have abandoned the Project by providing the Chief Engineer with a duly authorized Resolution by the Hays City Commission and a duly authorized Resolution by the Russell City Council.

XX. Petition for Administrative Review

183. Any person who is aggrieved by this Master Order may file a petition for administrative review by the Secretary pursuant to K.S.A. 82a-708b, K.S.A. 2016 Supp. 82a-1901, and K.S.A. 77-527. K.S.A. 2016 Supp. 82a-1901 applies because the proceeding regarding this matter began before the 2017 amendments became effective.

184. A petition for administrative review by the Secretary must include a statement of its basis as provided in K.S.A. 77-527(c).

185. This Master Order and its incorporated Change Approvals will become final orders, without further notice, unless a petition for administrative review by the Secretary pursuant to K.S.A. 82a-708b, K.S.A. 2016 Supp. 82a-1901, and K.S.A. 77-527 is filed within 15 days after the date of service shown on the Certificate of Service.

186. Any request for administrative review by the Secretary must be in writing and submitted to the attention of:

Chief Legal Counsel,
Kansas Department of Agriculture,
1320 Research Park Drive,
Manhattan, Kansas 66502,
Fax: (785) 564-6777,

with copies to those shown in the Certificate of Service.

Dated at Topeka, Kansas, on this ____ day of _____, 2018.

David W. Barfield, P.E.
Chief Engineer
Division of Water Resources
Kansas Department of Agriculture

Daniel J. Buller
Foulston Siefkin LLP
9225 Indian Creek Parkway Suite 600
Overland Park, Kansas 66210
Phone: 913-253-2179
E-mail: dbuller@foulston.com

Stafford Field Office
Stockton Field Office
Big Bend Groundwater Management District No. 5

KDA Staff

**Appendix A:
Legal Description of the R9 Ranch**

(Note that the R9 Ranch is visually depicted on the map attached to the Master Order as Exhibit 33.)

PARCEL #1

Lots 5, 6 and 7, in Section 36, Township 25 South, Range 20 West of the Sixth Principal Meridian, Edwards County, Kansas, and lying east of the Arkansas River.

PARCEL #2

All of Section 15, Township 26 South, Range 20 West of the Sixth Principal Meridian, Edwards County, Kansas.

PARCEL #3

The Northwest Quarter of Section 14, Township 26 South, Range 20 West of the Sixth Principal Meridian, Edwards County, Kansas.

PARCEL #4

All of Section 11, Township 26 South, Range 20 West of the sixth Principal Meridian, Edwards County, Kansas.

PARCEL #5

Lots 4, 5, 6, and 7 and the Southeast Quarter of the Southwest Quarter and the Southeast Quarter of Section 10, Township 26 South, Range 20 West of the Sixth Principal Meridian, Edwards County, Kansas.

PARCEL #6

Lots 7, 8, 9, and 10 and the East Half of the Southeast Quarter, and the Southwest Quarter of the Southeast Quarter of Section 2, EXCEPT 20 ACRES, more or less, in Section 2 described as follows:

Commencing at the Southeast corner of Section 2, Township 26 South, Range 20 West of the Sixth Principal Meridian, Edwards County, Kansas; thence North 1,914.77 feet;

thence West at right angles 2,539.63 feet; thence Northwesterly on an angle of 59 degrees 48'45" a distance of 63.6 feet for a place of beginning; thence in a Northeasterly direction at an angle of 65 degrees a distance of 2,314.63 feet; thence Westerly to the bank of the Arkansas River; thence Southwesterly along the bank of the Arkansas River to the place of beginning.

PARCEL #7

All of Section 1, Township 26 South, Range 20 West of the Sixth Principal Meridian, Edwards County, Kansas.

PARCEL #8

All of Section 32, Township 25 South, Range 19 West of the Sixth Principal Meridian, Edwards County, Kansas.

PARCEL #9

All of Section 31, Township 25 South, Range 19 West of the Sixth Principal Meridian, Edwards County, Kansas; except a 40-acre tract described as: Southwest Quarter of the Southeast Quarter (SW/4 SE/4) of Section 31, Township 25 South, Range 19 West.

PARCEL #10

That part of the West Half of Section 30, Township 25 South, Range 19 West of the Sixth Principal Meridian, Edwards County, Kansas, lying East of the Arkansas River.

PARCEL #11

All of Section 29, Township 25 South, Range 19 West of the Sixth Principal Meridian, Edwards County, Kansas.

PARCEL #12

All of Section 5, Township 26 South, Range 19 West of the Sixth Principal Meridian, Edwards County, Kansas.

PARCEL #13

Lots 1 and 2 and the South half of the North Half and the Southwest Quarter of Section 4, Township 26 South, Range 19 West of the Sixth Principal Meridian, Edwards County, Kansas.

PARCEL #14

The Southwest Quarter and the Southwest Quarter of the Southeast Quarter or Section 33, Township 25 South, Range 19 West of the Sixth Principal Meridian, Edwards County, Kansas.

**Appendix B:
Table 1**

Table 1							
DWR File No.	Circle No.	Well Location	Section, Township & Range	Crop	Acre Feet Converted from Irrigation to Municipal Use by Water Right (authorized quantity after change)	Acre Feet Converted from Irrigation to Municipal Use By Well	New Well Location
21,729-D1	8	NC NW/4	Sec.29-T25S-R19W	Alfalfa		86.0	A
		NE/4 SW/4 NW/4	Sec.29-T25S-R19W			102.0	A
	9	NC NE/4	Sec.29-T25S-R19W	Alfalfa		188.0	A
21,729-D1 Totals					376.0		
21,729-D2	7	NC SW/4	Sec.29-T25S-R19W	Alfalfa		74.0	A
		NE/4 SW/4 SW/4	Sec.29-T25S-R19W			114.0	A
	10	NC SE/4	Sec.29-T25S-R19W	Alfalfa		188.0	A
21,729-D2 Totals					376.0		
21,730	1	NW/4 NE/4 SW/4	Sec.30-T25S-R19W	Alfalfa	176.0	176.0	G
21,731	2	SW/4 SE/4 SW/4	Sec.30-T25S-R19W	Alfalfa		80.0	G
		NW/4 NE/4 NW/4	Sec.31-T25S-R19W			192.0	
	3	NW/4 NE/4 SW/4	Sec.31-T25S-R19W	Alfalfa		177.0	H
		NC W side NE/4 SW/4	Sec.31-T25S-R19W			126.0	
	4	SW/4 NW/4 SW/4	Sec.32-T25S-R19W	Alfalfa		87.0	H
		SE/4 NE/4 SE/4	Sec.31-T25S-R19W			56.0	

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Table 1							
DWR File No.	Circle No.	Well Location	Section, Township & Range	Crop	Acre Feet Converted from Irrigation to Municipal Use by Water Right (authorized quantity after change)	Acre Feet Converted from Irrigation to Municipal Use By Well	New Well Location
	5	NC NE/4	Sec.31-T25S-R19W	Alfalfa		162.0	H
21,731 Totals					800.0		
21,732-D1	6	NC NW/4	Sec.32-T25S-R19W	Alfalfa		188.0	B
	11	NC NE/4	Sec.32-T25S-R19W	Alfalfa		165.0	B
21,732-D1 Totals					353.0		
21,732-D2	12	NC S/2	Sec.32-T25S-R19W	Alfalfa	240.0	240.0	B
21,733	13	SW/4 NW/4 SW/4	Sec.33-T25S-R19W	Alfalfa	189.0	189.0	C
21,734	14	Lot 3	Sec.5-T26S-R19W	Alfalfa		290.9	D
	15	NW/4 NE/4 SW/4	Sec.5-T26S-R19W	Corn		170.2	D
	16	NE/4 SW/4 SE/4	Sec.5-T26S-R19W	Corn		121.0	E
	17	Lot 2	Sec.5-T26S-R19W	Corn		130.2	D
	18	Lot 1	Sec.5-T26S-R19W	Alfalfa		176.8	C
21,734 Totals					889.1		
21,841	8A	NC Lots 1 & 2	Sec.4-T26S-R19W	Alfalfa	195.0	195.0	F
21,842	11A	NC SW/4	Sec.4-T26S-R19W	Alfalfa	195.0	195.0	E
22,325	19	Lot 1	Sec.1-T26S-R20W	Alfalfa	186.0	186.0	I
		Lot 2	Sec.1-T26S-R20W				

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Table 1							
DWR File No.	Circle No.	Well Location	Section, Township & Range	Crop	Acre Feet Converted from Irrigation to Municipal Use by Water Right (authorized quantity after change)	Acre Feet Converted from Irrigation to Municipal Use By Well	New Well Location
22,326	20	Lot 3 (Well A)	Sec.1-T26S-R20W	Corn	188	188	I
		Lot 3 (Well B)	Sec.1-T26S-R20W				
22,327	21	NC NE/4	Sec.1-T26S-R20W	Corn	145.8	145.8	I
		Lot 2	Sec.1-T26S-R20W				
22,329	24	NC SW/4	Sec.1-T26S-R20W	Corn	75.0	75.0	J
22,330	25	NC SE/4	Sec.1-T26S-R20W	Corn	75.0	75.0	J
22,331	22	NC SW/4 NW/4	Sec.1-T26S-R20W	Alfalfa	180.0	180.0	J
		Lot 9	Sec.2-T26S-R20W				
22,332	23	NC SE/4	Sec.2-T26S-R20W	Corn	135.0	135.0	J
		NC E/2 SE/4	Sec.2-T26S-R20W				
22,333	39	SE/4 SE/4 SW/4	Sec.2-T26S-R20W	Alfalfa	50.0	50.0	K
22,334	27	NC NE/4	Sec.11-T26S-R20W	Corn	136.1	136.1	K
		NC N/2 NE/4	Sec.11-T26S-R20W				
22,335	26	NC NW/4	Sec. 11-T26S-R20W	Corn	142.6	142.6	K
		NC E/2 NW/4	Sec. 11-T26S-R19W				
22,338	28	Lot 7	Sec.10-T26S-R20W	Corn	116.6	116.6	L
		Lot 7	Sec.10-T26S-R20W				

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Table 1							
DWR File No.	Circle No.	Well Location	Section, Township & Range	Crop	Acre Feet Converted from Irrigation to Municipal Use by Water Right (authorized quantity after change)	Acre Feet Converted from Irrigation to Municipal Use By Well	New Well Location
22,339	29	Lot 5	Sec.10-T26S-R20W	Corn	118.8	118.8	L
22,340	31	NW/4 SE/4 SE/4	Sec.10-T26S-R20W	Corn	116.6	116.6	M
22,341	30	NW/4 NE/4 NW/4	Sec. 15-T26S-R20W	Alfalfa	188.0	188.0	M
22,342	36	NW/4 SW/4 NW/4	Sec. 14-T26S-R20W	Corn	75.0	75.0	M
22,343	35	NE/4 SW/4 NE/4	Sec. 15-T26S-R20W	Corn	122.0	122.0	N
22,345	38	NC SE/4	Sec. 15-T26S-R20W	Alfalfa	159.0	159.0	N
22,346	37	SW/4 NE/4 SW/4	Sec. 15-T26S-R20W	Corn	140.4	140.4	N
27,760	32	NC SW/4	Sec. 11-T26S-R20W	Corn		142.5	L
	33	NC SE/4	Sec. 11-T26S-R20W	Corn		142.6	K
		NE/4 SW/4 SE/4	Sec. 11-T26S-R20W				
27,760 Totals					285.1		
29,816	9A	NC N/2 S/2 NE/4	Sec. 4-T26S-R19W	Alfalfa		90.0	F
	10A	NC S/2 NW/4	Sec. 4-T26S-R19W	Alfalfa		98.0	E
29,816 Totals					188.0		
30,083	36	NC E/2 W/2 NW/4	Sec. 14-T26S-R20W	Corn	69.7	69.7	M
30,084	24 & 25	NC S/2	Sec.1-T26S-R20W		75.0	75.0	J
DWR File No. Total					6,756.8		

**Appendix C:
K.A.R. 5-5-9 (1994 version)**

K.A.R. 5-5-9. Criteria for the approval of an application for a change in the use made of water from irrigation to any other type of beneficial use of water.

(a) The approval of a change in the use made of water from irrigation to any other type of beneficial use shall not be approved if it will cause the net consumptive use from the local source of water supply to be greater than the net consumptive use from the same local source of water supply by the original irrigation use based on the following criteria:

(1) The maximum annual quantity of water to be allowed by the change approval shall be the net irrigation requirement (NIR) for the 50% chance rainfall for the county of origin, as set forth in K.A.R. 5-5-12, multiplied by the maximum acreage legally irrigated under the authority of the water right in any one calendar year during the perfection period. For vested rights, the acreage used shall be the maximum acreage irrigated prior to June 28, 1945; or

(2) if the applicant establishes to the satisfaction of the chief engineer the need for more flexibility in the authorized annual quantity, the application may be approved subject to the following limits.

(A) The maximum annual quantity of water to be allowed by the change approval shall be the NIR for the 80% chance rainfall for the county of origin, as set forth in K.A.R. 5-5-12, multiplied by the maximum acreage legally irrigated in any one calendar year during the perfection period. For vested rights the acreage used shall be the maximum acreage irrigated prior to June 28, 1945.

(B) The new type of beneficial use shall be further limited by a five year fixed allocation of water in which the NIR for a 50% chance rainfall for the county of origin, as set forth in K.A.R. 5-5-12, is multiplied by five times the maximum acreage lawfully irrigated in any one calendar year during the perfection period. For vested rights, the acreage used shall be the maximum acreage irrigated prior to June 28, 1945.

(C) An application for a term permit which will circumvent the five year allocation of water limit shall not be approved by the chief engineer.

(3) In determining whether the net consumptive use of water will be increased by the proposed change in the use made of water, the applicant shall be given credit by the chief engineer for any return flows from the proposed type of beneficial use which will return to the same local source of supply as the return flows from the originally

authorized type of beneficial use as substantiated by the applicant to the satisfaction of the chief engineer by an engineering report or similar type of hydrologic analysis.

(4) The authorized quantity to be changed to the new type of beneficial use shall never exceed the maximum annual quantity authorized by the water right.

(5) If a water right which overlaps the authorized place of use of one or more other water rights, either in whole or in part, is being changed to a different type of beneficial use, the total net consumptive use of all water rights after the change is approved shall not exceed the total net consumptive use of all of the rights before the change is approved.

(6) The approval for a change in the use made of water shall also be limited by that quantity reasonable for the use proposed by the change in the use made of water.

(b) Upon request of the applicant, the historic net consumptive use actually made during the perfection period, or prior to June 28, 1945 in the case of vested rights, under the water right proposed to be changed shall be considered by the chief engineer, but the burden shall be on the owner to document that historic net consumptive use with an engineering study, or an equivalent documentation and analysis, and demonstrate to the satisfaction of the chief engineer that the analysis submitted by the applicant is a more accurate estimate of the historic net consumptive use than the net consumptive use calculated using the methodology set forth in paragraph (a)(1).

(c) If the methods set forth in subsection (a) produce an authorized annual quantity of water which appears to be unrealistic and could result in impairment of other water rights, the chief engineer shall make a site-specific net consumptive use analysis to determine the quantity of water which was actually beneficially consumed under the water right. The quantity approved shall be limited to the quantity determined to be reasonable by the chief engineer's analysis. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 1993 Supp. 82a-708b; effective Nov. 28, 1994.)

**Appendix D:
Table 3**

A	B	C	D	E	F	G	H	I
FILE NO.	AUTHORIZED (CERTIFIED) RATE PER IRRIGATION WELL (GPM)	MUNICIPAL WELL (TABLE 2)	MUNICIPAL WELL RATE (TABLE 2) (GPM)	RATE BY WELL AND BY RIGHT (GPM)	NET RATE REDUCTION BY RIGHT (GPM)	RATE LIMITATION BY WELL AND BY RIGHT (GPM)	POTENTIAL FUTURE CHANGES BY WELL	POTENTIAL FUTURE CHANGES BY RIGHT
21,729 D1	615	A	945	945		NONE	UP TO 3 WELLS WITH A TOTAL COMBINED RATE OF 945 GPM	UP TO 3 WELLS WITH A TOTAL COMBINED RATE OF 945 GPM
	325	A						
	275	A						
TOTAL RATE	1,215			945	-270			
21,729 D2	720	A	945	945		945	UP TO 3 WELLS WITH A TOTAL COMBINED RATE OF 945 GPM	UP TO 3 WELLS WITH A TOTAL COMBINED RATE OF 945 GPM
	360	A						
	635	A						
TOTAL RATE	LIMIT TO 1,685			945	-740			
21,730	795	G	1,040	795		NONE	1 WELL AT 795 GPM	1 WELL AT 795 GPM
TOTAL RATE	795			795	0			
21,731	380	H	765	765		NONE	UP TO 5 WELLS WITH A TOTAL COMBINED RATE OF 765 GPM	UP TO 7 WELLS WITH A TOTAL COMBINED RATE OF 1,805 GPM
	245	H						
	525	H						
	735	H						
	605	H						

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A	B	C	D	E	F	G	H	I
FILE NO.	AUTHORIZED (CERTIFIED) RATE PER IRRIGATION WELL (GPM)	MUNICIPAL WELL (TABLE 2)	MUNICIPAL WELL RATE (TABLE 2) (GPM)	RATE BY WELL AND BY RIGHT (GPM)	NET RATE REDUCTION BY RIGHT (GPM)	RATE LIMITATION BY WELL AND BY RIGHT (GPM)	POTENTIAL FUTURE CHANGES BY WELL	POTENTIAL FUTURE CHANGES BY RIGHT
TOTAL RATE	625	G	1,040	1,040		1,040	UP TO 2 WELLS WITH A TOTAL COMBINED RATE OF 1,040 GPM	
	450	G						
	3,565			1,805	-1,760			
21732 D1	780	B	885	885		NONE	UP TO 2 WELLS WITH A TOTAL COMBINED RATE OF 885 GPM	UP TO 2 WELLS WITH A TOTAL COMBINED RATE OF 885 GPM
	715	B						
TOTAL RATE	1,495			885	-610			
21,732 D2	885	B	885	885		885	1 WELL AT 885 GPM	1 WELL AT 885 GPM
TOTAL RATE	885			885	0			
21,733	915	C	1,360	915		NONE	1 WELL AT 915 GPM	1 WELL AT 915 GPM
TOTAL RATE	915			915	0			
21,734	1,035	E	1,270	1,035		NONE	1 WELL AT 1,035 GPM	UP TO 5 WELLS WITH A TOTAL COMBINED RATE OF 3,470 GPM
	1,500	D	1,500	1,500		NONE	UP TO 3 WELLS WITH A TOTAL COMBINED RATE OF 1,500 GPM	
	1,050	D						
	1,250	D						
	935	C	1,360	935		1,360	1 WELL AT 935 GPM	
TOTAL RATE	LIMIT TO 4,800			3,470	-1,330			

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A	B	C	D	E	F	G	H	I
FILE NO.	AUTHORIZED (CERTIFIED) RATE PER IRRIGATION WELL (GPM)	MUNICIPAL WELL (TABLE 2)	MUNICIPAL WELL RATE (TABLE 2) (GPM)	RATE BY WELL AND BY RIGHT (GPM)	NET RATE REDUCTION BY RIGHT (GPM)	RATE LIMITATION BY WELL AND BY RIGHT (GPM)	POTENTIAL FUTURE CHANGES BY WELL	POTENTIAL FUTURE CHANGES BY RIGHT
21,841	890	F	1,040	890		NONE	1 WELL AT 890 GPM	1 WELL AT 890 GPM
TOTAL RATE	890			890	0			
21,842	900	E	1,270	900		1,270	1 WELL AT 900 GPM	1 WELL AT 900 GPM
TOTAL RATE	900			900	0			
22,325	805	I	805	805		NONE	UP TO 2 WELLS WITH A TOTAL COMBINED RATE OF 805 GPM	UP TO 2 WELLS WITH A TOTAL COMBINED RATE OF 805 GPM
	530	I						
TOTAL RATE	LIMIT TO 1,000			805	-195			
22,326	690	I	805	805		805	UP TO 2 WELLS WITH A TOTAL COMBINED RATE OF 805 GPM	UP TO 2 WELLS WITH A TOTAL COMBINED RATE OF 805 GPM
	565	I						
TOTAL RATE	LIMIT TO 1,000			805	-195			
22,327	475	I	805	805		805	UP TO 2 WELLS WITH A TOTAL COMBINED RATE OF 805 GPM	UP TO 2 WELLS WITH A TOTAL COMBINED RATE OF 805 GPM
	490	I						
TOTAL RATE	LIMIT TO 950			805	-145			
22,329	570	J	700	570		NONE	1 WELL AT 570 GPM	1 WELL AT 570 GPM
TOTAL RATE	570			570	0			
22,330	620	J	700	620		700	1 WELL AT 620 GPM	1 WELL AT 620 GPM
TOTAL RATE	620			620	0			

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A	B	C	D	E	F	G	H	I
FILE NO.	AUTHORIZED (CERTIFIED) RATE PER IRRIGATION WELL (GPM)	MUNICIPAL WELL (TABLE 2)	MUNICIPAL WELL RATE (TABLE 2) (GPM)	RATE BY WELL AND BY RIGHT (GPM)	NET RATE REDUCTION BY RIGHT (GPM)	RATE LIMITATION BY WELL AND BY RIGHT (GPM)	POTENTIAL FUTURE CHANGES BY WELL	POTENTIAL FUTURE CHANGES BY RIGHT
22,331	640	J	700	700		700	UP TO 2 WELLS WITH AT COMBINED RATE OF 700 GPM	UP TO 2 WELLS WITH AT COMBINED RATE OF 700 GPM
	645	J						
TOTAL RATE	LIMIT TO 1,000			700	-300			
22,332	460	J	700	700		700	UP TO 2 WELLS WITH AT COMBINED RATE OF 700 GPM	UP TO 2 WELLS WITH AT COMBINED RATE OF 700 GPM
	655	J						
TOTAL RATE	LIMIT TO 980			700	-280			
22,333	520	K	700	520		NONE	1 WELL AT 520 GPM	1 WELL AT 520 GPM
TOTAL RATE	520			520	0			
22,334	639	K	700	700		700	UP TO 2 WELLS WITH A COMBINED RATE OF 700 GPM	UP TO 2 WELLS WITH A COMBINED RATE OF 700 GPM
	630	K						
TOTAL RATE	LIMIT TO 890			700	-190			
22,335	680	K	700	700		700	UP TO 2 WELLS WITH A COMBINED RATE OF 700 GPM	UP TO 2 WELLS WITH A COMBINED RATE OF 700 GPM
	555	K						
TOTAL RATE	LIMIT TO 1,000			700	-300			
22,338	950	L	950	950		NONE	UP TO 2 WELLS WITH A COMBINED RATE OF 950 GPM	UP TO 2 WELLS WITH A COMBINED RATE OF 950 GPM
	785	L						

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A	B	C	D	E	F	G	H	I
FILE NO.	AUTHORIZED (CERTIFIED) RATE PER IRRIGATION WELL (GPM)	MUNICIPAL WELL (TABLE 2)	MUNICIPAL WELL RATE (TABLE 2) (GPM)	RATE BY WELL AND BY RIGHT (GPM)	NET RATE REDUCTION BY RIGHT (GPM)	RATE LIMITATION BY WELL AND BY RIGHT (GPM)	POTENTIAL FUTURE CHANGES BY WELL	POTENTIAL FUTURE CHANGES BY RIGHT
TOTAL RATE	LIMIT TO 950			950	0			
22,339	680	L	950	680		950	1 WELL AT 680 GPM	1 WELL AT 680 GPM
TOTAL RATE	680			680	0			
22,340	950	M	950	950		NONE	1 WELL AT 950 GPM	1 WELL AT 950 GPM
TOTAL RATE	950			950	0			
22,341	920	M	950	920		950	1 WELL AT 920 GPM	1 WELL AT 920 GPM
TOTAL RATE	920			920	0			
22,342	630	M	950	630		950	1 WELL AT 630 GPM	1 WELL AT 630 GPM
TOTAL RATE	630			630	0			
22,343	810	N	1,040	810		NONE	1 WELL AT 810 GPM	1 WELL AT 810 GPM
TOTAL RATE	810			810	0			
22,345	820	N	1,040	820		1,040	1 WELL AT 820 GPM	1 WELL AT 820 GPM
TOTAL RATE	820			820	0			
22,346	600	N	1,040	600		1,040	1 WELL AT 600 GPM	1 WELL AT 600 GPM
TOTAL RATE	600			600	0			
27,760	670	K	700	670		700	1 WELL AT 670 GPM	UP TO 2 WELLS WITH A COMBINED RATE OF 1,470 GPM
	800	L	950	800		950	1 WELL AT 800 GPM	

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A	B	C	D	E	F	G	H	I
FILE NO.	AUTHORIZED (CERTIFIED) RATE PER IRRIGATION WELL (GPM)	MUNICIPAL WELL (TABLE 2)	MUNICIPAL WELL RATE (TABLE 2) (GPM)	RATE BY WELL AND BY RIGHT (GPM)	NET RATE REDUCTION BY RIGHT (GPM)	RATE LIMITATION BY WELL AND BY RIGHT (GPM)	POTENTIAL FUTURE CHANGES BY WELL	POTENTIAL FUTURE CHANGES BY RIGHT
TOTAL RATE	1,470			1,470	0			
29,816	750	F	1,040	750		1,040	1 WELL AT 750 GPM	UP TO 2 WELLS WITH A COMBINED RATE OF 1,550 GPM
	800	E	1,270	800		1,270	1 WELL AT 800 GPM	
TOTAL RATE	1,550			1,550	0			
30,083	1,000	M	950	455		950	1 WELL AT 455 GPM	1 WELL AT 455 GPM
TOTAL RATE	LIMIT TO 1,085, 455 add to 22,342			-545				
30,084	795	J	700	700		700	1 WELL AT 700 GPM	1 WELL AT 700 GPM
TOTAL RATE	795			700	-95			

**Appendix E:
Calculation of Hays' Reasonable-Need Limitation**

The following calculation illustrates the result of the formula in Master Order Subsection XII.B.b., "Method to Establish Reasonable-Need Limitation," as applied to Hays.

Region 5 Hays, Kansas	2012-2021 Reasonable Need	2022-2031 Reasonable Need	2032-2041 Reasonable Need
Hays' 2016 U.S. Census Bureau Estimated Population (Used for the initial Reasonable-Need Limitation calculation only.)	21,027		
2% growth multiplier for 4 years (1.02 ⁴) (Used for the initial Reasonable-Need Limitation calculation only.)	1.0824322		
2% growth multiplier for 10 years (1.02 ¹⁰)		1.2189944	1.2189944
Hays' Assumed Population (Based on 2% growth over 10 years.)		22,760	27,744
Hays' Estimated End-of-Decade Population (Starting point for the Reasonable-Need Limitation calculation and the starting point for the End-of-Decade population for the next decade.)	22,760 (Based on 2% growth over 4 years for the initial Reasonable-Need Limitation calculation only.)	27,744 (Based on 2% growth over 10 years.)	33,820 (Based on 2% growth over 10 years.)
Region 5 Average per capita water use in gallons, 2011-2015, for Cities with populations above 500	149.57	149.57	149.57
Days per year	365.25	365.25	365.25
Gallons	1,243,417,192.6	1,515,718,619.5	1,847,652,539.5
Gallons per Acre-Foot	325,851.4	325,851.4	325,851.4
Acre-Feet	3,815.9	4,651.6	5,670.2

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Water sold by the City to industrial, stock, and bulk customers	Quantities in these categories are only added to the extent not otherwise included in the 5-year average daily per capita municipal use. No additional quantities for Hays are included at this time.		
Water sold by the City to other public water suppliers			
Other metered water			
Other unmetered water			
Treatment losses			
Calculated Reasonable Need	3,815.90	4,651.56	5,670.23

Public Water Supplier	2010 Census	Region	2011 GPCD	2012 GPCD	2013 GPCD	2014 GPCD	2015 GPCD	AVG GPCD
Hays	20510	5	99	102	88	81	88	92
Larned	4054	5	225	218	179	171	167	192
Phillipsburg	2581	5	139	168	141	147	177	154
Ellis	2062	5	101	109	75	72	75	86
Plainville	1903	5	149	139	118	110	126	128
Kinsley	1457	5	126	127	123	125	117	124
La Crosse	1342	5	145	159	138	112	106	132
Stockton	1329	5	115	121	114	120	116	117
Victoria	1214	5	110	113	84	58	55	84
Coldwater	828	5	226	235	255	167	177	212
Greensburg	777	5	309	362	269	233	242	283
Haviland	701	5	174	189	134	136	127	152
Logan	589	5	174	197	144	115	144	155
Protection	514	5	196	192	176	164	187	183
Lewis	451	5	154	133	132	120	116	131
Otis	282	5	268	176	165	134	125	174
Palco	277	5	111	111	95	102	91	102
Agra	267	5	115	105	113	78	85	99
Bison	255	5	74	94	77	77	74	79
Mullinville	255	5	266	215	185	165	183	203
Burdett	247	5	178	223	137	134	109	156
Schoenchen	207		72	84	72	67	64	72
Offerle	199	5	183	161	119	96	101	132
McCracken	190	5	67	80	66	54	54	64
Kirwin	171	5	125	120	111	102	91	110
Rush Center	170	5	155	139	109	117	120	128

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Rozel	156	5	238	177	153	118	90	155
Woodston	136	5	92	129	64	85	8	76
Long Island	134	5	202	212	182	168	137	180
Prairie View	134	5	133	174	143	198	153	160
Damar	132	5	100	93	99	94	108	99
Liebenthal	103	5	78	79	72	79	75	77
Glade	96	5	69	77	71	95	79	78
Belpre	84	5	174	195	131	122	136	152
Timken	76	5	67	87	68	97	90	82
Alexander	65	5	99	123	89	86	100	99
Speed	37	5	109	118	91	103	62	97
Comanche Co. RWD #01		5	126	147	140	na	143	139
Comanche Co. RWD #02		5	800	702	809	741	705	751
Ellis Co. RWD #01C		5	na	na	na	106	121	114
Ellis Co. RWD #03		5	53	55	49	46	45	50
Ellis Co. RWD #06		5	150	167	161	110	132	144
Hays City Suburban Estates		5	162	183	103	103	123	135
Phillips Co. RWD #01		5	93	99	133	113	131	114
Rooks Co. RWD #01		5	75	74	76	93	91	82
Rooks Co. RWD #02		5	100	87	71	65	65	78
Rooks Co. RWD #03		5	175	146	156	215	77	154
Rush Co. RWD #01		5	276	283	168	192	223	228

**Appendix F:
Calculation of Russell’s Reasonable-Need Limitation**

The following calculation illustrates the result of the formula in Master Order Subsection XII.B.b., “Method to Establish Reasonable-Need Limitation,” as applied to Russell. As of the issuance of this Master Order, however, Russell’s existing water rights with sources in the Smoky Hill River Basin are subject to a Limitation such that the total water used cannot exceed 1,841.3 acre-feet per calendar year. Accordingly, the Master Order provides that Russell’s Reasonable-Need Limitation is 1,841.3 acre-feet of water per calendar year instead of the lower value shown in the table below and that otherwise would apply.

Region 6, Russell, KS	2012-2021 Reasonable Need	2022-2031 Reasonable Need	2032-2041 Reasonable Need
Russell’s 2016 Estimated Population (Used for the initial Reasonable-Need Limitation calculation only.)	4,506		
2% growth multiplier for 4 years (1.02 ⁴) (Used for the initial Reasonable-Need Limitation calculation only.)	1.0824322		
2% growth multiplier for 10 years (1.02 ¹⁰)		1.2189944	1.2189944
Russell’s Assumed Population (Based on 2% growth over 10 years.)		4,877	5,945
Russell’s Estimated End-of-Decade Population (Starting point for the Reasonable-Need Limitation calculation and the starting point for the End-of-Decade population for the next decade.)	4,877 (Based on 2% growth over 4 years for the initial Reasonable-Need Limitation calculation only.)	5,945 (Based on 2% growth over 10 years.)	7,247 (Based on 2% growth over 10 years.)
Region 6 Average per capita water use in gallons, 2011-2015, for Cities with populations above 500	137.25	137.25	137.25

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Days per year	365.25	365.25	365.25
Gallons	244,508,776	298,054,834	363,327,179
Gallons per Acre-Foot	325,851.4	325,851.4	325,851.4
Acre-Feet	750.4	914.7	1,115.0
Water sold by the City to industrial, stock, and bulk customers	700	700	700
Water sold by the City to other public water suppliers	Quantities in these categories are only added to the extent not otherwise included in the 5-year average daily per capita municipal use. Other than water sold to industrial, stock, and bulk customers listed above, no additional quantities for Russell are included at this time.		
Other metered water			
Other unmetered water			
Treatment losses			
Calculated Reasonable Need	1,450.37	1,614.70	1,815.01

Public Water Supplier	2010 Census	Region	2011 GPCD	2012 GPCD	2013 GPCD	2014 GPCD	2015 GPCD	AVG GPCD
Hutchinson	42,080	6ML	155	153	137	141	137	145
Great Bend	15,995	6ML	122	131	114	114	105	117
Pratt	6,835	6ML	210	224	186	219	228	213
Russell	4,506	6ML	146	149	101	135	137	134
Beloit	3,835	6ML	126	141	124	120	123	127
Lyons	3,739	6ML	253	231	183	159	165	198
Kingman	3,177	6ML	131	138	108	118	100	119
Ellsworth	3,120	6ML	117	128	107	119	125	119
Hoisington	2,706	6ML	113	103	100	89	86	98
South Hutchinson	2,457	6ML	173	165	142	140	152	154
Sterling	2,328	6ML	107	100	91	90	91	96
Anthony	2,269	6ML	139	143	142	121	111	131
Ellinwood	2,131	6ML	125	135	101	91	100	110
Medicine Lodge	2,009	6ML	180	159	152	135	244	174
Smith Center	1,665	6ML	168	181	156	167	134	161
Harper	1,473	6ML	165	147	140	137	121	142
Osborne	1,431	6ML	144	191	141	119	121	143
Buhler	1,327	6ML	143	157	121	122	121	133
Lincoln Center	1,297	6ML	114	113	96	101	94	104
St. John	1,295	6ML	166	150	132	137	115	140
Haven	1,237	6ML	140	124	95	100	102	112

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Nickerson	1,070	6ML	84	85	75	71	78	79
Stafford	1,042	6ML	151	155	100	106	107	124
Kiowa	1,026	6ML	157	114	182	162	127	148
Downs	900	6ML	149	181	137	132	131	146
Mankato	869	6ML	184	206	170	183	172	183
Wilson	781	6ML	109	112	94	96	101	102
Pretty Prairie	680	6ML	142	126	92	96	97	111
Clafin	645	6ML	158	168	128	114	136	141
Attica	626	6ML	272	249	199	257	253	246
Little River	557	6ML	149	118	95	105	130	119
Macksville	549	6ML	135	137	119	110	112	123
Kanopolis	492	6S	92	87	70	76	75	80
Norwich	491	6S	128	123	90	111	90	108
Chase	477	6S	146	133	100	110	106	119
Arlington	473	6S	122	99	75	83	85	93
Kensington	473	6ML	113	159	131	149	157	142
Cawker City	469	6S	142	152	128	129	134	137
Cunningham	454	6S	228	231	186	166	185	199
Holyrood	447	6S	160	170	106	115	118	134
Glen Elder	445	6S	128	139	124	119	112	124
Jewell	432	6S	63	69	60	63	61	63
Lucas	393	6S	87	96	90	92	70	87
Turon	387	6S	130	134	120	na	na	128
Natoma	335	6S	107	110	104	80	88	98
Gorham	334	6S	75	81	85	89	75	81
Bushton	279	6S	149	147	120	138	133	137
Sylvan Grove	279	6S	117	130	110	123	119	120
Geneseo	267	6S	122	132	108	95	85	108
Pawnee Rock	252	6S	102	91	110	72	62	87
Lebanon	218	6S	84	87	96	91	80	88
Sylvia	218	6S	124	131	115	96	114	116
Tipton	210	6S	110	123	104	111	107	111
Luray	194	6S	79	88	81	79	74	80
Dorrance	185	6S	82	126	62	58	44	74
Albert	175	6S	158	171	132	92	104	131
Burr Oak	174	6S	150	183	108	141	201	157
Hardtner	172	6S	275	255	139	174	177	204
Iuka	163	6S	82	75	68	66	75	73
Preston	158	6S	117	92	74	83	77	89
Sharon	158	6S	210	218	144	151	171	179

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Lorraine	138	6S	104	102	80	61	63	82
Sawyer	124	6S	191	158	137	137	126	150
Gaylord	114	6S	115	171	122	99	92	120
Olmitz	114	6S	151	134	100	92	107	117
Alton	103	6S	132	131	141	111	166	136
Portis	103	6S	99	115	92	82	98	97
Cullison	101	6S	214	185	156	221	151	185
Bunker Hill	95	6S	100	108	102	82	95	97
Formoso	93	6S	90	91	74	69	71	79
Hazelton	93	6S	128	159	151	178	181	159
Isabel	90	6S	160	132	101	83	77	111
Zenda	90	6S	196	178	152	133	104	153
Abbyville	87	6S	213	216	97	107	na	158
Simpson	86	6S	108	98	111	118	109	109
Coats	83	6S	175	135	167	163	215	171
Raymond	79	6S	162	146	98	113	101	124
Spivey	78	6S	138	135	131	108	118	126
Barnard	70	6S	60	106	95	57	39	71
Bluff City	65	6S	113	80	51	53	95	78
Randall	65	6S	102	98	130	102	104	107
Hunter	57	6S	na	na	na	na	na	na
Paradise	49	6S	92	78	88	92	94	89
Susank	34	6S	107	na	77	76	73	83
Waldo	30	6S	60	119	75	73	84	82
Barber Co. RWD #01		6S	193	184	157	159	152	169
Barber Co. RWD #02		6S	581	551	497	617	609	571
Barber Co. RWD #03		6S	95	85	67	109	107	93
Barton Co. RWD #01		6S						
Barton Co. RWD #02		6ML	60	59	36	37	45	47
Barton Hills WD		6S	145	42	41	45	47	64
Beverly		6S	94	92	74	74	95	86
Esbon		6S	141	137	120	148	114	132
Harper Co. RWD #04		6S	111	99	87	95	112	101
Harper Co. RWD #05		6S	na	na	na	na	na	na
Jewell Co. RWD #01		6S	273	149	168	121	348	212
Kingman Co. RWD #01		6S	66	58	64	61	61	62
Mitchell Co. RWD #02		6ML	193	245	250	323	183	239
Osborne Co. RWD #01A		6S	559	972	1408	2543	2769	1650
Osborne Co. RWD #02		6S	117	109	121	161	275	157
Reno Co. RWD #01		6S	185	140	72	74	77	110

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Reno Co. RWD #03		6S	161	181	79	63	121	121
Reno Co. RWD #04		6S	81	78	71	66	69	73
Reno Co. RWD #08		6S	153	148	145	126	118	138
Reno Co. WD #101		6S	119	118	103	109	101	110
Rice Co. RWD #01		6ML	133	124	114	109	104	117
Russell Co. RWD #01		6S	120	111	98	121	104	111
Russell Co. RWD #02		6S	182	207	164	142	185	176
Russell Co. RWD #03		6ML	153	125	91	na	112	120
Russell Co. RWD #04		6S	258	158	248	270	297	246
Smith Co. RWD #01		6S	162	204	271	268	240	229
West Hills Water Company		6S	397	639	na	387	401	456
Ellsworth Co. RWD #01 (Post Rock RWD)		6ML	174	175	170	171	93	157
Mitchell Co. RWD #03		6ML	na	na	na	na	na	na
Harper Co. RWD #01		6S	na	na	na	na	na	na
Harper Co. RWD #02		6S	na	na	na	200	178	189

Appendix G
R9 Ranch Water Use Report

Appendix G - R9 Ranch Water Use Report

MUNICIPAL WATER USE REPORT (PUBLIC WATER SUPPLY)

IMPORTANT: YOU MUST REPORT ANNUAL USAGE OR THE REASON FOR NON-USAGE, IN ORDER TO PROTECT YOUR RIGHT TO USE WATER

This is the annual Water Use Report **required** to retain all Vested or Appropriation Rights. Please begin by reading the instructions for Part A on the reverse side of this page. Also present are instructions for name and address changes, **which include information needed if you have disposed of your interest in any one or more of the water right file numbers listed below.** If you have any questions on how to complete this form, please contact the Water Use Coordinator at (785) 564-6638. Please make a copy of the entire Water Use Report for your records, and return the original report to:

Water Use Coordinator
Kansas Department of Agriculture
Division of Water Resources
1320 Research Park Drive
Manhattan, Kansas 66502

PART A: POINTS OF DIVERSION

Water Right File Number	Legal Descriptions Point(s) of Diversion	Water Meter Data			U N I T	Hours	Pump Rate (gpm)	Well Data			
		Beginning Water Meter Reading	Ending Water Meter Reading	Metered Quantity Of Water				Well Depth	Depth to Water	Date	

____ Check here if you are purchasing from or selling water to other public water suppliers and report amounts on **PART B**, Columns 2 and 3, and **PART E**.

Date: _____ Telephone: (____) _____

Email: _____

I submit this report as the best information available. I understand that knowingly falsifying the report is a violation of state law.

YEAR PIN PERSON ID FO CO GMD

Name (Printed or Typed)

Name (Signature)

____ Owner

____ Tenant

____ Agent

Appendix G - R9 Ranch Water Use Report

WATER USE REPORT MUNICIPAL USE (PUBLIC WATER SUPPLY)

NOTE: If you hold water rights for uses other than municipal, the appropriate Water Use Report(s) will be mailed under separate cover.

INSTRUCTIONS AND DEFINITIONS FOR PART A:

- Water Right File Number:** The file number that was originally assigned by the Division of Water Resources to the application for permit to appropriate water for beneficial use or the file number that was originally assigned to the order determining and establishing a vested right to continue the beneficial use of water.
- Point of Diversion:** The point from which water is obtained, be it a well, dam or intake. **If no water was used from one or more points of diversion, then the reason for non-usage must be given for each of the points of diversion.**
- Legal Descriptions:** **If an error exists in a legal description, mark through the incorrect portion and enter the correct description immediately above it.** The location of each point of diversion is given by a qualifier followed by the section, township, and range. The qualifier is used to describe the specific location of the point of diversion within the section. For example, "NC S2 NW" reads "near the center of the South Half of the Northwest Quarter." The qualifiers may be the number of feet North and number of feet West of the Southeast corner of the section. In some cases, a portion is included on the next line following the term "aka" (also known as).
- Water Meter Data:** If the meter has malfunctioned during the year, please indicate in this space and provide hours pumped and pump rate.
- Beginning Meter Reading:** If a WATER METER is installed, report this year's BEGINNING METER READING (this is the same as last year's ending meter reading), APPLYING ANY MULTIPLICATION FACTOR SHOWN ON THE FACE OF THE METER.
- Ending Meter Reading:** If a WATER METER is installed report this year's ENDING METER READING, APPLYING ANY MULTIPLICATION FACTOR SHOWN ON THE FACE OF THE METER.
- Metered Quantity:** If a WATER METER is installed, subtract this year's beginning meter reading from this year's ending meter reading and report the difference, APPLYING ANY MULTIPLICATION FACTOR SHOWN ON THE FACE OF THE METER. Please have the water meter checked to verify its accuracy, if it has not been checked by a qualified person within the past three years.
- Meter Unit:** Indicate the unit of measure recorded by your water meter (enter "A" for acre-feet, "AI" for acre-inches or "G" for gallons).
- Hours Pumped:** Enter the number of hours the pump was operated during the calendar year.
- Est. Pump Rate:** Enter the average rate of pumping in gallons per minute.
- Well Data:** Well Depth: enter the depth to bottom of well in feet.
Depth to Water: enter the depth to water in feet.
Date Measured: enter the date of the last depth to water measurement.

INSTRUCTIONS FOR NAME, ADDRESS CHANGES:

1. Please check your name and address, which is printed on the reverse side of this page in the lower left corner. If it is incorrect or incomplete, make any necessary changes in the space provided below. If you are no longer the person responsible for completing this report for one or more of the water right file numbers listed on the reverse side of this page, please print or type the information requested below.

Check one: Address Correction New Correspondent New Owner

Water Right File Number(s): _____

Name of New Owner/Title: _____

Address: _____

Date of Change: Month _____ Year _____ Telephone: (____) _____

IF YOU HAVE ADDITIONAL INFORMATION REGARDING THIS WATER USE REPORT, PROVIDE BELOW OR ATTACH ANOTHER PAGE.

Appendix G - R9 Ranch Water Use Report

MUNICIPAL WATER USE REPORT (PUBLIC WATER SUPPLY)

PART B: MONTHLY WATER USE SUMMARY

NOTE: REPORT WATER PUMPED, PURCHASED, AND SOLD FOR THE MONTH OF ACTUAL USE. REPORT ALL AMOUNTS IN UNITS OF **1000 GALLONS**.

- Column 1: The amount of water diverted, by month, from all points of diversion (wells or intakes). If possible, raw water meters should be read at the same time of the month as customer meters. The total amount in this column should equal the total of the amounts reported in PART A.
- Column 2: The amount of water diverted to the City of Hays by month,
- Column 3: The amount of water diverted to the City of Russell by month.
- Column 4: The amount of water sold, by month, to all industrial, pasture, stockwater, feedlot, and bulk water service connections. For rural water districts, include the amount of water sold to farmsteads using at least 200,000 gallons of water per year. Also include metered power plant usage, even if this water is supplied free.
- Column 5: The amount of water sold, by month, to your residential, commercial and institutional customers (include hospitals, schools and prisons) from the supply line between the ranch and Hays and Russell.
- Column 6: The amount of water used, by month, that is metered at individual service connections and supplied free, such as for public service, treatment processes, and connections receiving free water. Please record metered power plant usage with industrial water use in Column 4.
- Column 7: The amount of unaccounted for water, by month. The gallons reported in this column are found by adding the numbers in Columns 1 and 2 and subtracting the numbers in Columns 3, 4, 5, and 6. If you do not sell water to your customers, this column simply represents the total amount of water that you diverted or purchased.

Month	Column 1 Raw Water Diverted Under Your Rights (1000 Gallons)	Column 2 Water Diverted to Hays (1000 Gallons)	Column 3 Water Diverted to Russell (1000 Gallons)	Column 4 Water Sold to Your Industrial, Stock, and Bulk Customers (1000 Gallons)	Column 5 Water Sold to Your Residential and Commercial Customers (1000 Gallons)	Column 6 Metered Water Provided Free (1000 Gallons)	Column 7 Unaccounted For Water (See Above Explanation) (1000 Gallons)
Jan.							
Feb.							
Mar.							
Apr.							
May							
June							
July							
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							
Total							

PART C: POPULATION, SERVICE CONNECTIONS, AND WATER RATES

1. Population served: _____ Estimate the number of persons served directly by your distribution system (Columns 5, 6, and 7).
2. Number of **ACTIVE** water service connections as of December 31:
 - a. _____ Residential
 - b. _____ Commercial/Institutional
 - c. _____ Industrial
 - d. _____ Pasture/Stockwater/Feedlot
 - e. _____ Other (specify) _____
 - f. _____ **Total ACTIVE Service Connections**
3. If you are a city, how many of the active residential water service connections shown in 2a. are located outside of your city limits. _____

Appendix G - R9 Ranch Water Use Report

MUNICIPAL WATER USE REPORT (PUBLIC WATER SUPPLY)

PART D: WASTEWATER DISCHARGE

Check one:

- No wastewater treatment Pond or lagoon Wastewater treatment facility Other facility treats wastewater

If lagoon or treatment facility discharges to a stream, complete the following:

Amount of Discharge, in 1,000 gallons: _____

Does the above amount include rainwater: Yes No

Name of stream receiving discharge: _____

PART E: WATER SOLD TO OR PURCHASED FROM OTHER ENTITIES (Report all amounts in units of 1000 gallons)

Please provide the name of each ENTITY that water was sold to or purchased from during the year. Water purchased from the Kansas Water Office should also be recorded here. Report all quantities in units of 1000 gallons. Copy this form as needed to completely report sold and purchased water. The total amount of water purchased each month should be entered in Column 2 of PART B, and the total amount sold each month should be entered in Column 3 of Part B.

Name: _____
County: _____
_____ Sold To _____ Purchased From

Jan.	_____	_____
Feb.	_____	_____
Mar.	_____	_____
Apr.	_____	_____
May	_____	_____
June	_____	_____
July	_____	_____
Aug.	_____	_____
Sept.	_____	_____
Oct.	_____	_____
Nov.	_____	_____
Dec.	_____	_____
Total	_____	_____

Name: _____
County: _____
_____ Sold To _____ Purchased From

Jan.	_____	_____
Feb.	_____	_____
Mar.	_____	_____
Apr.	_____	_____
May	_____	_____
June	_____	_____
July	_____	_____
Aug.	_____	_____
Sept.	_____	_____
Oct.	_____	_____
Nov.	_____	_____
Dec.	_____	_____
Total	_____	_____

Name: _____
County: _____
_____ Sold To _____ Purchased From

Jan.	_____	_____
Feb.	_____	_____
Mar.	_____	_____
Apr.	_____	_____
May	_____	_____
June	_____	_____
July	_____	_____
Aug.	_____	_____
Sept.	_____	_____
Oct.	_____	_____
Nov.	_____	_____
Dec.	_____	_____
Total	_____	_____

Name: _____
County: _____
_____ Sold To _____ Purchased From

Jan.	_____	_____
Feb.	_____	_____
Mar.	_____	_____
Apr.	_____	_____
May	_____	_____
June	_____	_____
July	_____	_____
Aug.	_____	_____
Sept.	_____	_____
Oct.	_____	_____
Nov.	_____	_____
Dec.	_____	_____
Total	_____	_____

**Exhibits 1-32:
Change Approvals**

**Exhibit 33:
The boundaries of the R9 Ranch, the approximate locations of the proposed municipal wells, and the areas excluded from any new municipal well (shown in gray).**

**Exhibit 34:
R9 Ranch Water Level Monitoring Plan dated April 19, 2017**