

JUN 16 2008

**BEFORE THE WYOMING
ENVIRONMENTAL QUALITY COUNCIL**

Terri A. Lorenzon, Director
Environmental Quality Council

IN RE: Willow Creek General Permit,) Consolidated Docket
Pumpkin Creek General Permit, and) Nos. 06-3815, 06-3816,
Four Mile Creek General Plan) and 06-3817

**WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY'S
PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW**

At the conclusion of the hearing in this matter on May 1, 2008, the Environmental Quality Council (EQC) directed the parties to submit proposed findings of fact and conclusions of law on or before June 16, 2008 to help the EQC members find specific evidence of proposed facts in the record. Tr. vol. IV, 775:19-25, 776:1-10, 778:16-19. Respondent Wyoming Department of Environmental Quality (DEQ), pursuant to the EQC's direction, submits the following PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW in the above-captioned consolidated contested case.

FINDINGS OF FACT

1. The DEQ issued General Permit WYG280000 (Pumpkin Creek General Permit) on September 11, 2006 for discharges of produced water from coal bed methane (CBM) facilities located in the Pumpkin Creek watershed in the Powder River basin in northeast Wyoming.

2. The DEQ issued General Permit WYG 290000 (Willow Creek General Permit) on September 11, 2006 for discharges of produced water from coal bed methane (CBM) facilities located in the Willow Creek watershed in the Powder River basin in northeast Wyoming.

3. Petitioners Yates Petroleum Corporation (Yates), Marathon Oil Company (Marathon), and Citation Oil & Gas Corporation (Citation), collectively "Y/M/C," filed a Notice of Appeal and Request for Hearing before the EQC on or about November 9, 2006, contesting certain terms and conditions in the Pumpkin Creek General Permit and the Willow Creek General Permit, and also in the Four Mile Creek General Plan.

4. Pursuant to the EQC's April 22, 2008 Prehearing Conference Order, based on agreement of the parties, the Four Mile Creek General Plan is not at issue before the EQC in the present proceeding.

5. Petitioner Wyoming Outdoor Council (WOC) filed separate Petitions for Review on or about November 9, 2006, contesting certain terms and conditions in the Pumpkin Creek General Permit and the Willow Creek General Permit, respectively.

6. WOC filed a Motion for Summary Judgment on or about July 13, 2007 involving the same three issues raised in both WOC Petitions, and Y/M/C was granted leave to intervene.

7. The EQC consolidated the separate Y/M/C and WOC appeals by Order dated October 4, 2007, and denied WOC's Motion for Summary Judgment on those three particular issues by Order dated November 28, 2007, filed November 30, 2007.

8. The issues remaining to be resolved in this consolidated contested case are identified in the EQC's April 22, 2008 Prehearing Conference Order.

(1) Findings relating to whether the effluent limits in the permits are appropriate

(a) Findings relating to whether the effluent limits for EC and SAR applicable to Category IC discharges located above irrigation are appropriate

9. "Water quality standards" are regulations in Chapter 1 of the Wyoming Water Quality Rules & Regulations (WWQRR) establishing numeric and narrative "criteria" to protect designated uses of surface waters of the state. WWQRR, Chapter 2, Section 3(b)(ci) (p.2-16).

10. "Water quality based effluent limits" (as distinguished from "technology-based effluent limits") are numeric permit limits set to meet water quality "standards" in Chapter 1. WWQRR, Chapter 2, Section 3(b)(xcix) (p.2-15); Tr. vol. I, 51:3-17.

11. Chapter 1, Section 20 is a narrative standard to protect the quality of surface water used for agricultural purposes from degradation to such an extent as to cause a measurable decrease in crop or livestock production. Tr. vol. II, 365:23-366:1.

12. Irrigation and livestock watering are the agricultural uses to be protected under Section 20. WWQRR, Chapter 1, Section 3(a). Tr. vol. I, 51:25-52:20.

13. In issuing permits to discharge, DEQ has to translate the narrative standard in Chapter 1, Section 20 into numeric effluent limits. Tr. vol. I, 50:7-15.

14. DEQ interprets the narrative standard in Chapter 1, Section 20 to mean that if the quality of water discharged meets the quality of water historically used for irrigation in that drainage, the result should be no measurable decrease in crop production due to the water quality. Tr. vol. I, 58:18-59:3.

15. It is difficult to obtain adequate direct data of natural (pre-CBM) water quality in ephemeral systems in the Powder River Basin, such as Pumpkin Creek and Willow Creek. Tr. vol. I, 59:21-60:11.

16. In circumstances where it does not have adequate information on the quality of water historically used for irrigation, DEQ will use “default” numbers to set numeric effluent limits to implement the Section 20 narrative standard for protection of irrigated crop production. Tr. vol. I, 59:10-15.

17. DEQ used “default” numbers to set numeric effluent limits for Category I discharges in the Pumpkin Creek and Willow Creek General Permits. Tr. vol. I, 58:11-13, 162:4-6, 218:15-22.

18. Category I discharges under both the Pumpkin Creek and Willow Creek General Permits are discharges either directly to stream channels or to on-channel reservoirs with no containment requirements. Tr. vol. I, 158:12-15; Y/M/C Exhibit 10 at §1.1.2.1 (p.7); Y/M/C Exhibit 29 at §1.1.2.1 (p.6).

19. Subcategory IC discharges under the Pumpkin Creek General Permit are Category I discharges from outfalls located more than 10 miles above the confluence of Pumpkin Creek with the Powder River, and, if located upstream from irrigation, are subject to EC and SAR effluent limits for protection of irrigation uses. Y/M/C Exhibit 10 at §1.1.2.1 & §1.1.2.1.1 (p.7).

20. Subcategory IC discharges under the Willow Creek General Permit are Category I discharges from outfalls located upstream from existing irrigation uses within the Willow Creek watershed. Y/M/C Exhibit 29 at §1.1.2.1 (p.6).

21. To protect water quality for irrigation use, the important constituents are salinity measured as electrical conductivity (EC) and sodium adsorption ratio (SAR). Tr. vol. I, 54:19-23.

22. EC is a measurement of salinity, which can have a direct effect on irrigated crop production by impairing plants’ ability to uptake water. Tr. vol. I, 56:14-21, 57:3-5.

23. SAR is not crop specific, but rather a more general concern regarding damage to soil structure that will impair the ability of irrigated land to infiltrate water. Tr. vol. I, 57:7-20.

24. To set "default" limits for EC, DEQ uses published soil salinity tables from the United States Department of Agriculture (USDA) soil salinity laboratory. Tr. vol. I, 59:13-15, 61:2-13; DEQ Exhibits 8 & 8A.

25. The two soil salinity data tables used by DEQ (DEQ Exhibits 8 & 8A) to set Category IC "default" limits for EC in the Pumpkin and Willow Creek General Permits are essentially the same data tables and are probably the best information available for that purpose. Tr. vol. IV, 633:5-14, 637:4-8.

26. The soil salinity tables list recommended soil salinity thresholds for a variety of crops. Tr. vol. I, 61:16-62:6; DEQ Exhibits 8 & 8A.

27. DEQ assumes that using 100% threshold numbers from the soil salinity tables to derive default limits will assure that the quality of water discharged will not negatively affect the production of crops irrigated with that water, but DEQ does *not* assume that those default limits will assure 100% of potential yield, because irrigation water quality is not the only factor that can affect crop production. Tr. vol. I, 65:9-25.

28. To derive "default" numeric limits for EC of water (EC_w) available for irrigation, DEQ divides the soil salinity (EC_e) from the tables by 1.5. Tr. vol. I, 64:4-7.

29. DEQ's use of the 1.5 conversion factor to derive default limits for water EC (EC_w) from soil EC values (EC_e) in the soil salinity tables is a fair and commonly used method. Tr. vol. IV, 641:22-642:8.

30. First setting the default limit for EC, and then setting the SAR limit in relation to the EC limit up to a cap of 10 for SAR is a sound and reasonable approach to setting the Category IC default limits for EC and SAR to protect irrigation water quality. Tr. vol. IV, 633:17-22, 636:16-637:3.

31. DEQ set Category IC default limits of 1330 umhos/cm for EC and 7 for SAR in the Willow Creek General Permit to protect water quality for irrigation of alfalfa. Tr. vol. I, 216:23-217:5, 218:5-22.

32. DEQ used the USDA soil salinity data table (DEQ Exhibit 8) to derive Category IC default EC limits to protect irrigation of alfalfa in the Willow Creek General

Permit, because DEQ did not have background water quality data for the Willow Creek drainage. Tr. vol. I, 218:15-22, 221:3-25.

33. The default limit for EC of 1330 to protect alfalfa in the Willow Creek General Permit is appropriately protective, not overly protective. Tr. vol. IV, 633:23-634:25.

34. The default limit for SAR of 7 to protect alfalfa in the Willow Creek General Permit is protective. Tr. vol. IV, 634:1-2, 635:1-15.

35. DEQ set Category IC default limits of 2200 umhos/cm for EC and 13 for SAR in the Pumpkin Creek General Permit to protect water quality for irrigation of western wheatgrass. Tr. vol. I, 158:19-25, 160:24-161:4.

36. DEQ used the soil salinity data table in "Agricultural Salinity and Drainage" by Blaine Hanson, et al (DEQ Exhibit 8A) to derive Category IC default EC limits to protect irrigation of western wheatgrass in the Pumpkin Creek General Permit, because DEQ had neither adequate historic water quality data nor soil data for the Pumpkin Creek drainage. Tr. vol. I, 160:19-23, 162:4-163:15.

37. The default limit for EC of 2200 to protect wheatgrass in the Pumpkin Creek General Permit is appropriately protective, not overly protective. Tr. vol. IV, 633:23-634:25.

38. Capping the default limit for SAR at 10 to protect wheatgrass under the Pumpkin Creek General Permit is appropriate. Tr. vol. IV, 634:1-2, 635:1-13.

39. Y/M/C's designated expert, Dr. Eric Kern, expressed his opinion that the Category IC default limits for EC are *overprotective* based on the data he looked at, but he did not specify what he thought the Category IC numeric limits for EC should be other than the default limits specified in the contested Pumpkin Creek and Willow Creek General Permits. DEQ Exhibit 15 (Y/M/C's Answer to DEQ's Interrogatory #3); Tr. vol. II, 362:12-363:12, 368:8-369:1; Tr. vol. III, 435:20-25, 437:1-14.

40. At the time DEQ established the limits in the contested general permits, sufficient soil and water quality data were not available to set watershed-specific Category IC numeric limits for EC in lieu of the default limits in those permits, and watershed-specific soil and water quality data in addition to that provided in discovery or admitted at the hearing would be needed to do so. DEQ Exhibit 15 (Y/M/C's Answer to DEQ's Interrogatory #3); Tr. vol. II, 363:13-364:3; Tr. vol. III, 437:1-8.

41. To meet the Chapter 1, Section 20 narrative standard of preventing a measurable decrease in irrigated crop production by setting numeric limits based on actual storm water quality data, it is important to consider during which periods of a storm hydrograph irrigators historically would have used the water for irrigation. Tr. vol. II, 370:23-371:25, 372:19-25; Tr. vol. III, 422:23-423:7.

42. It is common knowledge among experienced irrigators to let the first flush of water in the hydrograph of a storm event go by before diverting it for irrigation, because that initial rise typically has higher salinity. Tr. vol. IV, 640:19-641:21; Tr. vol. II, 375:22-376:2; Tr. vol. III, 420:5-16.

43. If there are soluble minerals such as sulfates in the drainage, then water flowing through it, whether CBM or natural runoff, could pick those up. Tr. vol. II, 377:23-378:1, 379:16-24; Tr. vol. III, 401:24-402:2.

44. As CBM discharge water flows through a drainage, the salinity may increase and the type of the discharged water may change from a CBM "signature" to a natural signature. Tr. vol. III, 401:3-402:24.

45. The opinions about natural water quality Dr. Kern expressed in the hearing were not based on any actual surface water quality data from Willow Creek. Tr. vol. II, 361:21-362:11.

46. The empirical data on which Y/M/C's designated expert, Dr. Kern, based his opinions about natural water quality in the Pumpkin Creek drainage came from only two sources: data from Y/M/C's CBM discharges in Pumpkin Creek and water samples collected at the Iberlin station downstream from CBM discharge points in that drainage during 4 storm events. Tr. vol. II, 363:13-364:3; Tr. vol. III, 410:25-411:11.

47. In formulating his opinions, Dr. Kern assumed there was contribution from upgradient CBM discharges in the storm runoff sampled at Iberlin, but he did not know the specific volumes of CBM discharge water that were commingled in the water sampled. Tr. vol. III, 410:25-411:11.

48. In formulating his opinions, Dr. Kern did not have direct data on the volume or flow of CBM water in relation to the flow of storm water being sampled. Tr. vol. III, 413:6-17.

49. Dr. Kern did not do any "geochemical mixing calculations" showing the effect of CBM produced water quality on the resultant surface water quality following

mixing with natural runoff from in the Pumpkin Creek or Willow Creek drainages. DEQ Exhibit 15 (Y/M/C's Answer to DEQ's Interrogatory #6); Tr. vol. III, 410:9-24.

50. In 3 of the 4 storm events in Pumpkin Creek on which Dr. Kern based his opinions, the average EC levels were well below the Category IC default limit of 2200 umhos/cm for EC in the Pumpkin Creek General Permit. Y/M/C Exhibit 1, Table 1; Tr. vol. III, 414:2-19.

51. Most of the point-in-time EC levels measured during the 4 storm events in Pumpkin Creek on which Dr. Kern based his opinions were below the Category IC default limit of 2200 umhos/cm for EC in the Pumpkin Creek General Permit. Y/M/C Exhibit 1, Figures 1&2.

52. Of the 3 spikes in point-in-time EC levels that exceeded the Category IC default limit of 2200 umhos/cm for EC in the Pumpkin Creek General Permit, which occurred during 2 of the 4 storm events in Pumpkin Creek on which Dr. Kern based his opinions:

- 2 of the 3 spikes occurred during the initial rise in the hydrograph of two storms (August 24, 2002 & May 27, 2003) and were of relatively short duration (2 hours or less);
- the "spike" during the initial rise in the hydrograph of the August 24, 2002 storm consisted of only one point-in-time measured exceedance of 2500 umhos/cm;
- except for the single, marginal point-in-time exceedance during the initial rise in the hydrograph of the August 24, 2002 storm, there were *no* point-in-time exceedances during 3 of the 4 storms (May 27, 2003). Y/M/C Exhibit 1, Figures 1&2.

(b) Findings relating to whether all the effluent limits in the general permits meet the requirements of WWQRR Chapter 1, § 20, by protecting all existing and potential agricultural uses

53. Chapter 2, Appendix H(b)(vii) specifies numeric effluent limits for listed constituents (including 7500 umhos/cm for specific conductance (EC)) for discharges of produced water from oil and gas operations, including CBM, to protect water quality for use by livestock and wildlife. Tr. vol. I, 54:23-56:9.

54. Category II discharges under both the Pumpkin and Willow Creek General Permits are discharges from outfalls to on-channel reservoirs capable of containing all CBM effluent in addition to storm water runoff equivalent to a 50 year, 24 hour precipitation event. Y/M/C Exhibit 10 at §1.1.2.2 (p.8); Y/M/C Exhibit 29 at §1.1.2.2 (pp.6-7).

55. Category II discharges under both the Pumpkin and Willow Creek General Permits are subject to effluent limits at the outfalls to protect water quality for livestock use, not irrigation use. Tr. vol. I, 71:11-24.

56. The concept for the Category II discharge limits is that the water in a reservoir with capacity to contain a 50 year, 24 hour storm event will be available for livestock use, but not for irrigation use. Tr. vol. I, 79:23-81:7, 165:13-20.

57. The effluent limits for Category II discharges to protect water quality for livestock use under the Willow Creek General Permit are at least as stringent as the numeric limits for listed constituents specified in Chapter 2, Appendix H(b)(vii) (p.H-2). Y/M/C Exhibit 29 at §3 (p15); Tr. vol. I, 54:23-55:9.

58. The effluent limits for Category II discharges to protect water quality for livestock use under the Pumpkin Creek General Permit are at least as stringent as the numeric limits for listed constituents specified in Chapter 2, Appendix H(b)(vii) (p.H-2), except sulfate, which was not included in the Pumpkin Creek General Permit, because DEQ determined it to be a pollutant of non-concern for discharges in that drainage based on available discharge monitoring data showing consistently low sulfate concentrations (discharge sulfate concentrations: average 2.5 mg/l, maximum 44 mg/l compared with 3,000 mg/l limit in Chapter 2, Appendix H(b)(vii)(B). Y/M/C Exhibit 9 (pp.11-12); Y/M/C Exhibit 10 at §6 & 6.1 (pp.17-18); Tr. vol. I, 54:23-55:9.

59. DEQ set effluent limits to protect irrigation use under the Pumpkin Creek and Willow Creek General Permits based on information from landowners at stakeholder meetings during the watershed permitting process for each of those permits. Tr. vol. I, 158:19-160:18, 215:1-8, 217:17-218:4, 270:18-271:4.

60. At the time DEQ developed the Pumpkin Creek and Willow Creek General Permits, it did not impose effluent limits specifically to protect naturally irrigated bottomlands. Tr. vol. II, 272:20-23.

61. DEQ staff testified that DEQ does not object to protecting naturally irrigated bottomlands. Tr. vol. I, 126:10-15.

62. The size (area) of naturally irrigated bottomlands that it “makes sense” to protect by effluent limits under the Pumpkin Creek and Willow Creek General Permits may vary by specific site. Tr. vol. IV, 688:21-689:17.

(2) Findings relating to the appropriate point of compliance for effluent limits

63. The point of compliance for effluent limits for Category IC and Category II discharges under the Pumpkin Creek General Permit is at the outfalls (end of pipe). Y/M/C Exhibit 10 at §11.3, pp.29-30, §11.5, pp.32-33; Tr. vol. I, 83:15-21, 166:22-167:10.

64. The point of compliance for effluent limits for Category IC and Category II discharges under the Willow Creek General Permit is at the outfalls (end of pipe). Y/M/C Exhibit 29 at §14.1, p.29; Tr. vol. I, 83:15-21, 222:8-25, 224:15-225:22.

65. Requiring compliance with effluent limits at the end of pipe (outfalls) aids the enforcement of those limits by reducing problems with commingled discharges and other intervening factors. Tr. vol. I, 74:10-24.

66. Chapter 2, Appendix H, WWQRR, which prescribes “Additional Requirements Applicable to Produced Water Discharges from Oil and Gas Production Facilities,” requires that all water quality samples collected by discharge permit holders subject to Appendix H shall be taken from the free fall of water from the last treatment unit (or at the outfall, if no treatment units), which is located out of the natural drainage, and the sample *must not be mixed* with waters of any other surface water or with water from another discharge point. WWQRR Chapter 2, Appendix H(b)(x) (p.H-2); Tr. vol. I., 74:25-75:22.

67. The point of compliance for SAR and EC should be imposed at the outfall, if the produced water will reach an existing point of use, because the point of outfall is the only point at which it can be assured that the water being tested is from that operator, and eliminates other potential sources (natural and otherwise) that could affect water quality once the water has been discharged from the outfall and travels down the drainage. DEQ Exhibit 1 (Marathon/Pennaco’s Answers to DEQ’s Interrogatories ##2&8).

68. Y/M/C’s designated expert, Dr. Eric Kern, did not identify locations other than end-of-pipe (outfalls) where compliance with effluent limits for EC and SAR should be required under the contested Pumpkin Creek and Willow Creek General Permits. DEQ Exhibit 15 (Y/M/C’s Answer to DEQ’s Interrogatory #4); Tr. vol. III, 403:20-404:5, 406:20-25.

69. “Mixing zones” are taken into account in *establishing* effluent limits. WWQRR Chapter 2, Section 5(c)(iii)(C)(II)(1)(a) (p.2-42).

70. *Dilution* in “mixing zones” under WWQRR Chapter 1, Section 9 is a consideration in determining *what* “effluent limits” should be permitted for “compliance with water quality standards,” not *where* compliance with effluent limits should be measured. Chapter 1, Section 9 (p.1-15); WWQRR Chapter 2, Section 5(c)(iii)(C)(I)(4) (p.2-41); Tr. vol. I, 76:23-77:5, 148:1-10.

71. “Mixing zones” under WWQRR Chapter 1, Section 9 do not apply to the point of compliance for direct discharges of produced water from oil and gas production facilities in ephemeral systems, which are specifically governed by Chapter 2, Appendix H(b)(x) (p.H-2), which requires that samples “must not be mixed” with surface water or other discharges. Tr. vol. I, 74:25-75:22, 79:15-22, 224:25-225:22.

72. Willow Creek and Pumpkin Creek are both ephemeral systems. Tr. vol. I, 220:2-23; Tr. vol. II, 377:16-18.

73. Mixing zones for direct discharges of CBM produced water in ephemeral systems are not appropriate, because there is usually no natural flow with which to mix. Tr. vol. I, 79:15-22.

(3) Findings relating to whether the 50-year, 24-hour storm event containment “requirement” is justifiable, if a permittee selects the Category II “option”

74. As an “option” to Category IC effluent limits for protection of irrigation use, which apply to direct discharges of CBM produced water under the Pumpkin Creek and Willow Creek General Permits, operators can discharge to reservoirs with freeboard capacity capable of containing up to a 50-year, 24-hour precipitation event, subject to Category II effluent limits for protection of livestock watering use. Tr. vol. I, 79:23-81:7.

75. CBM produced water discharged into on-channel reservoirs having the capacity to contain up to a 50-year, 24-hour precipitation event is subject to Category II effluent limits to protect livestock use, because it is available for livestock use, but is isolated from use for downstream irrigation, except in a statistically rare 50-year, 24-hour precipitation. Tr. vol. I, 71:8-24, 148:13-20.

76. The 50-year, 24-hour containment “option” does not prohibit discharges to smaller reservoirs, subject to Category IC (irrigation) effluent limits. Y/M/C Exhibit 10 at §1.1.2.1 & §1.1.2.1.1 (p.7); Y/M/C Exhibit 29 at §1.1.2.1 (p.6); Tr. vol. I, 166:19-21; Tr. vol. III, 518:22-24, 519:21-520:17.

77. Although Y/M/C's designated expert, Mr. Hugh Lowham, expressed his opinions that the larger size of reservoirs needed for purposes of the 50-year, 24-hour containment "option" is a problem, and that a relatively large reservoir is one with a capacity over 20 acre feet and a dam over 20 feet high, he also testified that there probably are sites within the Pumpkin Creek drainage that are appropriate for reservoirs with a capacity of even 40 acre feet or larger. Tr. vol. III, 484:16-17, 521:6-13, 529:19-530:2, 531:23-532:3.

78. CBM produced water meeting Category II effluent limits for livestock use, which is discharged into on-channel reservoirs having the capacity to contain up to a 50-year, 24-hour precipitation event, is already water of the state, not a waste being isolated from waters of the state for treatment. Tr. vol. I, 71:8-24, 148:11-21.

79. Although Y/M/C's designated expert, Mr. Lowham, expressed his opinion that dilution from storm runoff in existing smaller reservoirs will work just fine and there will be no problem with water quality, Y/M/C's other designated expert, Dr. Eric Kern, did not do any "geochemical mixing calculations" for various-sized storm events regarding the amount and quality of natural runoff versus the amount and quality of *stored* CBM produced water in the Pumpkin Creek or Willow Creek drainages. DEQ Exhibit 15 (Y/M/C's Answer to DEQ's Interrogatory #5); Tr. vol. III, 409:21-410:8, 524:1-7, 526:20-527:2.

80. DEQ does not issue permits for dams or reservoirs or determine their safety or feasibility, but rather only authorizes and sets effluent limits on discharges going into them. Tr. vol. I, 87:18-21, 88:2-7.

81. The State Engineer permits the construction of on-channel reservoirs and has jurisdiction over safety of dams. Tr. vol. I, 87:16-88:1.

82. WYO. STAT. ANN. § 35-11-1104(a)(iii) expressly restricts the DEQ from interfering with the jurisdiction or authority of the State Engineer.

(4) Findings relating to whether incorporation of the "Wyoming Powder River Assimilative Capacity Allocation and Control Process" in the permits provides fair notice concerning what requirements will be imposed on permittees

83. Chapter 2, Section 9(a)(v) prohibits issuance of a permit or authorization which would authorize any discharge that, after imposition of permit conditions, cannot ensure compliance with the applicable water quality requirements of all affected states. WWQRR Chapter 2, Section 9(a)(v) (p.2-79).

84. Assimilative capacity requirements in the contested Pumpkin Creek and Willow Creek General Permits are designed to ensure that discharges permitted in Wyoming are not going to result in an exceedance of Montana water quality standards downstream at the Montana state line. Tr. vol. I, 88:23-89:4.

85. The conditions in the contested General Permits imposing assimilative capacity requirements to ensure that discharges permitted in Wyoming are not going to result in an exceedance of Montana standards downstream at the Montana state line are based on and consistent with WWQRR Chapter 2, Section 9(a)(v) (p.2-79). Tr. vol. I, 88:8-89:18.

86. There are two conditions in the contested Pumpkin Creek General Permit relating to assimilative capacity:

- §1.2.2.13 makes permittees subject to additional requirements related to assimilative capacity in the Powder River, as determined by the “*Wyoming Powder River Assimilative Capacity Allocation and Control Process*,” and

- §18.1 explains that determination of whether proposed discharges will require use of assimilative capacity credits will be made as part of authorization process under this general permit, and, if so, §18.2 specifies the methodology to be used to determine the number of credits needed for surface discharges.

Y/M/C Exhibit 10, §1.2.2.13 (p.11), §18.1 (p.47), §18.2 (pp.47-48); Tr. vol. I, 169:22-170:22.

87. There are two conditions in the contested Willow Creek General Permit relating to assimilative capacity:

- §1.2.2.13 makes permittees subject to additional requirements related to assimilative capacity in the Powder River, as determined by the “*Wyoming Powder River Assimilative Capacity Allocation and Control Process*,” and

- §16.1 explains that determination of whether proposed discharges will require use of assimilative capacity credits will be made as part of authorization process under this general permit, and, if so, §16.2 specifies the methodology to be used to determine the number of credits needed for surface discharges.

Y/M/C Exhibit 29, §1.2.2.13 (p.10), §16.1 (p.33), §16.2 (pp.33-34); Tr. vol. I, 226:18-228:14.

88. Petitioners Y/M/C raised the “fair notice” issue relating to incorporation of the “assimilative capacity control process” in the contested General Permits, but they “don’t have a problem with the methodology” for determining the number of credits needed for surface discharges specified in the permits. Tr. vol. I, 24:11-25:5.

89. The contested General Permits adequately specify and provide fair notice of the methodology to be used to determine the number of credits needed for surface discharges. Y/M/C Exhibit 10, §18.2 (pp.47-48); Y/M/C Exhibit 29, §16.2 (pp.33-34).

90. The contested General Permits also give fair notice that determination of whether proposed discharges will require use of assimilative capacity credits will be made as part of the “authorization process” under the General Permits. Y/M/C Exhibit 10, §18.1 (p.47); Y/M/C Exhibit 29, §16.1 (p.33).

91. The “authorization process” for discharges under a General Permit requires submittal to DEQ of a Notice of Intent (NOI) seeking coverage under the General Permit, including “information necessary for adequate program implementation,” and then written authorization by the Water Quality Division (WQD) Administrator prior to any discharges under the General Permit. WWQRR Chapter 2, Section 3(b)(ii),(xi) & (lxvii) (pp.2-5,6&12), Section 4(b)(i)-(ii) & (iii)(A) (p2-17), Section 4(f)(ii) (p.2-19); Tr. vol. I, 156:13-20.

92. “Information necessary for adequate program implementation” to be submitted in NOIs for authorization to discharge under the contested General Permits includes information needed from the operator before DEQ can actually allocate credits and determine whether to specify any “additional requirements related to assimilative capacity” in the written authorization. Tr. vol. I, 92:2-93:11, 147:8-17.

93. Written authorization by the WQD Administrator to discharge under these General Permits will actually allocate the credits and identify any other conditions of such authorization in addition to the conditions specified in the General Permits themselves. WWQRR Chapter 2, Section 4(f)(ii) (p2-19); Tr. vol. I, 93:12-16, 94:7-10.

94. The necessary DEQ/WQD written authorizations to discharge will give Petitioners Y/M/C fair notice of any “additional requirements related to assimilative capacity” under §1.2.2.13 of the Pumpkin Creek General Permit and §1.2.2.13 of the Willow Creek General Permit. Y/M/C Exhibit 10 (p.11); Y/M/C Exhibit 29 (p.10); Tr. vol. I, 94:7-10, 108:8-12.

95. DEQ/WQD posts written authorizations to discharge under the contested General Permits on the DEQ/WQD website. Tr. vol. I, 94:7-13.

96. Final actions by the WQD Administrator are appealable to the EQC. Chapter I, Section 16(a), DEQ Rules of Practice & Procedure.

97. The WQD Administrator's written authorizations to discharge under the contested General Permits, including actual allocation of assimilative capacity credits and any "additional requirements related to assimilative capacity," are appealable final decisions of the Administrator. Tr. Vol. I, 93:12-20, 94:4-6.

(5) Findings relating to whether on-channel reservoirs authorized by the general permits are "treatment works" as defined by WYO. STAT. ANN. § 35-11-103(c)(iv), for which WYO. STAT. ANN. § 35-11-301(a)(iii) requires separate permits to construct

98. Pollution or wastes may be discharged to waters of the state only as authorized by a permit. WYO. STAT. ANN. § 35-11-301(a)(i).

99. Permits regulate pollution or wastes discharged to waters of the state through effluent limits for constituents in discharges determined to have a reasonable potential of adversely impacting uses of surface waters of the state. WWQRR Chapter 2, Section 5(c)(iii)(C)(I).

100. Under both the Pumpkin Creek and Willow Creek General Permits, discharges of CBM produced water to on-channel reservoirs which do not have the capacity to contain up to a 50-year, 24-hour precipitation event are subject to Category IC effluent limits at the outfall to protect irrigation use. Y/M/C Exhibit 10 at §1.1.2.1 & §1.1.2.1.1 (p.7); Y/M/C Exhibit 29 at §1.1.2.1 (p.6); Tr. vol. I, 216:23-217:5.

101. Under both the Pumpkin Creek and Willow Creek General Permits, discharges of CBM produced water to on-channel reservoirs which do have the capacity to contain up to a 50-year, 24-hour precipitation event are subject to Category II effluent limits at the outfall to protect livestock watering use. Tr. vol. I, 71:11-24, 83:15-24; 85:18-86:1.

102. Category II effluent limits for livestock use on discharges to 50 year, 24 hour containment on-channel reservoirs apply at the outfall (end of pipe) before discharge into the reservoir, because the water in such on-channel reservoirs is a water of the state. Tr. vol. I, 83:16-84:14, 167:8-10.

103. CBM produced water meeting Category II effluent limits for livestock use, which is discharged into on-channel reservoirs having the capacity to contain up to a 50-year, 24-hour precipitation event, is already a water of state, not a waste being isolated from waters of the state for treatment. Tr. vol. I, 71:11-24, 148:11-21.

104. Permitted discharges of CBM produced water into downstream on-channel reservoirs are waters of the state, if those discharges are subject to use-protective effluent limits (Chapter 2, Appendix H(b)(vii)(C) (p.H-2)) at the point of discharge (outfall) upstream from the reservoirs.

105. On-channel reservoirs receiving permitted discharges of CBM produced water subject to use-protective effluent limits (Chapter 2, Appendix H(b)(vii)(C) (p.H-2)) at the point of discharge (outfall) upstream from the reservoirs are not “treatment works” under WYO. STAT. ANN. § 35-11-103(c)(iv). Tr. vol. I, 84:20-86:15.

106. Unlike on-channel reservoirs where discharges must meet effluent limits *before* going into the reservoir, effluent limits for discharges from treatment works apply when treated effluent is discharged from a treatment works. Tr. vol. I, 86:2-15.

Findings relating to (6) whether the erosion control protections set forth in the general permits are adequate to protect the drainage from damage caused by erosion; and (7) whether the requirements in the “Head Cut Monitoring and Mitigation” provisions of the general permits are appropriate

107. The regulatory basis for DEQ to impose conditions in the Pumpkin Creek and Willow Creek General Permits to control channel erosion and head cuts is to implement the narrative standard for limiting settleable solids under WWQRR Chapter 1, Section 15 (p.1-17), rather than to manage erosion per se. Tr. vol. I, 167:14-168:3, 225:23-226:7.

108. The DEQ contracted for an independent channel survey to evaluate channel capacity and relative stability of several channel segments in the process of developing requirements for channel stability and erosion monitoring and mitigation in the Pumpkin Creek General Permit. Y/M/C/ Exhibit 9 (pp.21-22).

109. The Pumpkin Creek General Permit contains reasonable requirements for erosion control, channel stability and head cut monitoring and mitigation based on input from stakeholders during the process of developing the general permit for that watershed. Y/M/C/ Exhibit 9 (pp.21-22); Y/M/C Exhibit 10 at §8 (pp.19-22), §13 (p.35); Tr. vol. I, 167:14-169:21, 192:20-198:24.

110. The DEQ used information from a channel hydraulic survey conducted by WWC Engineering in the process of developing requirements for channel stability and erosion control and monitoring in the Willow Creek General Permit. Y/M/C/ Exhibit 28 (pp.9-10).

111. The Willow Creek General Permit contains reasonable requirements for erosion control, channel stability and head cut monitoring and mitigation based on input from three watershed planning committees during the process of developing the general permit for that watershed. Y/M/C/ Exhibit 28 (pp.9-10); Y/M/C Exhibit 29 at §6 (pp.17-19); Tr. vol. I, 225:23-226:17, 273:21-274:13.

112. As of the time of the hearing, there have not been serious erosion problems resulting from CBM discharges. Tr. vol. IV, 640:8-15.

CONCLUSIONS OF LAW

1. Pursuant to WYO. STAT. ANN. § 35-11-112(a)(iv), the EQC has jurisdiction over the subject matter and the parties in this case, in which Petitioners Y/M/C and WOC are each contesting certain conditions DEQ imposed in the Pumpkin Creek and Willow Creek General Permits.

2. WYO. STAT. ANN. § 35-11-301(a)(i) requires authorization under a permit issued by DEQ for the discharge of any pollution or wastes into the waters of the state.

3. WYO. STAT. ANN. § 35-11-801(a) authorizes the DEQ to impose conditions on permits as necessary to accomplish the purpose of the Wyoming Environmental Quality Act (WEQA) which are “not inconsistent” with existing rules, regulations and standards.

4. For purposes of evaluating the contested permit conditions for compliance with WYO. STAT. ANN. § 35-11-801(a), the “Agricultural Use Protection Policy” discussed at various times during the hearing is not an existing rule, regulation, or standard, and was not an existing rule, regulation, or standard in 2006 when the contested Pumpkin Creek and Willow Creek General Permits were issued. EQC’s “Statement of Principal Reasons” for adoption of WWQRR Chapter 1 (p.2), dated and filed February 16, 2007.

5. WWQRR Chapter 2, Section 5(c)(iii)(C)(III) (p.2-42) authorizes inclusion of numeric effluent limits for EC (salinity) and SAR (sodicity) in the Pumpkin Creek and Willow Creek General Permits to implement the Chapter 1, Section 20 narrative standard, because those water quality parameters have the potential to cause a measurable decrease in irrigated crop production.

6. The default numeric effluent limits for EC of 2200 and 1330 umhos/cm, respectively, in the Pumpkin Creek and Willow Creek General Permits applicable to

Category IC direct discharges to protect water quality for irrigation use are appropriate to implement the narrative standard in WWQRR Chapter 1, Section 20, because:

- a) EC of 2200 is adequate to protect western wheatgrass in the Pumpkin Creek watershed from measurable decrease in production due to irrigation water quality;
- b) EC of 1330 is adequate to protect alfalfa in the Willow Creek watershed from measurable decrease in production due to irrigation water quality.

7. The evidence and opinion presented in the hearing by Y/M/C's designated expert, Dr. Eric Kern, regarding the alleged historic EC levels in natural surface water in the Pumpkin Creek and Willow Creek drainages do not support a conclusion that the Category IC default limits for EC in the contested general permits are inappropriate, because:

- a) that evidence and opinion were not based on any natural water quality data from the Willow Creek drainage;
- b) that evidence and opinion were based on samples of *combined* CBM and natural water collected during 4 storm events in the Pumpkin Creek drainage;
- c) Dr. Kern did not know how much CBM water in relation to natural water was in those Pumpkin Creek samples;
- d) average EC levels in the Pumpkin Creek samples collected during 3 of the 4 storm events were well below the Category IC default limits for EC in the contested general permits;
- e) point-in-time EC levels in the Pumpkin Creek samples collected during the 4 storms events were generally lower than the Category IC default limits for EC in the contested general permits, with the only 2 significant point-in-time exceedances both occurring during the same May 27, 2003 storm. Y/M/C Exhibit 1, Table 1 & Figure 2.

8. The default numeric effluent limit for SAR of 7 in the Willow Creek General Permit applicable to Category IC direct discharges to protect water quality for irrigation use is appropriate to implement the narrative standard in WWQRR Chapter 1, Section 20, because SAR of 7 (in relation to the default EC limit of 1330) is adequate to protect alfalfa in the Willow Creek watershed from measurable decrease in production due to the effect of irrigation water quality on the soil.

9. A cap of 10 SAR for the default numeric effluent limit in the Pumpkin Creek General Permit applicable to Category IC direct discharges to protect water quality for irrigation use would be appropriate to implement the narrative standard in WWQRR Chapter 1, Section 20, because a cap of 10 SAR (with the default EC limit of 2200) would be adequate to protect western wheatgrass in the Pumpkin Creek watershed from measurable decrease in production due to the effect of irrigation water quality on the soil.

10. The numeric effluent limit for EC of 7500 umhos/cm in the Pumpkin Creek and Willow Creek General Permits applicable to Category II discharges to protect water quality for livestock watering use is appropriate to implement the narrative standard in WWQRR Chapter 1, Section 20, because:

a) Category II discharges are only those to reservoirs with capacity to contain up to a 50-year, 24-hour precipitation event, which will be available for livestock watering, but not for irrigation, except in a 50-year, 24-hour precipitation event;

b) 7500 EC is the effluent limit prescribed in WWQRR Chapter 2, Appendix H(b)(vii)(C) (p.H-2) for discharges of produced water from oil and gas production facilities to be protective for livestock consumption.

11. Conditions in the contested general permits requiring compliance with effluent limits for CBM discharges at the outfall (end of pipe) are appropriate, because:

a) WWQRR Chapter 2, Appendix H(b)(x) (p.H-2), which applies to produced water discharges from oil and gas production facilities, requires that all water quality samples collected by discharge permit holders subject to Appendix H shall be taken from the free fall of water from the last treatment unit (or at the outfall, if no treatment units), which is located out of the natural drainage, and the sample *must not be mixed* with waters of any other surface water or with water from another discharge point;

b) the outfall is the only point at which it can be assured that the water being tested is from that operator, and eliminates other potential sources (natural and otherwise) that could affect water quality once the water has been discharged from the outfall and travels down the drainage.

12. "Mixing zones" under WWQRR Chapter 1, Section 9 do not apply to the point of compliance with effluent limits for direct discharges of CBM produced water under the Pumpkin Creek and Willow Creek General Permits, because:

a) WWQRR Chapter 2, Appendix H(b)(x) (p.H-2) requires that samples from discharges of produced water from oil and gas production facilities "must not be mixed" with surface water or other discharges;

b) there is usually no natural flow in ephemeral systems, such as Willow Creek and Pumpkin Creek, with which to mix.

13. The 50-year, 24-hour storm event containment "option" for Category II effluent limits under the Pumpkin Creek and Willow Creek General Permits is appropriate, because:

a) Category II effluent limits to protect livestock watering use are a reasonable option for discharges that will be available for livestock use, but isolated from use for downstream irrigation, except in a statistically rare 50-year, 24-hour precipitation;

b) the 50-year, 24-hour containment “option” does not prohibit discharges to smaller reservoirs, subject to Category IC (irrigation) effluent limits, if landowners do not want reservoirs with capacity to contain up to a 50-year, 24-hour storm event.

14. Requirements in the Pumpkin Creek and Willow Creek General Permits pertaining to assimilative capacity are appropriate, because:

a) Chapter 2, Section 9(a)(v) (p.2-79) prohibits issuance of a permit or authorization which would authorize any discharge that, after imposition of permit conditions, cannot ensure compliance with the applicable water quality requirements of all affected states;

b) assimilative capacity requirements in the Pumpkin Creek and Willow Creek General Permits are designed to ensure that discharges permitted in Wyoming are not going to result in an exceedance of Montana water quality standards downstream at the Montana state line.

15. The contested General Permits adequately specify and provide fair notice of the *methodology* to be used to determine the number of assimilative capacity credits needed for surface discharges, with which Petitioners Y/M/C “don’t have a problem.” Tr. vol. I, 24:11-25:5.

16. Petitioners will have fair notice of and opportunity to contest any additional assimilative capacity requirements imposed in connection with, but not specified in, the contested general permits, because:

a) written authorization by the WQD Administrator, which is required prior to commencing discharges under these General Permits, will identify any other conditions of such authorization, including additional requirements related to assimilative capacity, in addition to the conditions specified in the General Permits themselves;

b) DEQ/WQD posts written authorizations to discharge under the contested General Permits on the DEQ/WQD website;

c) such written authorizations to discharge, which identify additional conditions not specified in the General Permits themselves, are final actions by the WQD Administrator, and are appealable to the EQC under Chapter I, Section 16(a) of the DEQ Rules of Practice & Procedure.

17. On-channel reservoirs which receive discharges authorized by the contested general permits are not “treatment works” as defined by WYO. STAT. ANN. § 35-11-103(c)(iv), because:

a) treatment works are used to manage “wastes;”

b) permits with effluent limits to protect designated uses of waters of the state are not required for the discharge of pollution or waste to treatment works;

- c) permits with effluent limits to protect designated uses of waters of the state are required before pollution or waste can be discharged to a water of the state;
- d) discharges to on-channel reservoirs authorized by the contested general permits must meet effluent limits at the outfall to protect designated uses, prior entering those reservoirs;
- e) permitted discharges of CBM produced water into on-channel reservoirs are waters of the state, where those discharges are subject to use-protective effluent limits at the point of discharge (outfall) upstream from the reservoirs.

18. The erosion control protections and head cut monitoring and mitigation provisions set forth in the general permits are adequate and appropriate to protect the drainage from damage caused by erosion, because:

- a) the regulatory basis for DEQ to impose conditions in the contested general permits to control channel erosion and head cuts is to implement the narrative standard for limiting settleable solids under WWQRR Chapter 1, Section 15 (p.1-17), rather than to manage erosion per se;
- b) the DEQ consulted stakeholders and had channel surveys performed to evaluate channel capacity and stability;
- c) The contested general permits contain reasonable requirements for erosion control, channel stability and head cut monitoring and mitigation;
- d) as of the time of the hearing, there have not been serious erosion problems resulting from CBM discharges. Tr. vol. IV, 640:8-15.

19. The Petitioners should have the burden of proof, because:

- a) issuance of the contested Pumpkin Creek and Willow Creek General Permits constitute “final actions” of the DEQ Director and WQD Administrator, which are appealable under Chapter I, Section 16(a) of the DEQ Rules of Practice & Procedure, not “orders” of the DEQ, which are appealable under WYO. STAT. ANN. § 35-11-701(c)(ii);
- b) as provided in Chapter I, Section 16(a) of the DEQ Rules of Practice & Procedure, Petitioners Y/M/C and WOC both appealed the Pumpkin Creek and Willow Creek General Permits within 60 days after the DEQ Director and WQD Administrator signed them, but did not appeal them within 10 days as required for contesting DEQ “orders” under WYO. STAT. ANN. § 35-11-701(c)(ii);
- c) to the extent that the Wyoming Environmental Quality Act (WEQA) expressly allocates the burden of proof in cases contesting permit “decisions” by the DEQ Director and Division Administrators, that burden is placed on the “petitioner.” WYO. STAT. ANN. § 35-11-802;
- d) Petitioners Y/M/C and WOC both appealed the Pumpkin Creek and Willow Creek General Permits because the DEQ Director and WQD Administrator

“refused” to issue those permits with certain conditions Petitioners wanted, and/or without certain conditions to which Petitioners objected;

e) Petitioners Y/M/C and WOC both contested certain conditions DEQ placed in these two General Permits on the grounds that inclusion of those conditions is arbitrary and capricious. YMC's Notice of Appeal, p.3; WOC's Pumpkin Creek Petition, p.5, ¶¶30-31; WOC's Willow Creek Petition, p.5, ¶¶30-31;

f) the burden of proving arbitrary administrative action (DEQ's inclusion of the contested conditions in these two permits) is on the complainants (YMC and WOC). *Knight v. Environmental Quality Council of the State of Wyoming*, 805 P.2d 268, 273, 275 (Wyo. 1991).

DATED this 16th day of June, 2008.



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CERTIFICATE OF SERVICE

This certifies that true and correct copies of the foregoing WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW were served by United States Mail, first class postage prepaid, and by facsimile transmission and/or e-mail, this 16th day of June, 2008, addressed as follows:

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