COW PALACE: THE APPLICATION AND LIKELY IMPACT ON HOG OPERATIONS IN IOWA

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I. INTRODUCTION

The debate over agricultural industrialization in Iowa has risen to the legislative and legal forefront in recent years, as a result of the emergence of thousands of hog confinements across the state.[1] The recent groundswell is likely attributed

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1. *Iowa Pork Facts*, IOWA PORK PRODUCERS ASS'N, https://perma.cc/RFU2-F7AB (archived Aug. 29, 2017).

to an increase in awareness among the populace regarding the potential health risks associated with elevated nitrates in drinking water.[2] Much of the debate centers on whether the state and its regulatory agencies are doing enough to protect the quality of Iowa's water.[3]

This Note discusses a recent decision from the U.S. District Court for the Eastern District of Washington, in which the court ruled the defendant, Cow Palace Dairy (Dairy), "[contributed] to the past or present handling, storage, treatment, transportation, or disposal of any solid or hazardous waste which may present an imminent and substantial endangerment to health or the environment."[4] The Resource Conservation and Recovery Act (RCRA) provided plaintiffs with the requisite standing to initiate a citizen suit against Dairy.[5] As the subsequent analysis will indicate, the court's ruling in *Community Association for Restoration of the Environment v. Cow Palace, L.L.C.* has provided a framework for citizen suits in which a civil action can be brought against livestock confinements that have discarded their manure in a manner that allows for nitrates to contaminate a water source and pose a threat to public health.[6] Prospective plaintiffs can utilize *Cow Palace's* nitrate-centered ruling to initiate a lawsuit against confinements that violate the pertinent provisions of RCRA.

A. The Resource Conservation and Recovery Act

RCRA was enacted in 1976 to facilitate "the safe disposal of discarded materials," thereby ultimately governing the safe management and disposal of hazardous waste.[7] According to Congress, the unavoidable hazardous waste generated from various industrial facilities throughout the United States needs to be reduced or eliminated as a matter of national policy.[8] Specifically, Congress states that such waste should be "treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment."[9] RCRA provides the Environmental Protection Agency (EPA) with greater latitude in regulating hazardous

2. Donnelle Eller, *Nitrates in the Water May Be More Harmful Than We Thought*, DES MOINES REG. (Sept. 29, 2016, 1:28 PM), https://perma.cc/5KRR-LZKT.

3. DAVID OSTERBERG ET AL., THE IOWA POLICY PROJECT, SAVING RESOURCES: MANURE AND WATER 2 (May 2016), http://iowapolicyproject.org/2016docs/160504-manure.pdf.

4. 42 U.S.C. § 6972(a)(1)(B) (2012); *see* Cmty. Ass'n for Restoration of the Env't (*CARE*) v. Cow Palace, L.L.C., 80 F. Supp. 3d 1180, 1228 (E.D. Wash. 2015).

5. 42 U.S.C. § 6972(a) (2012).

6. *Cow Palace*, 80 F. Supp. 3d at 1230 n.36.

7. Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795, 2795.

8. 42 U.S.C. § 6902(b) (2012).

9. *Id.*

wastes from the beginning to end of the waste creation process, or "from cradle to grave."[10] Although the EPA enforces and promulgates the provisions of RCRA, the Act itself allows citizens to pursue a party who may violate its requirements by means of a civil action.[11]

Due to a 2015 decision by the U.S. District Court for the Eastern District of Washington, two of RCRA's provisions have garnered particular attention. In *Cow Palace*, the court ruled the Dairy's manure management practices were inadequate in guarding against contamination, and as a result, negatively affected public health and the environment.[12]

The first provision controlling much of the discussion in *Cow Palace* pertains to the Act's prohibition against any disposal of solid waste that may constitute "open dumping."[13] RCRA defines an open dump as "any facility or site where solid waste is disposed of which is not a sanitary landfill . . . and which is not a facility for disposal of hazardous waste."[14] Additionally, RCRA has defined "disposal" as:

> [T]he discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.[15]

The second provision of RCRA that contributed to much of the discussion in *Cow Palace* "prohibits any person from causing or contributing to the creation of an imminent and substantial endangerment to health or the environment."[16] The court ultimately granted the plaintiff's motion for summary judgment, holding the defendant violated the aforementioned RCRA provisions.[17] The court's analysis in reaching such a conclusion is discussed below.

B. Iowa: The Pork Producing Capital of the United States

At any one time in Iowa, approximately 20 million hogs—one-third of the

10. City of Chicago v. Envtl. Def. Fund, 511 U.S. 328, 331 (1994).
11. 42 U.S.C. § 6972(a) (2012).
12. *See generally* Cmty. Ass'n for Restoration of the Env't (*CARE*) v. Cow Palace, L.L.C., 80 F. Supp. 3d 1180 (E.D. Wash. 2015).
13. *Id.* at 1218-19 (quoting 42 U.S.C. § 6945(a) (2012)).
14. 42 U.S.C. § 6903(14) (2012).
15. 42 U.S.C. § 6903(3) (2012).
16. *See Cow Palace*, 80 F. Supp. 3d at 1218 (citing 42 U.S.C. § 6972(a)(1)(B) (2012)).
17. *Id.* at 1231.

nation's hog population—are filling confinements and factories across the state.[18] In fact, Iowa has almost 58% more inventory of hogs and pigs than its next closest competitor, North Carolina.[19] Hog farming represents approximately $7.5 billion in total economic activity for Iowa.[20] Additionally, Iowa holds the title as the top pork-producing state in the United States, as well as the nation's top pork exporter around the world; countries such as Japan, Canada, Mexico, and South Korea contributed to Iowa's $1.4 billion in exports in 2014.[21]

However, what may be an economically beneficial industry for Iowa may simultaneously be a burden on the state's environment and its citizens' health. The nearly 6300 hog operations in Iowa produce an estimated ten billion gallons of manure per year.[22] The combined sewage from the Atlanta and Los Angeles metro areas equals the amount of untreated manure produced from one particular county in Iowa—Sioux County.[23] Alarmingly, more than ninety-nine manure spills have taken place around the state since 2013.[24] Additionally, Iowa has in excess of 630 polluted waterways.[25] While much of the manure from hog confinements is applied to agricultural fields, the nutrients can coalesce with rivers, lakes, and other bodies of water, causing high nitrate levels.[26] Iowa state law requires a concentrated animal feeding operation (CAFO) with 500 or more animal units—equivalent to 1250 hogs[27]—to obtain a manure management plan and file it with the Iowa Department of Natural Resources (DNR).[28] However, CAFOs have found ways to exploit the regulation by constructing facilities that house just under 1250 hogs, or in some circumstances, two confinements directly adjacent that each house just under 1250

18. IOWA PORK PRODUCERS ASS'N, *supra* note 1.

19. NAT'L PORK BD., PORK STATS 2014, at 11 (2014), http://www.iowapork.org/wp-content/uploads/2015/06/pork_quickfacts_stats_2014.pdf.

20. IOWA PORK PRODUCERS ASS'N, *supra* note 1.

21. *Id*.

22. Donnelle Eller, *Iowa's Hog Confinement Loopholes Causing a Stink*, DES MOINES REG. (June 11, 2016, 8:19 AM), https://perma.cc/6CEC-JNH7; *see Iowa, Environmentalists Differ on Farm Manure Progress*, AG WEB (Sept. 15, 2015, 5:00 AM), https://perma.cc/H8WF-7US5.

23. *Iowa Facts*, FACTORY FARM MAP, https://perma.cc/DZ52-TWKQ (archived Aug. 31, 2017).

24. AG WEB, *supra* note 22.

25. *Manure Spill–25,000 Gallons*, IOWA CITIZENS FOR COMMUNITY IMPROVEMENT, https://perma.cc/MU2J-NSYT (archived Aug. 31, 2017).

26. AG WEB, *supra* note 22.

27. Karen Grimes, *Producers Must Account for Commercial Fertilizer on Manure Application Fields*, Odor & Nutrient Mgmt. (Iowa State Univ. Extension & Outreach), Fall 2005, at 6.

28. IOWA DEP'T OF NAT. RES., MANURE MANAGEMENT PLANS REQUIRED BY THE DNR (Oct. 2004), www.iowadnr.gov/Portals/idnr/upload/afo/fs_mmp.pdf.

for a total of almost 2500 hogs.[29] CAFOs that take advantage of this loophole are not required to file manure management plans, thus avoiding the stricter manure application regulations that apply to the larger facilities.[30]

The amount of smaller-scale facilities in Iowa has grown to the point where it is difficult for the DNR to accurately determine their number.[31] The DNR cannot track these facilities and their manure management practices due to the absence of any paperwork.[32] Notably, during the winter months, nearly 78% of the reported manure application complaints to the DNR have stemmed from such facilities.[33] The court's holding in *Cow Palace* has arguably provided a template for potential plaintiffs to initiate a citizen suit not only against large-scale confinements that are having an adverse effect on Iowa's environment, but also against small-scale confinements that are less regulated when it comes to manure-management practices.

II. COW PALACE ANALYSIS

As previously discussed, *Cow Palace* has been the source of much discussion and debate since its publication in 2015.[34] The two provisions of RCRA alleged by the plaintiffs in the suit include: (1) the outlaw of "the disposal of solid waste in a manner that constitutes 'open dumping,'" and (2) the "contribut[ion] to the creation of an imminent and substantial endangerment to human health or the environment."[35] The court noted the substantial overlap in the two claims and simplified its analysis into the following three issues:

> (1) whether the manure at the Dairy, when over-applied to land, stored in lagoons that leak, and managed on unlined, permeable soil surfaces, constitutes the "handling, storage, treatment, transportation, or disposal of . . . solid waste;" (2) whether the manure "contaminates" the groundwater or surface water, and relatedly whether this water is "beyond the solid waste boundary;" [and] (3) whether, if the nitrates are reaching water, this contamination is pos-

29. Diane Rosenberg, *The Iowa LLC Loophole*, JEFFERSON COUNTY FARMERS & NEIGHBORS, INC., https://perma.cc/XNW4-MJTX (archived Aug. 31, 2017).

30. *Id*.

31. *See* Eller, *supra* note 22.

32. *See* Rosenberg, *supra* note 29.

33. OSTERBERG ET AL., *supra* note 3, at 8.

34. *See* Carol Ryan Dumas, *Yakima Dairy Challenge Has Broad Implications, Experts Say*, CAP. PRESS (Aug. 18, 2015, 10:46 AM), https://perma.cc/9TB7-MQUF.

35. Cmty. Ass'n for Restoration of the Env't (*CARE*) v. Cow Palace, L.L.C., 80 F. Supp. 3d 1180, 1218 (E.D. Wash. 2015) (quoting 42 U.S.C. § 6945(a) (2012)).

> ing an "imminent and substantial endangerment" to human health or the environment; . . .[36]

A. Background

The Dairy is among a cluster of Lower Yakima Valley CAFOs in Washington State.[37] At the time of the lawsuit, the Dairy reported to have within its confinement over 11,000 animals, which included "7,372 milking cows, 897 dry cows, 243 springers [cow or heifer close to calving], 89 breeding bulls, and 3,095 calves."[38] The Dairy, like many other CAFOs in the country, produces enormous amounts of animal manure.[39] On an annual basis, the Dairy creates in excess of 100 million gallons of manure that must be managed.[40] The manure is managed in one of three ways: composted and later exchanged with third parties, impoundment in storage lagoons, or application to agriculture fields as fertilizer.[41]

Under Washington law, the Dairy was required to obtain a Dairy Nutrient Management Plan (DNMP).[42] A DNMP provides confinements with a viable plan to help manage contaminated nutrients and prevent those nutrients from entering the surface waters nearby.[43] However, the court found the Dairy did not sufficiently adhere to the DNMP.[44] For instance, the Dairy would determine its land manure application rates by merely using average values discussed in the DNMP as examples, rather than doing its own soil sampling analysis using agronomic rates.[45] The DNMP required application rates "to be adjusted according to the actual test results."[46] Additionally, the court found the Dairy applied 7,680,000 gallons of manure onto a field that had already been sufficiently fertilized and even applied its manure onto bare ground where no crops were ever planted.[47]

The Dairy stored millions of gallons of its liquid manure in lagoons.[48] The

36. *Id.* at 1219 (discussing whether each of the defendants implicated in the lawsuit were responsible parties under RCRA). For this Note, the fourth factor will not be addressed.

37. *Id.* at 1187.

38. *Id.*

39. *Id.*

40. *Id.*

41. *Id.* at 1188, 1195, 1220.

42. *Id.* at 1189.

43. *Id.* at 1191.

44. *Id.* at 1221.

45. *Id.* at 1192.

46. *Id.* at 1190 (citing Cmty. Ass'n for Restoration of the Env't (*CARE*) v. Cow Palace, L.L.C., ECF No. 226-1).

47. *Id.* at 1193.

48. *Id.* at 1194.

Natural Resource Conservation Service (NRCS), an agency that "provides America's farmers and ranchers with financial and technical assistance," sets forth certain standards to help dairies construct lagoons to effectively hold manure and eliminate leakage.[49] According to the NRCS, lagoons constructed above aquifers are strongly discouraged unless a reasonable alternative does not present itself.[50] When a lagoon is constructed above an aquifer, the NRCS standards suggest "'additional measures of safety from pond seepage,' such as clay or synthetic liner, should be considered."[51] Notably, the Dairy's lagoons were located above a major aquifer that provided residential drinking water.[52] Furthermore, the Dairy admitted none of its lagoons had a synthetic liner or any other sort of additional measure to protect against seepage.[53] Samples taken near two of the Dairy's lagoons found high levels of nitrate, ammonium, and phosphorus.[54] In addition to the over-application of manure and poor lagoon construction, the Dairy composted its manure on natural, unlined soil.[55] In sum, the plaintiffs gathered evidence indicating the Dairy's inadequate manure management led to nutrient contamination in the area's groundwater and surface water.[56]

The plaintiffs, Community Association for Restoration of the Environment (CARE) and Center for Food Safety (CFS), are two non-profit corporations who brought this action against the Dairy on behalf of its organizations and the independent members within the groups.[57] CARE "is a public interest corporation dedicated to informing Washington state residents about activities that endanger the health, welfare, and quality of life for current and future residents."[58] In addition, CFS—also a public interest corporation—is "organized under the laws of Washington D.C., whose mission is to protect the environment and human health from harmful food production technologies, including the negative impacts of industrial agricultural technologies."[59]

49. *Id*. at 1195; U.S. Dep't of Agric., *About NRCS*, WELCOME, https://perma.cc/NV75-FJUJ (archived Aug. 31, 2017).

50. *Cow Palace*, 80 F. Supp. 3d at 1195 (citing Cmty. Ass'n for Restoration of the Env't (*CARE*) v. Cow Palace, L.L.C., ECF No. 226-1 ¶ 87; 256-1 ¶ 87).

51. *Id*.

52. *Id*.

53. *Id*.

54. *Id*. at 1196.

55. *Id*. at 1197.

56. *Id*. at 1198.

57. *Id*. at 1203-04.

58. *Id*. at 1204.

59. *Id*.

B. Can the Dairy's Manure Constitute a "Solid Waste" Under RCRA?

This issue sparked the most in-depth analysis by the court, and its holding as to whether the Dairy's manure could be classified as "solid waste" provided the foundation for the court's subsequent analysis regarding "open dumping" and "imminent and substantial endangerment to the public health and environment."[60] RCRA defines solid waste as "any garbage, refuse, . . . and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from . . . agricultural operations . . . ."[61] With this in mind, the court classified the Dairy's manure as discarded material, using a definition of the term cited in a case from the Ninth Circuit.[62] In reaching that conclusion, the court determined that whether a manufactured product has become a solid waste depends on "whether that product 'has served its intended purpose and is no longer wanted by the consumer.'"[63]

While manure initially appears to fit within the solid waste definition, the relevant RCRA and EPA regulations provide an agricultural wastes exemption, which includes manure and crop residues that are "returned to the soil as fertilizers or soil conditioners."[64] The Dairy argued this exemption should be interpreted as a blanket exemption, suggesting that when a CAFO uses its confinement-generated manure for fertilization purposes, it can never constitute a solid waste under RCRA.[65] However, the court in *Cow Palace* points out that the exemption applies "only to the extent the wastes are 'returned to the soil as fertilizers or soil conditions.'"[66] The court determined that when the issue of whether manure constitutes a solid waste is contemplated, the question that must be asked is "whether the manure is handled and used in such a manner that its usefulness as a fertilizer is eliminated."[67] The argument against the blanket exemption is further substantiated in *Water Keeper Alliance, Inc. v. Smithfield Foods, Inc.*, which stated a blanket animal waste exception does not exist that excludes it from the solid waste definition.[68]

60. *Id.* at 1219-28 (first citing 42 U.S.C. § 6945(a) (2012); then citing 42 U.S.C. § 6972(a)(1)(B) (2012)).

61. 42 U.S.C. § 6903 (2012).

62. Safe Air for Everyone v. Meyer, 373 F.3d 1035, 1041 (9th Cir. 2004) (defining the term "discard" as to "cast aside; reject; abandon; give up"); *Cow Palace*, 80 F. Supp. 3d at 1219-20.

63. *Cow Palace*, 80 F. Supp. 3d at 1219-20 (citing *Meyer*, 373 F.3d at 1041).

64. 40 C.F.R. § 257.1(c)(1) (2017).

65. *Cow Palace*, 80 F. Supp. 3d at 1220.

66. *Id.* (citing 40 C.F.R. § 257.1(c)(1) (2014)).

67. *Id.*

68. Water Keeper All., Inc. v. Smithfield Foods, Inc., No. 4:01-CV-27-H(3), 2001 U.S. Dist. LEXIS 21314, at *12 (E.D.N.C. Sept. 20, 2001).

Rather, the determination is a functional inquiry that focuses on the underlying use of the animal waste instead of the agricultural waste definition.[69]

The plaintiffs, CARE and CFS, did not dispute the fact manure was generally a useful and valuable product when stored and applied as fertilizer.[70] Rather, they contend the Dairy "discarded manure by applying it to agricultural fields without regard to crop fertilization needs, and abandoned the manure when storing it in lagoons that leak and managing [the waste] on unlined, native soils."[71]

The court analyzed the individual systems the Dairy used to manage its manure: land application, lagoons, and composting.[72] Each analysis focused on whether, in that particular system, manure could be classified as a solid waste.

1. Land Application

The plaintiffs asserted the Dairy's manure was being over-applied to the extent the crops could not effectively use the fertilizer, thus constituting "discarded material" as defined in *Safe Air for Everyone v. Meyer*.[73] Therefore, the excess manure applied to the crops provided no beneficial use nor was it used as it was intended—as fertilizer.[74]

The plaintiffs provided evidence to establish the Dairy failed to employ the requisite manure nutrient analysis to determine appropriate applications.[75] Additionally, the Dairy did not take into account residual manure that had already been present in the crop soil from previous applications.[76] Millions of gallons of manure had already been applied to the agricultural fields, and the crops were already sufficiently saturated with the nitrates from prior applications.[77] Thus, the additional manure applied could not fertilize the crops, and consequently, the circumstances supported plaintiffs' assertion that the manure was not "returned to the soil as fertilizer" because the crops simply could not use the surplus of manure.[78]

In sum, the court found the Dairy's manure application practices constituted

69. *Cow Palace*, 80 F. Supp. 3d at 1220 (citing *Smithfield Foods*, 2001 U.S. Dist. LEXIS 21314, at *12).

70. *Id.* at 1220-21.

71. *Id.*

72. *Id.* at 1221.

73. Safe Air for Everyone v. Meyer, 373 F.3d 1035, 1041 (9th Cir. 2004); *Cow Palace*, 80 F. Supp. 3d at 1221.

74. *Cow Palace*, 80 F. Supp. 3d at 1221.

75. *Id.* at 1221-22.

76. *Id.* at 1222.

77. *Id.*

78. *Id.*

"discarded materials" as defined in *Safe Air*.[79] The Dairy's application process deviated from the guidelines set forth in the DNMP.[80] The court concluded by stating the Dairy's manure application practices were "done without regard to crop fertilization needs," and "the otherwise beneficial purpose of manure as fertilizer was eliminated and the manure discarded."[81]

2. Lagoons

The plaintiffs allege the otherwise beneficial manure was transformed into solid waste when the lagoons were constructed in such a way as to allow leakage into the soil—with the end result of the manure eventually accumulating into the environment and losing its beneficial fertilization and commodity purposes.[82] While the Dairy argued its lagoons were constructed in conformity with NRCS standards, which allow for permeability, this permeability is premised on the idea that these lagoons are intended for temporary storage with the aim of preserving manure's usefulness for future land application.[83]

In *Cow Palace*, the court indicated the RCRA definition of solid waste could potentially apply to a material that has accumulated in the environment over time after the material had already served its intended purpose.[84] Furthermore, the court pointed out that the manure leaking from the Dairy's lagoons was neither a natural nor a foreseeable consequence of the manure's intended use, and instead, it was a result of the permeable nature of the structure.[85] Due to its permeability, the stored manure—an otherwise beneficial product—was converted into a solid waste upon its entry into the soil beneath the lagoon.[86] Because of the manure and its leaching constituents being knowingly abandoned in the soil beneath the lagoon, it constituted a solid waste.[87]

The court ultimately ruled the plaintiffs provided indisputable evidence to support their assertion that the Dairy's lagoons were leaking, the constituents were

79. *Id.* at 1222-23; *see* Safe Air for Everyone v. Meyer, 373 F.3d 1035, 1041 (9th Cir. 2004).

80. *Cow Palace*, 80 F. Supp. 3d at 1222-23.

81. *Id.*

82. *Id.* at 1223.

83. *Id.*

84. *Id.*; *see* Ecological Rights Found. v. Pac. Gas & Elec. Co., 713 F.3d 502, 514-16 (9th Cir. 2013).

85. *Cow Palace*, 80 F. Supp. 3d at 1223.

86. *Id.*

87. *Id.* at 1224.

seeping from the lagoon into the deep soil, and as a result, the dangerous accumulation of nitrates would eventually contaminate the underlying aquifer.[88] The court found the manure that leaked as a consequence of the poorly constructed lagoon could be classified as "discarded material," and thus, was a solid waste.[89]

3. Composting

The Dairy composted a large portion of its manure—the plaintiffs assert that because the manure is composted on native, unlined soil, it allows for nitrates to accumulate below the surface.[90] As a result of those manure constituents seeping into the underlying soil, plaintiffs argued the constituents were no longer a beneficial product and transformed into a discarded material.[91]

The court determined the manure to be both knowingly abandoned and, because the manure was accumulating into dangerous quantities, a solid waste.[92] Similar to the analysis in determining the leaching manure from the lagoons to be a solid waste, the court reasoned "[t]he consequence of such unlined composting surfaces converts what would otherwise be a beneficial product (the composted manure) into a solid waste (the discarded, leaching constituents of manure) under RCRA because the manure is knowingly abandoned to the underlying soil."[93] The court found the Dairy's composting practices to be purposeful in allowing wet manure to inhabit open, native soil.[94] This would allow for dangerous nutrients to leak into the deep soil, ultimately putting the aquifer at extreme risk.[95]

In sum, the court determine each of the dairy's systems of managing its stored manure put the underlying aquifer at risk because the manure and its constituents were allowed to accumulate into the underlying soil.[96] As a result, the generated manure was transformed into a discarded material, thus constituting a solid waste under RCRA rather than an exempt agricultural waste.[97]

88. *Id*.

89. *Id*.; *see also* Safe Air for Everyone v. Meyer, 373 F.3d 1035, 1041 (9th Cir. 2004) (defining the term "discard" as to "cast aside; reject; abandon; give up").

90. *Cow Palace*, 80 F. Supp. 3d at 1224.

91. *Id*.

92. *Id*.

93. *Id*.

94. *Id*.

95. *Id*.

96. *Id*.

97. *Id*. at 1225.

C. Were the Dairy's Operations Contaminating the Environment?

In reaching a decision, the court had to determine whether the dairy's operations contaminated the environment. It is important to point out the statutory standard only required the plaintiffs to show the operations of the Dairy contributed or were contributing to the disposal of solid waste in such a way that it may threaten public health.[98] The plaintiffs were not required to quantify that contribution, nor were they required to demonstrate the Dairy was the sole or primary cause of that contamination.[99] The court parsed its analysis into two component parts: contamination of the groundwater and surface water, and contamination "beyond the solid waste boundary."[100]

1. Groundwater and Surface Water

The plaintiffs alleged nitrates from the manure (over-applied as fertilizer and stored in the Dairy's compounds and lagoons) were reaching the ground water.[101] The court determined that although the significance of contribution was in dispute, the assertion that the underlying aquifer would continue to be affected by the migration of nitrates from below the crop root zones near the Dairy was not in dispute.[102] Sampling by the plaintiffs, the Dairy, and the EPA all indicated excess levels of nitrates within the groundwater and monitoring wells.[103] Moreover, the presence of dairy pharmaceuticals and other chemicals that had been used at the Dairy indicated its operations contributed to the groundwater's high nitrate levels.[104]

Due to the fact that the soil beneath the Dairy was "not conducive to denitrification," the likelihood of the nitrates drifting to the aquifer by way of rainfall, snowmelt, or irrigation runoff increased.[105] Groundwater recharge—the process by which surface water is injected into a groundwater reservoir—was also occurring rapidly; certainly more rapidly than what scientists had originally predicted.[106] The variation in temperature and water table levels, coupled with the presence of dairy-used pharmaceuticals within the area's wells, substantiated the contention the surface activities were negatively impacting the groundwater.[107] Ultimately, the court

98. *Id.* at 1226.
99. *Id.*
100. *Id.* at 1225-27.
101. *Id.* at 1223.
102. *Id.* at 1225.
103. *Id.*
104. *Id.*
105. *Id.* at 1224.
106. *Id.* at 1226; *see also Artificial Groundwater Recharge*, USGS, https://perma.cc/T7BK-N3ZV (archived Aug. 31, 2017).
107. *Cow Palace*, 80 F. Supp. 3d at 1225-26.

determined, at minimum, the Dairy's operations were contributing to the elevated levels of nitrates found below the root zone in the underlying groundwater.[108]

The issue of whether the Dairy's operations were contaminating the surface water through surface runoff and the intermingling of shallow groundwater was determined to be an issue of material fact and was thus reserved for resolution at trial.[109] Because the parties settled and never reached trial, the court never affirmatively ruled upon the controversy.[110] However, significant evidence suggested the Dairy also contributed to the contamination of the surface water.[111]

2. Contamination "Beyond the Solid Waste Boundary"

The "solid waste boundary" is defined as the "'outermost perimeter' of where waste is disposed."[112] The plaintiffs asserted the contamination, as a result of the Dairy's manure management operations, had extended beyond the solid waste boundary.[113] The area's groundwater flows south and southwest, and as a result, "any nitrates that migrate into the underlying aquifer will either be extracted from a well or eventually discharged to surface water."[114] Samples from downgradient wells indicated high nitrate levels, and the court determined the levels to be directly correlated to Dairy's operations.[115] As a result, because the Dairy's "nitrate contamination extend[ed] beyond the 'outermost perimeter' of where the Dairy discard[ed] its manure, . . . the Dairy's activities contaminat[ed] an area 'beyond the solid waste boundary.'"[116]

D. Did the Contamination Pose a Substantial and Imminent Endangerment to Health or the Environment?

The plaintiffs asserted the Dairy's operations had contaminated the groundwater in the area to the point where the excess nitrate levels "may present an imminent and substantial endangerment to health or the environment."[117] The court considered how other courts had highlighted the word "may" in ascertaining the degree of risk required to establish liability under RCRA.[118] Additionally, "the term

108. *Id*. at 1226.
109. *Id*. at 1224-26.
110. *Id*. at 1226.
111. *See id*. at 1202.
112. *Id*. at 1227 (citing 40 C.F.R. § 257.3-4(c)(5) (2014)).
113. *Id*.
114. *Id*.
115. *Id*.
116. *Id*. (citing 40 C.F.R. § 257.3-4(c)(5) (2014)).
117. *Id*.
118. *Id*.

imminent 'does not require a showing that actual harm will occur immediately so long as the risk of threatened harm is present.'"[119] Moreover, a finding of substantial endangerment only requires "a threatened or potential harm."[120] The court found the above analysis to be compelling in its finding of whether the Dairy's contamination did pose a substantial or imminent endangerment.

Consuming water with elevated nitrates can cause significant health problems such as cancer.[121] For this reason, the EPA has set the Maximum Contaminant Level (MCL) at 10 mg/L.[122] The plaintiffs tested 115 residences near the Dairy, and their sampling revealed 66 of those residences having levels that exceeded the MCL.[123] Remarkably, some residences exceeded 50 mg/L.[124] As discussed above, the plaintiffs' proof of contamination merely needed to establish that the contamination may have presented a threatened or potential harm.[125] Accordingly, the court determined Dairy's operations had contaminated the water to the extent that its operations "may present an imminent and substantial endangerment to the public."[126]

The court concluded its analysis by proclaiming there could be no genuine issue of material fact that the Dairy's manure management practices violated RCRA's open dumping and substantial and imminent endangerment provisions, and it found the defendants to be the responsible parties under the Act.[127] In May of 2015, a settlement was reached between the parties in which the Dairy agreed to certain mitigation measures, as well as to provide funds for nearby residences to obtain clean drinking water.[128]

III. COW PALACE APPLICATION IN IOWA

The court's analysis in *Cow Palace* has effectively constructed a blueprint for potential plaintiffs who seek to hold livestock confinements accountable for their contribution to the damage of natural resources.[129] More specifically, where

119. *Id*.
120. *Id*.
121. *Id*.
122. *Id*.
123. *Id*.
124. *Id*.
125. *Id*. at 1228.
126. *Id*.
127. *Id*. at 1230.
128. Caroline Simson, *Wash. Dairy Settles Enviros' Manure Contamination Suit*, LAW360 (May 12, 2015, 4:56 PM), https://perma.cc/GH8H-SA9A.
129. Lauren Tavar, Recent Case, *The Aftermath of* CARE v. Cow Palace *and the Future of RCRA in CAFO Cases*, SUSTAINABLE DEV. L. & POL'Y, Fall 2015, at 34, 34.

the government and its agencies, such as the DNR, do not address environmental issues related to manure management and subsequent nutrient contamination, *Cow Palace* could provide an avenue for citizens to initiate a civil action.[130] A civil action could be brought against both large-scale and small-scale confinements, the latter of which requires less oversight by the DNR.[131] In Iowa, RCRA could be utilized in a lawsuit if it can be established that the state's water contamination—a persistent problem in Iowa—is attributed to the state's thousands of hog confinements.[132]

The EPA recently listed more than 725 Iowa waterways as impaired.[133] Additionally, the DNR monitors thirty-eight state-owned beaches during the summer months for a type of toxin that results from manure runoff.[134] Over the past few years, beach advisories have increased at an alarming rate.[135] In 2015, Iowa issued thirty-four advisories due to an increase in microcystin.[136] Microcystin is a toxin that is often produced by cyanobacteria, a bacteria created when manure flows into waterways and creates algal blooms.[137] These cyanobacterial algal blooms can contaminate sources of drinking water and cause various outbreaks of illnesses.[138]

Moreover, in March of 2015, the Des Moines Water Works (DMWW) Board of Trustees filed a suit against three northwest Iowa counties targeting ten drainage districts for the discharge of nitrate pollutants into the Raccoon River.[139] The DMWW provides drinking water to approximately 500,000 Iowans while drawing most of its supply from the Raccoon and Des Moines rivers.[140]

These occurrences indicate waterways within the state of Iowa are suffering from various levels of manure-induced contaminations.[141] The broad application of RCRA in *Cow Palace* may provide a cause of action for prospective Iowa plaintiffs who are able to establish that Iowa-based confinements have contributed to that contamination.[142] The RCRA provisions discussed in *Cow Palace* could provide

130. *See id.*
131. Rosenberg, *supra* note 29.
132. Eller, *supra* note 22.
133. AG WEB, *supra* note 22.
134. OSTERBERG ET AL., *supra* note 3, at 5.
135. *Id.*
136. *Id.*
137. *Id.*
138. *Id.*
139. *Board of Water Works Trustees Votes to Pursue Lawsuit Against Drainage Districts*, DES MOINES WATER WORKS (Mar. 10, 2015), https://perma.cc/K62N-JTJK.
140. *Id.*
141. *Id.*
142. *See generally* Cmty. Ass'n for Restoration of the Env't (*CARE*) v. Cow Palace, L.L.C., 80 F. Supp. 3d 1180 (E.D. Wash. 2015).

standing to an Iowa plaintiff if it can be established that a hog confinement disposed of any manure in a manner where the material could fall under RCRA's definition of solid waste.[143] This would subsequently show the solid waste contributed to the contamination of a water source "beyond the solid waste boundary," which may pose a substantial and imminent endangerment to health or the environment.[144]

A. Hog Manure Can Be a Solid Waste under RCRA

The mere fact the material is manure, as in *Cow Palace*, does not automatically designate it a solid waste under RCRA.[145] A manufactured product, such as manure, becomes a solid waste when the product is discarded and "has served its intended purpose and is no longer wanted by the consumer."[146] The manure was deemed a solid waste because its use as a beneficial product was eliminated when it was discarded and abandoned.[147]

When analyzing whether hog manure can be a solid waste, a potential plaintiff must show the manure is a discarded material under RCRA's definition.[148] If it can be shown that hog manure has accumulated within the environment to the point where it was not the natural, expected consequence of the manure's intended use, and the accumulation of that manure was abandoned thus eliminating its beneficial use, the manure would be a solid waste.[149]

Manure spills have been occurring more frequently in Iowa, resulting in an increase in underground leakage.[150] The increase in manure spills is often attributed to faulty equipment and carelessness among producers.[151] However, owners of hog confinements are not required to obtain any specific permit that might require preventative equipment or impose greater fines if spills do occur.[152] Moreover, a major pork producer has submitted plans to build a new hog confinement near Lansing,

143. *Id*.
144. *Id*.
145. *Id*. at 1219-20.
146. *Id*.
147. *Id*. at 1220.
148. 42 U.S.C. § 6903(27) (2012); *see* Safe Air for Everyone v. Meyer, 373 F.3d 1035, 1041 (9th Cir. 2004).
149. *Cow Palace*, 80 F. Supp. 3d at 1223.
150. AG WEB, *supra* note 22; *see also* IOWA CITIZENS FOR COMMUNITY IMPROVEMENT, *supra* note 25.
151. AG WEB, *supra* note 22.
152. *Id*.

Iowa, with 2499 pigs—a single pig short of stricter state regulations.[153] The confinement would be adjacent to streams and hills with porous topography, promoting the funneling of manure and other sediment into nearby waterways.[154] These instances indicate hog confinements in Iowa are not always aiming to be risk averse when it comes to their manure management and construction. Manure constituents that have leaked into the soil as a result of faulty equipment could likely be interpreted as discarded material under RCRA, and thus as a solid waste, because it is not a natural, expected consequence of the manure's intended use.[155] The same conclusion could be drawn from the proposed confinement in Lansing. If the manure and its constituents are allowed to leak into the soil, eliminating the manure's use as a beneficial product, it too could constitute a solid waste under the Act.[156]

In *Cow Palace*, manure was applied onto agricultural fields in excess of what the crop could use as fertilizer, and the excess material was determined to be discarded and a solid waste.[157] This practice of applying manure to a crop that cannot sufficiently use the material as fertilizer draws similarities to land-application practices in the state of Iowa and the rest of the Midwest. During the winter months, it is difficult for fertilizer to penetrate frozen soil.[158] Manure that is applied to frozen soil cannot be fully absorbed, and as a result, there is a greater risk the manure and its constituents will migrate towards nearby waterways during the winter thaw and spring rain.[159] Due to the frequent fluctuations in temperature throughout the Midwest, the EPA has noted the importance of appropriate timing when applying manure onto agricultural fields.[160] The increased risk that comes with winter manure application is another example of a beneficial product that could become a solid waste if the proper land-application techniques were ignored.

Ultimately, *Cow Palace's* ruling demonstrates hog manure can constitute a solid waste under RCRA. However, its underlying status as manure isn't what de-

153. Eller, *supra* note 22.

154. *See id.*

155. Cmty. Ass'n for Restoration of the Env't (*CARE*) v. Cow Palace, L.L.C., 80 F. Supp. 3d 1180, 1222-23 (E.D. Wash. 2015).

156. *Id.* at 1225.

157. *Id.* at 1222-23.

158. OSTERBERG ET AL., *supra* note 3, at 2.

159. *Id.*

160. *Id.*

termines whether it is a solid waste—rather, the functional use of that manure determines whether it can be classified as such.[161] If it can be shown that a hog confinement's manure has been discarded to the point where its use as a beneficial product is eliminated, citizens can utilize RCRA language to initiate action.[162]

B. Hog Manure Could Be Contributing to the Elevated Nitrates in Iowa's Drinking Water

As discussed above, manure spills have become more prevalent, and the number of impaired waterways has risen from 630 in 2012 to 725 in 2015.[163] The high concentrations of nitrates in Iowa's drinking water—a statistic for which Iowa ranks amongst the highest in the country—can likely be attributed to the state's thousands of confinements and hundreds of manure spills.[164] A potential plaintiff seeking to establish that a particular confinement's solid waste has contributed to water contamination must establish such a causal link throughout the course of litigation.[165] However, as evidenced by the recent DMWW lawsuit, the increase in beach advisories, and the sheer amount of manure produced annually by hog operations (approximately 10 billion gallons), a correlation is not only possible, but probable.[166]

At the time DMWW filed its lawsuit, sample testing done on the groundwater in the three counties in question revealed nitrate levels as high as 39.2 mg/L; nearly four times what the EPA has set as the MCL.[167] DMWW alleges the high nitrate levels to be attributed to the counties' drainage districts, which funnel groundwater to the Raccoon River.[168] The drainage districts allegedly promote the funneling of farm field runoff into the natural groundwater.[169] DMWW's lawsuit aims to hold the counties in question accountable for their role in governing the drainage districts that are allegedly contaminating the Raccoon River, rather than

161. *Cow Palace*, 80 F. Supp. 3d at 1220 (citing Water Keeper All., Inc. v. Smithfield Foods, Inc., No. 4:01-CV-30-H(3), 2001 U.S. Dist. LEXIS 21314, at *12 (E.D.N.C. Sept. 20, 2001)).

162. Tavar, *supra* note 129, at 34.

163. David Pitt, *Polluted Iowa Waterways Rise 15 Percent in 2 Years*, DES MOINES REG. (May 14, 2015, 3:05 PM), https://perma.cc/83RY-XUSZ.

164. IOWA CITIZENS FOR COMMUNITY IMPROVEMENT, *supra* note 25; *see* Eller, *supra* note 2.

165. *Cow Palace*, 80 F. Supp. 3d at 1207.

166. AG WEB, *supra* note 22.

167. DES MOINES WATER WORKS, *supra* note 139.

168. *Id*.

169. *Board of Water Works Trustees Issue a Notice of Intent to Sue for Polluted Drinking Water*, DES MOINES WATER WORKS (Jan. 8, 2015), https://perma.cc/ZUS7-9PAM.

hold independent confinements accountable under RCRA as in *Cow Palace*.[170] What the DMWW lawsuit may illustrate is that Iowans want to address the amount of nitrates in their water but perhaps are unsure of whom to hold responsible. *Cow Palace* provides potential plaintiffs with an avenue by which a direct source of the contamination—the confinement and its manure—can be held accountable.

Under RCRA, the degree of such contribution need not be quantified, nor must any one confinement be the sole cause of the contamination.[171] Rather, having first established the water is contaminated, a potential plaintiff would need to show a confinement's solid waste has extended beyond the solid waste boundary and contributed to the contamination.[172] Specifically, the confinement's nitrate contamination must extend beyond the outermost perimeter of where the confinement discards its manure.[173] For example, in *Cow Palace*, the court determined the Dairy's contamination extended beyond the solid waste boundary because downgradient well data showed high nitrate concentrations, indicating the Dairy's contamination may have extended beyond where the Dairy discarded its manure.[174] Similarly, DMWW determined its water source to be contaminated as a result of high nitrate levels in the Raccoon River, a tributary of the Des Moines River.[175] If the contaminated water possessed constituents, it indicates a confinement's manure extended beyond the solid waste boundary, and DMWW could have likely established the causal link to initiate a lawsuit under RCRA.[176] *Cow Palace* was published the same month DMWW issued its notice of intent to sue, perhaps contributing to DMWW's decision to not pursue an action under RCRA.[177] Nevertheless, *Cow Palace's* broad application will pave the way for future plaintiffs to address the contamination at a direct source—hog confinements.

C. Contamination from Hog Confinements May Pose a Substantial and Imminent Endangerment to Health or the Environment

For a confinement to be culpable under this particular standard, a potential plaintiff merely needs to demonstrate the confinement may pose a substantial and

170. DES MOINES WATER WORKS, *supra* note 139.

171. Cmty. Ass'n for Restoration of the Env't (*CARE*) v. Cow Palace, L.L.C., 80 F. Supp. 3d 1180, 1226 (E.D. Wash. 2015).

172. *Id.* at 1227.

173. *Id.* (citing 40 C.F.R. § 257.3-4(c)(5) (2014)).

174. *Id.*

175. DES MOINES WATER WORKS, *supra* note 139.

176. *Cow Palace*, 80 F. Supp. 3d at 1227.

177. *See generally id.* at 1180; *see also* DES MOINES WATER WORKS, *supra* note 169.

imminent danger to public health.[178] It is a broad application where particularized proof of harm is not necessary, requiring only the risk of a threatened or potential harm.[179] Where a confinement's manure has been discarded and contributed to the contamination of a water source, a confinement will likely be found to present an imminent and substantial endangerment to the public.[180]

The consumption of nitrate-polluted water can lead to a number of potential health concerns.[181] In the past five years, more than sixty Iowa towns confronted high nitrate levels, while 260 of Iowa's 880 municipal water systems are highly susceptible to becoming contaminated in the near future.[182] When drinking water contains high nitrate levels, methemoglobinemia (blue baby syndrome) is a major health concern. Although Iowa's last case of blue baby syndrome occurred in the 1970s, the court in *Cow Palace* pointed out it would be unconscionable to wait for an infant to be diagnosed before addressing the issue.[183] There can be no dispute that elevated nitrates in drinking water may present immense risk to health or the environment.[184] Thus, if a confinement's manure was discarded in a way that is considered a solid waste, and that waste contributed to the contamination of a water source that *may* present a risk of potential harm, the confinement will likely be a responsible party under *Cow Palace's* application of RCRA.[185]

It is evident RCRA's open dumping and imminent and substantial endangerment provisions can apply to hog confinements in Iowa, just as they did to the Dairy in Washington.[186] What is particularly important about the court's analysis in *Cow Palace* is its focus on nutrient management as it relates to groundwater.[187] The Dairy's abundance of manure and storage techniques are not what led to its culpability, but rather, it was its use of manure—or lack thereof—and the subsequent effect on the underlying soil, and ultimately, water sources. Moving forward, parties who wish to hold hog confinements accountable for their potential contribution to water pollution and public health should use *Cow Palace* as a template in establishing the confinement's inadequate nitrate management practices and the effects on the area's groundwater. Conversely, confinements that wish to avoid potential litigation under RCRA should avoid locations that would present increased risks

178. *See Cow Palace*, 80 F. Supp. 3d at 1227.
179. *Id*.
180. *Id*. at 1228.
181. Eller, *supra* note 2.
182. *Id*.
183. *Id*.; *see Cow Palace*, 80 F. Supp. 3d at 1228.
184. *Cow Palace*, 80 F. Supp. 3d at 1227.
185. *Id*. at 1230.
186. *Id*. at 1218.
187. Dumas, *supra* note 34.

of waterway contamination.[188] Additionally, waste storage structures, nutrient management plans, and their relevant specifications should be strictly adhered to.[189]

IV. CONCLUSION

Although *Cow Palace* never reached trial and was only a district court ruling, other courts will likely be persuaded by the decision.[190] Congress has yet to address *Cow Palace's* implications, and until it clarifies RCRA's intent, the ruling will likely support lawsuits in other jurisdictions.[191]

The high nitrate levels in Iowa's streams and groundwater is an issue that is garnering more attention for a number of reasons: the DMWW lawsuit, the media coverage of contamination and potential health effects, and the industrialization of hog confinements. This increasing citizen awareness may initiate legislative action in the near future as Iowans search for solutions to mitigate the health risks associated with a polluted water supply. Until such action takes place, however, *Cow Palace* has provided a framework for citizens to utilize RCRA language and pursue parties who are contributing to contamination.

188. Shannon L. Ferrell & Tiffany Dowell Lashmet, *One if by Land, Two if by Sea, Three if by Air: The Changing Face of Environmental Regulation of Production Agriculture*, *in* STATE BAR OF TEXAS: 10TH ANNUAL JOHN HUFFAKER AGRICULTURAL LAW COURSE 3 (2016).

189. *Id.* at 4.

190. *RCRA Settlement May Boost Law Suits Despite Averting Precedent*, INSIDE EPA WKLY. REP. (EPA), May 21, 2015, at 2.

191. *Id.* ("[The] liability ruling, along with other case law on what constitutes a 'discarded' material under RCRA and other statutes, is enough to support suits in other jurisdictions even without a ruling.").