2nd Annual Mid-South Agricultural and Environmental Law Update

Index for Session #1 Materials

Mississippi WQT Presentation Notes

EPA is heavily encouraging states to explore and adopt water quality trading programs (See http://water.epa.gov/type/watersheds/trading.cfm). In 2008, the EPA awarded $4.2 million to ten projects to support the development of WQT to reduce nutrient loads to the Gulf of Mexico.

While WQT is emerging as an important tool in water quality managers' toolkit, there are significant legal and technical challenges to implementation of a trading program and the Mississippi River Basin is years away from having the necessary regulatory framework in place.

This section provides a brief overview of water quality trading in general and some information on trading in the Chesapeake Bay, which is the only existing regional model. This section will then discuss the legal uncertainty and what that means for the Gulf.

What is Water Quality Trading?

Water Quality Trading (WQT) is a market-based instrument premised on the fact that the pollution reduction costs vary among the various entities. A trading program is established to enable sources with high abatement costs to purchase discharge reductions, known as credits, from sources that have lower abatement costs. The sources with lower abatement costs are generating "credits" for sale by reducing pollution discharges beyond regulated or permitted levels. WQT is most commonly promoted and applied to nutrients.

There are two main types of trading.

- Point-to-Point Trading: These are trades between permitted point sources, i.e. between sewage treatment plants or other regulated facilities.
- Point-to-Nonpoint Trading: This refers to trades between point sources (e.g., sewage treatment plants) and nonpoint sources of pollution, typically farmers. The farmers generate credits for sale by implementing BMPs designed to reduce runoff or manage nutrient loads.

Because nonpoint sources of pollution, such as agricultural runoff, are not directly regulated under the Clean Water Act (CWA), trading is often seen as an alternative to legislative reform. Through WQT, EPA and the states can generate desired reductions from unregulated sources.

Gulf of Mexico Hypoxia

The EPA is promoting WQT in the Mississippi River Basin to address the hypoxia or "dead zone" in the Gulf. Hypoxia in the northern Gulf of Mexico is defined as a concentration of dissolved oxygen less than 2 mg/L (2 ppm). This is the largest dead zone currently affecting the United States, and the second largest hypoxic zone worldwide. The average size of the hypoxic zone in the northern Gulf of Mexico over the past five years (2004-2008) is about 17,000 km2, the size of Lake Ontario. Information about the extent of the dead zone in 2014 is available at http://water.epa.gov/type/watersheds/named/msbasin/zone.cfm.

The dead zone is fueled by nutrient runoff, principally from agricultural activity, which stimulates an overgrowth of algae that sinks, decomposes, and consumes most of the life-giving

oxygen supply in the water. Because the primary contributors are unregulated sources, WQT is seen as one of the most promising mechanisms to reduce nutrient loading.

Examples of Trading Programs in the Basin

Trading programs can take a variety of forms. A couple of small pilot projects are underway in the Mississippi River Basin.

- Ohio has a water quality credit trading program for the Great Miami River, a tributary of the Ohio. (http://www.miamiconservancy.org/water/quality_credit.asp). This program was launched after a TMDL was developed for one of the three Great Miami's subwatersheds. The Miami Conservancy District first issued a request for proposals to generate agricultural credits. Soil and Water Conservation Districts in the area worked with farmers to submit applications for credit generation. Once applications were received, the Miami Conservancy District held a reverse auction to select and fund those applications that provided the greatest phosphorus reductions at the least cost. Funding for the projects comes from the wastewater treatment plants combined with a grant from the USDA Natural Resources Conversation Service. Credits are then allocated to investors, wastewater treatment plants, based on their initial investment amount.

    - According to Miami Conservancy District fact sheets, "as of May 2014, 397 agricultural projects have been contracted generating more than 1.14 million credits over the life of the projects. More than 1.6 million dollars will be paid to agricultural producers for these credits. This translates to a 572 ton reduction in nutrient discharges to rivers and streams and other benefits including more sustainable farming operations and an array of ancillary environmental benefits." (Miami Conservancy District, Water Quality Trading Program, available at http://newserver.miamiconservancy.org/water/documents/WQCTPfactsheet2014FINAL_000.pdf).

- A smaller scale example is provided by the Minnesota Pollution Control Agency incorporation of water quality trading provisions into the wastewater treatment permit for the Southern Minnesota Beet Sugar Cooperative, a farmer-owned cooperative with a beet-processing facility. The Cooperative wanted to build a wastewater treatment plant to serve the facility. A phosphorous TMDL on the lower Minnesota River prohibited the addition of a new discharger, but the MPCA allowed the Cooperative to build a WWTP and obtain a NPDES permit, provided it offset all discharges with non-point source phosphorus reductions. The Cooperative has achieved most of its offsets by contracting with its beet growers to grow spring cover crops to reduce runoff. More information available at: http://water.epa.gov/type/watersheds/named/msbasin/mn_01.cfm.

Prerequisites for Trading in Mississippi River Basin

A TMDL, or the equivalent, is often the driving force that motivates the participation of key players in water quality trading. This has certainly been true in the Chesapeake Bay where a looming court-ordered deadline to develop a TMDL lead the EPA and the states to establish total

load limits for N and P and develop voluntary tributary strategies. The reductions required to implement the tributary strategies and comply with a TMDL in Virginia are driving the trading programs in PA, MD, and VA. See, http://www.epa.gov/chesapeakebaytmdl/.

With the Chesapeake Bay 2000 Agreement, the states in the region agreed to work cooperatively to achieve the nutrient and sediment reduction targets necessary to remove the Bay from the list of impaired waters. Attempt to prevent imposition of mandatory reductions through TMDL. As a first step towards these goals, the EPA and the states developed water quality criteria which were to be incorporated into the state's existing water quality standards. In 2003, the six Chesapeake Bay watershed states (MD, PA, VA, DE, NY, and WV) and D.C. agreed to new nutrient reduction goals. These goals called for the states to reduce nutrient pollution to 174 million lbs/yr and phosphorus to 12.8 million lbs/year. These are, in essence, the total load EPA estimates the Chesapeake Bay can handle and still meet the three new water quality criteria.

EPA next divided the watershed into nine major river basins, subdivided by state boundaries. Resulted in 20 distinct state-specific basins. Total load for entire bay was allocated among these basin. Each state agreed to develop plans, known as Tributary strategies, to achieve these nutrient reduction goals. WQT is part of the Tributary strategies in PA, MD, and VA. In addition to providing the necessary motivation, the existence of a TMDL and the associated waste load allocations create the data foundation necessary to develop trading ratios and other parameters used to structure WQT programs.

Because there is no TMDL for the Mississippi River, there are no looming discharge reductions in sight that would force point sources such as wastewater treatment plants to consider trading. The Basin doesn't even have the foundation necessary to develop a TMDL – numeric water quality standards for nutrients. Implementation of TMDLs depend on a waterway's non-compliance with state water quality criteria.

The EPA's development of recommended nutrient water quality criteria and the states' adoption of nutrient water quality standards are legal prerequisites to the use of a TMDL to reduce nutrient pollution. EPA does not have recommended nutrient water quality criteria, but the agency does encourage states to adopt numeric nutrient WQS for both casual (Total Nitrogen and Total Phosphorus) and response (chlorophyll-a and clarity) parameters for all of their water body types (lakes and reservoirs, rivers and streams, estuaries, and wetlands).

The vast majority of states in the Mississippi River Basin have no numeric water quality standards for phosphorus in rivers or streams or for nitrogen in any waters.

- Minnesota did adopt statewide criteria for phosphorus in 2008.
- Illinois has numeric criteria for phosphorus in any reservoir or lake with a surface area of 8.1 hectares (20 acres) or more, or in any stream at the point where it enters any such reservoir or lake.
- Mississippi has no criteria although the state's nutrient criteria plan, revised July 2007, has a projected date of adoption for lakes, rivers and streams, and estuaries, as 2011.

The Gulf Restoration Network and a coalition of environmental groups, represented by the Tulane Environmental Law Clinic, are seeking to compel the EPA to establish numeric criteria for the Mississippi Basin. On July 30, 2008, they filed petition requesting that EPA establish TMDLs for nitrogen and phosphorus for the Gulf of Mexico, the Mississippi River and each Mississippi River tributary that fails to meet the numeric standards set for nitrogen and phosphorus for which a TMDL has not already been prepared. A lawsuit was subsequently filed

when EPA did not act favorably on the petition. This litigation is ongoing. Most recently, on April 7, 2015, the Fifth Circuit Court of Appeals vacated a district court ruling requiring the EPA to make a necessity determination and remanded the case for further proceedings. (see opinion in materials or download at http://www.tulane.edu/~telc/assets/Ct_Orders/4-7-15_GRN_v_McCarthy_5th_Cir.pdf).

On March 6, 2015, the State of Arkansas enacted legislation to authorize the implementation of a nutrient WQT program. Act 335 calls for the creation of a Nutrient Water Quality Trading Advisory Panel to advise the Arkansas Pollution Control and Ecology Commission and the Arkansas Natural Resources Commission on the development of the program. The text of the legislation is include in the CLE Materials.

Clean Water Act Overview

Even assuming the EPA and the states could move quickly to develop a program in the Mississippi River Basin similar to that in the Chesapeake Bay, there is quite a bit of legal uncertainty about whether trading is permissible under the current CWA.

- Water quality trading is often promoted as comparable to EPA's successful trading program for Sulfur Dioxide (SO2). That situation was quite different, however. Congress authorized the EPA to implement a market-based allowance trading system to deal with acid rain. The EPA does not have such clear statutory authority with respect to WQT. Major source of SO2 pollution were stationary sources already regulated by the EPA. The major sources of water pollution are unregulated point sources. WQT is more technically challenging.

- CWA goal is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Discharge of pollutant from a point source into waters of the U.S without a permit is prohibited. Points sources are required to met: Technology-based effluent limitations and Water quality-based effluent limitations, where necessary to achieve water quality standards. The biggest legal uncertainty facing water quality trading programs is the question of whether the CWA even permits the EPA to consider offsets, especially if a trading program involves an impaired water, a waterbody not meeting state water quality standards.

Additional Concerns

- How do you account for uncertainty? Trading ratios are recommended to address uncertainty. For example, a wastewater treatment plant would be required to buy two pounds of P reduction for each pound discharged. EPA recommends the use of trading rations of at least 2:1, but some programs allow 1:1 trades. Application of uncertainty ratios helps ensure that actual loads resulting from the trade do not violate water quality standards despite the inability to accurately measure them.

- How effective are the BMPs? Estimates of nutrient reductions achieved through BMP implementation are based on computer models. Very difficult to accurately measure the pollution reductions achieved from the creation of a riparian buffer or use of a particular agricultural practice.

- How should the trading program be enforced? Point Sources remain responsible for achieving reductions. Some liability risk can be shifted through the use of contracts, but many point sources remain wary of trading programs because they will pay the fines if the farmer does not implement the BMP or it fails.

IN THE UNITED STATES COURT OF APPEALS
FOR THE FIFTH CIRCUIT

United States Court of Appeals
Fifth Circuit

FILED
April 7, 2015

Lyle W. Cayce
Clerk

No. 13-31214

GULF RESTORATION NETWORK; MISSOURI COALITION FOR THE ENVIRONMENT; IOWA ENVIRONMENTAL COUNCIL; TENNESSEE CLEAN WATER NETWORK; MINNESOTA CENTER FOR ENVIRONMENTAL ADVOCACY; SIERRA CLUB; PRAIRIE RIVERS NETWORK; KENTUCKY WATERWAYS ALLIANCE; ENVIRONMENTAL LAW & POLICY CENTER; NATURAL RESOURCES DEFENSE COUNCIL, INCORPORATED; WATERKEEPER ALLIANCE, INCORPORATED,

Plaintiffs - Appellees

v.

GINA McCARTHY, Administrator of the United States Environmental Protection Agency; UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Defendants - Appellants

Appeal from the United States District Court
for the Eastern District of Louisiana

Before HIGGINBOTHAM, CLEMENT, and HIGGINSON, Circuit Judges.

PATRICK E. HIGGINBOTHAM, Circuit Judge:

The Clean Water Act establishes a statutory scheme to protect and improve the quality of the country's waters. The administration of the Act depends on complicated interactions of three actors: the states, with lead responsibility for protecting waters within their borders; the EPA, which steps

in when the state-led efforts are inadequate; and the federal courts, which enforce Congressional mandates against state and federal regulators.

Not every state or EPA action taken under the Act is judicially cognizable; some are committed to agency discretion and are unreviewable. Under the statute, the EPA Administrator is obligated to issue new water quality standards in any case where she "determines that a revised or new standard is necessary to meet the requirements of" the Act. Here, the Administrator denied a petition for rulemaking, declining to make a so-called "necessity determination." The petitioners challenged this decision in federal court. The EPA countered that the denial was an unreviewable discretionary act.

This case poses two questions. First, do we have subject matter jurisdiction to review the EPA's decision not to make a necessity determination. We hold that we do. Second, was the EPA required to make such a determination. We hold that it was not.

I.

A.

Congress passed the Clean Water Act[1] "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[2] The Act bans "the discharge of any pollutant by any person," unless affirmatively allowed by law.[3] In regulating discharge, the Act "anticipates a partnership

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[1] The "Act" or "CWA."

[2] 33 U.S.C. § 1251(a).

[3] *Id.* § 1311(a). A "pollutant" includes, with certain enumerated exceptions, "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." *Id.* § 1362(6). "Discharge of a pollutant" is defined broadly as "any addition of any pollutant to navigable waters from any point source," *id.* § 1362(12), and "navigable waters," in turn, "means the waters of the United States, including the territorial seas," *id.* § 1362(7). The outer limit of the phrase "waters of the United States" remains fuzzy. *See, e.g.*, *Rapanos*

between the States and the Federal Government,"[4] with both sovereigns sharing regulatory responsibilities for water protection.[5]

One area where both states and the federal government play a role is in the setting and administration of water quality standards. These regulations "define[] the water quality goals of a water body . . . by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses."[6] The states are the primary player in this process; they are "responsible for reviewing, establishing, and revising water quality standards."[7] The federal government plays a secondary role, with important backstop responsibilities. State standards must be submitted to the EPA, the agency tasked with reviewing and approving these standards, to ensure that they are sufficient to "protect the public health or welfare, enhance the quality of water and serve the purposes of this [Act]."[8] If the state's standards do not pass muster, the EPA specifies changes required for approval.[9]

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v. *United States*, 547 U.S. 715, 733-34 (2006); *id.* at 766-67 (Kennedy, J., concurring in the judgment).

[4] *Arkansas* v. *Oklahoma*, 503 U.S. 91, 101 (1992).

[5] In *New York* v. *United States*, 505 U.S. 144 (1992), the Court termed this regulatory arrangement one of "cooperative federalism," where Congress "offer[s] States the choice of regulating that activity according to federal standards or having state law pre-empted by federal regulation." *Id.* at 167 (internal citation omitted).

[6] 40 C.F.R. § 131.2. These standards must "protect public health or welfare, enhance the quality of water and serve the purposes of the [Act]." *Id.* "'Serve the purposes of the Act' (as defined in . . . the Act) means that water quality standards should, wherever attainable, provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water and take into consideration their use and value of public water supplies, propagation of fish, shellfish, and wildlife, recreation in and on the water, and agricultural, industrial, and other purposes including navigation." *Id.*

[7] *Id.* § 131.4(a).

[8] 33 U.S.C. § 1313(c)(2)(A).

[9] *Id.* § 1313(c)(3). The EPA must notify the states of any changes within 90 days after the proposed water quality standards are submitted to it. *Id.*

The EPA may also directly set water quality standards through its own regulations under the two circumstances set out in 33 U.S.C. § 1313(c)(4)(A) and (B) ("section 1313(c)(4)").

> (A) if a revised or new water quality standard submitted by such State . . . for such waters is determined by the Administrator not to be consistent with the applicable requirements of this chapter, or
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> (B) in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of this chapter.[10]

In other words, in order to regulate pursuant to its section 1313(c)(4)(B) powers, the EPA must make what is called a "necessity determination." If the agency sets water quality standards, it acts through a rulemaking process, and "is subject to the same policies, procedures, analyses, and public participation requirements established for States in these regulations."[11]

B.

This case began when a group of environmental organizations petitioned the EPA[12] to "use its powers [pursuant to section 1313(c)(4)(B)] to control nitrogen and phosphorous pollution" within the Mississippi River Basin and the Northern Gulf of Mexico.

The EPA declined to do so. While the agency agreed that nitrogen and phosphorous pollution "is a significant water quality problem," it did "not believe that the comprehensive use of federal rulemaking authority is the most

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[10] *Id.* § 1313(c)(4)(A)-(B) (emphasis added).

[11] 40 C.F.R. § 131.22(c).

[12] The organizations included: Gulf Restoration Network, Louisiana Environmental Action Network, Tennessee Clean Water Network, Public Employees for Environmental Responsibility, Kentucky Waterways Alliance, Missouri Coalition for the Environment, Iowa Environmental Council, Prairie Rivers Network, Environmental Law & Policy Center, Midwest Environmental Advocates, Minnesota Center for Environmental Advocacy, Natural Resources Defense Council, and the Sierra Club.

effective or practical means of addressing these concerns at this time." Instead, the EPA said that, because its "long-standing policy, consistent with the CWA, has been that states should develop and adopt standards in the first instance," and in light of the fact that the states had been "quite active" in addressing water pollution issues, it was appropriate to let the states take the primary role in issuing new standards. In denying the petition, the EPA was explicit that it was "not determining that [new standards] are not necessary to meet CWA requirements," but rather was "exercising its discretion to allocate its resources in a manner that supports targeted regional and state activities to accomplish our mutual goals of reducing [nitrogen and phosphorous] pollution and accelerating the development and adoption of state approaches to controlling [nitrogen and phosphorous]."

The petitioners filed suit, positing that the EPA had violated the Administrative Procedure Act[13] and the CWA by declining to make a necessity determination. The EPA moved to dismiss the case on subject matter jurisdiction grounds, arguing that the decision whether to make a necessity determination was a discretionary act that the court lacked authority to review. The parties also cross-moved for summary judgment on the merits.

The district court ruled that it had jurisdiction to review the EPA's decision not to make a necessity determination.[14] It then went one step further. Pursuant to the Supreme Court's decision in *Massachusetts* v. *EPA*,[15] it held that the "EPA could not simply decline to make a necessity determination in response to . . . [the] petition for rulemaking."[16] It remanded

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[13] 5 U.S.C. § 551 *et seq*. (the "APA").

[14] *Gulf Restoration Network* v. *Jackson*, No. 12-677, 2013 WL 5328547, at *4 (E.D. La. Sept. 20, 2013).

[15] 549 U.S. 497 (2007).

[16] *Gulf Restoration Network*, 2013 WL 5328547, at *6.

the case to the agency with orders to conduct a necessity determination.[17] In doing so, the district court declined to issue specific guidance on "the types of factors that EPA can or cannot consider when actually making the necessity determination."[18]

This timely appeal followed.

II.

We review de novo the district court's legal conclusions about its subject matter jurisdiction.[19]

A.

We begin with the elementary principle that "the United States, as sovereign, is immune from suit save as it consents to be sued."[20] The petitioners have the burden of proving that Congress has consented to suit by affirmatively waiving sovereign immunity in the specific context at issue.[21] In the Administrative Procedure Act, the statute governing federal agency operations generally, Congress provided a general waiver of sovereign immunity for "[a] person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action within the meaning of a relevant statute."[22] In light of this language, federal courts must apply a general presumption that they have jurisdiction to review final agency actions.[23] But this waiver is not absolute, and Congress has provided that the

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[17] *Id.* at *7.

[18] *Id.*

[19] *Filer* v. *Donley*, 690 F.3d 643, 646 (5th Cir. 2012).

[20] *La. Dep't. of Envtl. Quality* v. *U.S. E.P.A.*, 730 F.3d 446, 448 (5th Cir. 2013) (bracket omitted) (quoting *United States* v. *Sherwood*, 312 U.S. 584, 586 (1941)).

[21] *See id.* at 448-49.

[22] 5 U.S.C. § 702. The APA waives sovereign immunity for all claims "other than money damages." *Id.* Only final agency actions are reviewable under the APA. *Id.* § 704.

[23] *See, e.g.*, *Sackett* v. *E.P.A.*, 132 S. Ct. 1367, 1373 (2012) ("The APA, we have said, creates a 'presumption favoring judicial review of administrative action,' but as with most presumptions, this one 'may be overcome by inferences of intent drawn from the statutory scheme as a whole.'") (quoting *Block* v. *Cmty. Nutrition Inst.*, 467 U.S. 340, 349 (1984)); *Save*

APA – and its concomitant grant of judicial review – does not apply in two circumstances: first, if the "statute[] preclude[s] judicial review," an exception not at issue in this case; and second, if "agency action is committed to agency discretion by law."[24]

In a quartet of cases, the Supreme Court provided two principles that guide our discretion analysis. The first is that the agency discretion clause "is a very narrow exception" to the principle of judicial review of administrative action.[25] It applies only "in those rare instances where statutes are drawn in such broad terms that in a given case there is no law to apply."[26] These are situations where "the statute is drawn so that a court would have no meaningful standard against which to judge the agency's exercise of discretion. In such a case, the statute ('law') can be taken to have 'committed' the decisionmaking to the agency's judgment absolutely."[27]

In determining whether Congress has provided a "meaningful standard," the court conducts a "careful examination of the statute on which the claim of agency illegality is based."[28] We look first to the statutory text, paying particular attention to the words Congress has chosen. For example, in *Webster* v. *Doe*, reviewing a statute that allowed the Central Intelligence

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the Bay, Inc. v. *Adm'r. of E.P.A.*, 556 F.2d 1282, 1293 (5th Cir. 1977) ("A long-standing and strong presumption exists that action taken by a federal agency is reviewable in federal court.").

[24] 5 U.S.C. § 701(a)(1), (2); *see also Webster* v. *Doe*, 486 U.S. 592, 597 (1988) ("The scope of judicial review under [section] 702 . . . is predicated on satisfying the requirements of [section] 701.").

[25] *Citizens to Preserve Overton Park, Inc.* v. *Volpe*, 401 U.S. 402, 410 (1971), *abrogated on other grounds by Califano* v. *Sanders*, 430 U.S. 99 (1977).

[26] *Id.* (internal quotation marks and citation omitted).

[27] *Heckler* v. *Chaney*, 470 U.S. 821, 830 (1985). The Court recognized that adopting "[t]his construction avoids conflict with the 'abuse of discretion' standard of review in [section] 706 [of the APA] – if no judicially manageable standards are available for judging how and when an agency should exercise its discretion, then it is impossible to evaluate agency action for 'abuse of discretion.'" *Id.*

[28] *Webster*, 486 U.S. at 600.

Agency Director to terminate an employee, the Supreme Court highlighted the fact that the statute was drawn so that the Director could fire the employee whenever he "'shall *deem* such termination necessary or advisable in the interests of the United States,' not simply when the dismissal *is* necessary or advisable to those interests."[29] This word choice, the Court concluded, "fairly exudes deference to the Director, and appears to us to foreclose the application of any meaningful judicial standard of review."[30] The reviewing court must also look at the structure and purpose of the statute.[31] Turning again to *Webster*, there, the Court found dispositive the fact that the CIA's "efficacy, and the Nation's security, depend in large measure on the reliability and trustworthiness of the Agency's employees."[32] Judicial review of the termination decision, the Court implicitly concluded, would hinder the agency's effectiveness.

The second agency discretion principle is that different substantive types of agency decisions are subject to different presumptions of reviewability. In general, agency decisions to affirmatively do something are presumptively reviewable.[33] The reviewability of agency decisions *not* to do something depends on the type of activity at issue. For "[r]efusals to take enforcement steps . . . the presumption is that judicial review is not available."[34] While

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[29] *Id.*

[30] *Id.*

[31] *See id.* at 600-01.

[32] *Id.* at 601.

[33] *See Abbott Labs.* v. *Gardner*, 387 U.S. 136, 140 (1967), *abrogated on other grounds by Califano* v. *Sanders*, 430 U.S. 99 (1977).

[34] *Heckler* v. *Chaney*, 470 U.S. 821, 831 (1985). A refusal to institute investigative actions is also presumptively unreviewable. *Id.* at 838. The Court justified this presumption on several grounds, including (1) the agency's need to determine how best to allocate its enforcement resources, *id.* at 831, (2) the fact that "when an agency refuses to act it generally does not exercise its coercive power over an individual's liberty or property rights, and thus does not infringe upon areas that courts often are called upon to protect," *id.* at 832 (emphasis omitted), and (3) the similarity between "an agency's refusal to institute proceedings" and a

Congress can trump this presumption, it must be explicit in doing so.[35] In contrast, an agency's denial of a petition for rulemaking is "susceptible to judicial review" though, as a substantive matter, "such review is 'extremely limited' and 'highly deferential.'"[36]

We pause to resolve one doctrinal uncertainty: whether a denial of a rulemaking petition is *categorically* reviewable, or whether it is merely *presumptively* reviewable? The petitioners urge us to adopt the former construction. We cannot. While the Supreme Court's language in *Massachusetts* v. *EPA* could support such a holding,[37] we conclude that the better reading is that these denials are presumptively reviewable, subject to Congressional language clearly to the contrary, a reading faithful to *Webster*'s exhortation that we determine reviewability only after a "careful examination of the statute."[38] It would accord with readings of *Massachusetts* v. *EPA* by

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prosecutor's decision "not to indict – a decision which has long been regarded as the special province of the Executive Branch," *id.*

[35] *See id.* at 838.

[36] *Massachusetts* v. *EPA*, 549 U.S. 497, 527-28 (2007) (quoting *Nat'l Customs Brokers & Forwarders Ass'n of Am., Inc.* v. *United States*, 883 F.2d 93, 96 (D.C. Cir. 1989)) (internal quotation marks omitted). In distinguishing between refusals to initiate enforcement actions and denials of petitions for rulemaking, the Court concluded that "agency refusals to initiate rulemaking 'are less frequent, more apt to involve legal as opposed to factual analysis, and subject to special formalities, including a public explanation.'" *Id.* at 527 (quoting *Am. Horse Protection Ass'n, Inc.* v. *Lyng*, 812 F.2d 1, 4 (D.C. Cir. 1987)). The Court also recognized that these agency decisions "arise out of denials of petitions for rulemaking which (at least in the circumstances here) the affected party had an undoubted procedural right to file in the first instance." *Id.*

[37] *See id.* at 527 (stating, without relevant terms of limitation, that "[r]efusals to promulgate rules are thus susceptible to judicial review"). The Second Circuit has interpreted this language consistent with a categorical right to review. *See, e.g.*, *New York* v. *U.S. Nuclear Regulatory Comm'n*, 589 F.3d 551, 554 (2d Cir. 2009) (holding that "[a]n agency decision to deny a rulemaking petition is subject to judicial review," but cautioning that the standard of review is sufficiently deferential that it "has been said to be so high as to be akin to non-reviewability") (internal citation and quotation marks omitted).

[38] *Webster*, 486 U.S. at 600.

some of our sister circuits,[39] and our own court's long-standing conclusion that there is a "strong presumption," subject to Congressional language, that "action taken by a federal agency is reviewable in federal court."[40] By "strong" we mean that this presumption is not easily overcome. Nonetheless, textual limits on agency action remain a prerequisite to our jurisdiction.

B.

Our inquiry proceeds in two steps: First, we determine whether the agency action is akin to a denial of a rulemaking petition or whether it is properly termed a refusal to engage in enforcement actions. If it is the former, we employ the presumption of reviewability, if it is the latter, the presumption is nonreviewability. Second, we look to the statutory provision at issue to see whether Congress has spoken sufficiently clearly as to override the appropriate presumption.

1.

We begin by determining whether the EPA's denial of the plaintiffs' request for the adoption of water quality standards is properly classified as a denial of a rulemaking petition or is better termed a refusal to engage in

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[39] For example, in *Conservancy of Sw. Fla.* v. *U.S. Fish & Wildlife Service*, 677 F.3d 1073 (11th Cir. 2012), the Eleventh Circuit, citing *Massachusetts*, rejected the proposition "that the denial of a petition for rulemaking is always unreviewable, or even presumptively unreviewable." *Id.* at 1085. Even still, it concluded that "*in context* – against the backdrop of a statutory and regulatory regime that provides absolutely no standards that constrain the Service's discretion – the statute's permissive language makes it all the more apparent that the decision at issue is committed to agency discretion." *Id.* at 1084. Similarly, in *Preminger* v. *Sec'y of Veterans Affairs*, 632 F.3d 1345, 1351-52 (Fed. Cir. 2011), the Federal Circuit concluded that it had authority to review the denial of a rulemaking petition after using standard statutory interpretation techniques, such as reasoning-by-structure and legislative history, implicitly suggesting its view that there was no categorical right to review divorced from the statutory context.

[40] *See, e.g.*, *RSR Corp.* v. *Donovan*, 747 F.2d 294, 299 n.23 (5th Cir. 1984) (quoting *Deering Milliken, Inc., Unity Plant* v. *Occupational Safety & Health Review Comm'n*, 630 F.2d 1094, 1099 (5th Cir. 1980)). The denial of a rulemaking petition is a form of agency action. *See, e.g.*, *Defenders of Wildlife* v. *Gutierrez*, 532 F.3d 913, 918-19 (D.C. Cir. 2008).

enforcement activities. While we recognize that the line between enforcement and rulemaking is not always clear,[41] we conclude that the EPA's action was akin to a denial of a rulemaking petition and is presumptively reviewable.

In classifying a petition, we look not to the title of the plaintiffs' filing but to the substance of their request.[42] In their petition, the plaintiffs proposed that:

> EPA should adopt numeric water quality standards for the portion of the ocean protected by the Clean Water Act but outside the jurisdiction of any state and for all water bodies in all states for which numeric water quality standards concerning nitrogen and phosphorous pollution have not yet been established. In the alternative, EPA should do this for the Northern Gulf of Mexico and for all waters of the United States within the Mississippi River Basin. At a minimum, EPA should establish water quality standards to control nitrogen and phosphorous pollution in the mainstem of the Mississippi River and the Northern Gulf of Mexico.

On their face, the wide scope of these requests, which would require the adoption of water quality standards across many different states, resembles the type of "broadly applicable . . . policy" that is generally considered a hallmark of rulemaking.[43] The standards, if adopted, would also "grant rights, impose obligations, or produce other significant effects on private interests," and would "effect a change in existing law or policy," both of which are considered essential features of substantive rules.[44] Moreover, the mechanism by which the EPA would implement the new water quality standards would be

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[41] *Cf., e.g.*, *Sec. & Exch. Comm'n* v. *Chenery Corp.*, 332 U.S. 194, 202 (1947) (recognizing that agencies can set broadly applicable standards of policy "either by general rule or by individual order").

[42] *See, e.g.*, *Animal Legal Def. Fund v. U.S. Dep't of Agric.,* No. 2:12-cv-4028, 2013 WL 1191736, at *3 (C.D. Cal. Mar. 22, 2013).

[43] *Crowley Caribbean Transp., Inc.* v. *Pena*, 37 F.3d 671, 677 (D.C. Cir. 1994).

[44] *Am. Hosp. Ass'n* v. *Bowen*, 834 F.2d 1037, 1045 (D.C. Cir. 1987) (internal citations omitted).

by "prepar[ing] and publish[ing] proposed regulations"[45] pursuant to "the same policies, procedures, analyses, and public participation requirements" that bind the states when they issue their own standards.[46] This implementation process sounds in rulemaking, not enforcement.

In arguing that the denial of the water quality standards petition is an unreviewable nonenforcement decision, the EPA relies heavily on our decision in *Public Citizen, Inc.* v. *United States Environmental Protection Agency*.[47] There, the petitioner challenged the EPA's decisions not to issue a Notice of Deficiency[48] to the state of Texas for failing to comply with certain regulatory requirements set out in Title V of the Clean Air Act.[49] We concluded that the decision not to issue a NOD was essentially a "decision not to invoke an enforcement mechanism," and was presumptively unreviewable.[50] The language of the statute, which stated that the EPA must "issue an NOD when it determines a program is being inadequately administered," was not sufficiently specific to constrain EPA's discretion and overcome the presumption against judicial review.[51]

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[45] 33 U.S.C. § 1313(c)(4).

[46] 40 C.F.R. § 131.22(c).

[47] 343 F.3d 449 (5th Cir. 2003).

[48] A "NOD."

[49] *See id.* at 453-55. Title V of the Clean Air Act, the "CAA," "requires major stationary sources of air pollution, such as factories, to receive operating permits incorporating CAA requirements and establishes a procedure for federal authorization of state-run Title V permit programs. Title V permits do not impose additional requirements on sources but, to facilitate compliance, consolidate all applicable requirements in a single document." *Id.* at 453 (internal citation omitted). As is relevant here, "[a]fter the EPA approved a State's Title V permit program, the EPA was to maintain an oversight role. The CAA provides that, whenever the EPA makes a determination that a State is not adequately administering and enforcing its permit program in accordance with Title V, it shall provide a notice of deficiency (NOD) to the State. If the State does not correct the deficiency within 18 months, it faces sanctions and, eventually, EPA takeover of its program." *Id.* at 454 (internal citations omitted).

[50] *Id.* at 464.

[51] *Id.* at 465; *see also id.* at 464-65.

The EPA argues that *Public Citizen* controls. We disagree. Given the factual differences between the NOD process under the CAA and the necessity determination mechanism under the CWA, our earlier decision is inapposite. First, a NOD determination is explicitly premised on the determination by the EPA that the state in question is not "adequately administering and enforcing" its Title V permitting program.[52] Agency action, then, depends on a conclusion that the state is failing to meet its statutory requirements, a finding that fits comfortably within the ambit of an enforcement action.[53] By contrast, section 1313(c)(4)(B) of the CWA requires the EPA to issue new water quality standards "in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of this chapter."[54] Under a plain reading of this provision, the state need not do anything wrong for the EPA to take action. Further buttressing that conclusion is the immediately preceding clause, section 1313(c)(4)(A), requires the EPA to issue a new standard "if a . . . water quality standard submitted by such State . . . for such waters is determined by the Administrator *not to be consistent* with the applicable requirements of this chapter."[55] Here, the EPA must determine that the state's standards do not meet the federal requirements. An action to correct that inadequacy could be termed an enforcement mechanism. But the two sections are set off by the disjunctive "or," which suggests that section 1313(c)(4)(B) does not require a finding of inadequacy, a feature more in line with rulemaking.

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[52] 42 U.S.C. § 7661a(i)(2).

[53] Moreover, the CAA subsection setting out the NOD process is titled "[a]dministration and enforcement." 42 U.S.C. § 7661a(i). While the title of a statutory section is not part of the law itself, and so does not control, it may be used as a guide to determine the meaning of a provision. *See, e.g.*, *Griffin* v. *Steeltek, Inc.*, 160 F.3d 591, 594 n.4 (10th Cir. 1998). Here, the title suggests that the NOD provision is an enforcement tool.

[54] 33 U.S.C. § 1313(c)(4)(B).

[55] *Id.* § 1313(c)(4)(A) (emphasis added).

Second, the consequences of noncompliance with the EPA's actions differ between these regulatory processes. After issuing a NOD, the EPA "is authorized to sanction the state if the deficiencies are not corrected within eighteen months . . . . Possible sanctions include the loss of federal highway funds and the application of strict emissions offset requirements for new sources in certain areas within the state."[56] These sanctions are essentially punitive in nature, a marking of enforcement. By contrast, the CWA authorizes no financial consequences for noncompliance.

Finally, the procedures by which the agency actions occur are different. With the CAA, after making a NOD determination, the agency must "provide notice to the State" before imposing sanctions,[57] akin to a due process requirement prior to punishment. With a CWA water quality standard, by contrast, the EPA must "promptly prepare and publish proposed regulations," without any explicit requirement that it inform the affected states.[58] This general notification process is a feature characteristically found in rulemaking.[59] We conclude that the EPA has denied a rulemaking petition, an action presumptively subject to judicial review.

2.

With this presumption in place, we turn to whether section 1313(c)(4)(B) provides "no meaningful" or "no substantive" standards to apply.[60] We hold

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[56] *Ohio Pub. Interest Research Grp., Inc.* v. *Whitman*, 386 F.3d 792, 794 (6th Cir. 2004) (internal citation omitted) (citing 42 U.S.C. §§ 7661a(i)(1)-(2), 7509(b)(1)-(2)).

[57] 42 U.S.C. § 7661a(i)(1). While the statutory language could have been more explicit, it appears that notice to the state must occur before sanctions can be imposed. *See Legal Envtl. Assistance Found.* v. *U.S. E.P.A.*, 400 F.3d 1278, 1280 (11th Cir. 2005) ("The first step in the enforcement process is the issuance of a notice of deficiency ('NOD') to a state.").

[58] 33 U.S.C. § 1313(c)(4).

[59] *See, e.g.*, 5 U.S.C. § 553(b) ("General notice of proposed rule making shall be published in the Federal Register.").

[60] *Webster* v. *Doe*, 486 U.S. 592, 600 (1988) (quoting, first, *Heckler* v. *Chaney*, 470 U.S. 821, 830 (1985)).

that Congress has given sufficient guidance for judicial review of the agency's actions under the statute, and we have subject matter jurisdiction.

a.

An important qualification: our task is not to determine whether there are adequate statutory standards to judge the EPA's decision that new water quality standards are or are not necessary. Rather, we must decide whether Congress has placed sufficient guideposts around the EPA's *prerequisite* decision not to make a necessity determination.[61] These two inquiries are related, however, and *Massachusetts* v. *EPA* provides insight as to how.

There, the Court clarified the type of permissible response the EPA could give after receiving a petition asking it to make a "judgment" that greenhouse gases "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."[62] The Court held that the EPA was not obligated to make a judgment that such gases do or do not contribute to climate change *if* "it provides some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether they do."[63] That explanation, in turn, must be "ground[ed] . . . in the statute."[64] The Court was not precise in specifying how tight the connection must be between the underlying statute and the agency decision to decline to exercise its discretion to make a prerequisite determination that it would or would not take action under that statute. It did, however, reject as inadequate several explanations posited by the EPA, which provide us some useful guidance.

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[61] Said differently, we are looking at the EPA's decision not to make a decision.

[62] *Massachusetts* v. *EPA*, 549 U.S. 497, 532-33 (2007) (citing 42 U.S.C. § 7521(a)(1)) (brackets omitted).

[63] *Id.* at 533.

[64] *Id.* at 535; *see also id.* at 533 ("But once EPA has responded to a petition for rulemaking, its reasons for action or inaction must conform to the authorizing statute.").

First, the Court rejected the EPA's arguments that it could decline to make a determination based on certain "policy judgments," which included (1) the presence of "voluntary Executive Branch programs [that] already provide an effective response to the threat of global warming," (2) the potential impact of a determination on the President's negotiations with foreign powers, and (3) the fact that regulating automobiles would be "an inefficient, piecemeal approach" to climate change.[65] Whatever the merits of these arguments, the Court concluded, "they ha[d] nothing to do with whether greenhouse gas emissions contribute to climate change."[66] Second, the Court recognized that scientific uncertainty could be an acceptable explanation for refusing to make a threshold judgment.[67] If the agency wanted to rely on this explanation, however, it had to be explicit about why it lacked "sufficient information . . . to make an endangerment finding" – it could not merely "not[e] the uncertainty surrounding various features of climate change."[68] These examples suggest that the court was looking for a close and specific linkage between the decision not to make a threshold determination and the statutory provision setting out the underlying choice. The agency cannot rely on alternative policy grounds, even if reasonable, if those explanations do not find clear textual support. Nor can it resort to general claims of scientific uncertainty – if it justifies its refusal to make a threshold determination on that basis, it must be explicit about what uncertainty is present.

Justice Scalia's dissent comports with this understanding. He criticized the majority for its narrow definition of an acceptable "reasonable

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[65] *Id.* at 533 (internal citations omitted).

[66] *Id.*

[67] *See id.* at 534.

[68] *Id.*; *see also id.* ("If the scientific uncertainty is so profound that it precludes EPA from making a reasoned judgment as to whether greenhouse gases contribute to global warming, EPA must say so.").

explanation." He focused on the distinction between the reasons the agency can rely on when it makes such a judgment about air pollutants, and those it can depend on when refusing to make a judgment – and concluded that the latter category was much broader:

> When the Administrator makes a judgment whether to regulate greenhouse gases, that judgment must relate to whether they are air pollutants that "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." But the statute says nothing at all about the reasons for which the Administrator may defer making a judgment—the permissible reasons for deciding not to grapple with the issue at the present time. Thus, the various "policy" rationales that the Court criticizes are not "divorced from the statutory text," except in the sense that the statutory text is silent, as texts are often silent about permissible reasons for the exercise of agency discretion. The reasons EPA gave are surely considerations executive agencies regularly take into account (and ought to take into account) when deciding whether to consider entering a new field: the impact such entry would have on other Executive Branch programs and on foreign policy. There is no basis in law for the Court's imposed limitation.[69]

Justice Scalia, then, would have allowed the agency to put forward reasonable explanations for not making threshold determinations that are not inconsistent with the statute, rather than insisting upon an explicit textual connection. That the majority rejected this reading suggests a tighter linkage is required.[70]

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[69] *Id.* at 552 (Scalia, J., dissenting) (quoting 42 U.S.C. § 7521(a)(1)) (emphasis omitted) (internal citations omitted).

[70] In *WildEarth Guardians* v. *United States Environmental Protection Agency*, 751 F.3d 649 (D.C. Cir. 2014), the D.C. Circuit upheld the EPA's denial of a rulemaking petition which declined to make a determination as to whether emissions from coal mines contribute to air pollution. *Id.* at 652, 656. It justified this decision on the basis of resource constraints that required it to make priorities about what regulatory priorities it focused on. *Id.* at 652-53. The court affirmed these reasons under *Massachusetts* v. *EPA*, concluding that they were "consistent with the statutory objective." *Id.* at 655. This decision could be read to require a less searching linkage than the *Massachusetts* v. *EPA* majority applied. However, even here, the *WildEarth* court was able to point to specific statutory language, *see id.*, which sets the

Informed by this precedent, we conclude that the EPA's reasons for declining to make a necessity determination must be rooted in the words of section 1313(c)(4)(B). And because the agency can only justify its decision not to make a necessity determination based on factors identified in the language of the statute, we look to those words to decide whether the statute is sufficiently specific to allow judicial review.

b.

We turn back to the Clean Water Act and hold that the EPA has not overcome the statutory presumption that we have subject matter jurisdiction to review its denial of the plaintiffs' rulemaking petition.

We begin with the text. The EPA is required to publish new water quality standards "in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of [chapter 26 of title 33 of the United States Code.]"[71] Those statutory requirements are further defined in the statute; for example, section 1313(c)(2)(A) defines the necessary features of a water quality standard:

> Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation.[72]

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decision apart from Justice Scalia's dissent, which relied primarily on statutory silence, which could then be filled by the agency under *Chevron* v. *National Resources Defense Council*, 467 U.S. 837 (1984). *Massachusetts*, 549 U.S. at 552-53 (Scalia, J., dissenting).

[71] 33 U.S.C. § 1313(c)(4)(B). Title 33, Chapter 26 of the United States Code codifies the Clean Water Act. *See id.* § 1251 *et seq.*

[72] *Id.* § 1313(c)(2)(A).

The EPA expanded upon these requirements in regulations issued pursuant to the CWA.[73] While broadly drawn, these requirements provide guidance for the types of considerations the EPA must take into account in deciding the necessity of regulation. And, by *Massachusetts* v. *EPA*, these are the same factors that must be considered when the EPA declines to make a necessity determination. As general factors are still reviewable factors, we cannot conclude that there are *no* standards to judge the EPA's decision to elect not to make a necessity determination.[74]

The structure of section 1313(c)(4)(B), which employs mandatory language, also suggests reviewability. There, Congress required regulation if the EPA Administrator makes a "determin[ation]" that new standards are necessary. In section 7521(a)(1), found reviewable by *Massachusetts* v. *EPA*, the EPA Administrator had to regulate if she made a "judgment" that the emission of greenhouse gases by motor vehicles causes or contributes to air pollution.[75] Both statutes are structured the same way: the agency has a mandatory obligation to take regulatory action if it makes a judgment (or determination) that regulation is required. This is in contrast to provisions

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[73] *See* 40 C.F.R. § 131.2 ("A water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. States adopt water quality standards to protect public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act (the Act). 'Serve the purposes of the Act' (as defined in sections 101(a)(2) and 303(c) of the Act) means that water quality standards should, wherever attainable, provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water and take into consideration their use and value of public water supplies, propagation of fish, shellfish, and wildlife, recreation in and on the water, and agricultural, industrial, and other purposes including navigation.").

[74] *Cf. Conservancy of Sw. Fla.* v. *U.S. Fish & Wildlife Serv.*, 677 F.3d 1073, 1082 (11th Cir. 2012) ("We have held before that the absence of *any* applicable legal standard that limits the agency's discretion precludes APA review.") (emphasis added).

[75] 549 U.S. 497, 532-33 (2007) (citing 42 U.S.C. § 7521(a)(1)).

that other courts have found unreviewable that use exclusively discretionary language, stating only that the agency "may" regulate, but need not do so.[76]

Nor does the overall structure of the Clean Water Act call this conclusion into question. Both parties emphasize the fact that the CWA is a cooperative federalism regime. The EPA argues that the CWA is a "carefully crafted scheme of cooperative federalism" that would be "placed at risk" if the courts were "to second-guess every EPA decision not to interfere with duly promulgated State water quality standards." The petitioners, in turn, focus on the backstop role the federal government plays in setting standards when state action is not enough, and argue that the Congressional intent of maintaining federal involvement would be frustrated if there was no judicial review. While both positions have merit, by the light of the required presumption of reviewability, we conclude that petitioners' argument carries more weight. This statutory scheme is defined by federal action: as Justice White noted in a different context, even though the CWA is a state-federal partnership, "the Federal Government maintains an extraordinary level of involvement" in administering the act.[77]

Finally, the subject matter of the CWA is also consistent with judicial review. Federal courts regularly hear cases addressing environmental regulations, including those implicating federalism issues.[78] This case does

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[76] *See, e.g.*, *Conservancy of Sw. Fla.*, 677 F.3d at 1083 (holding that the language in a statutory provision that stated that "[c]ritical habitat may be established for those species now listed as threatened or endangered" was unreviewable) (quoting 16 U.S.C. § 1532(5)(B)).

[77] *U.S. Dep't of Energy* v. *Ohio*, 503 U.S. 607, 634 (1992) (White, J., concurring in part and dissenting in part); *see also id.* ("EPA reviews state water quality standards. It retains authority to object to the issuance of particular permits, to monitor the state program for continuing compliance with federal directives, and even to enforce the terms of state permits when the State has not instituted enforcement proceedings.") (internal citations omitted).

[78] *See generally, e.g.*, *E.P.A.* v. *EME Homer City Generation, L.P.*, 134 S. Ct. 1584 (2014) (federal regulation of interstate pollution); *Massachusetts*, 549 U.S. 497 (federal regulation of greenhouse gases); *Rapanos* v. *United States*, 547 U.S. 715 (2006) (federal regulation of navigable waters and wetlands).

not bring the sensitive national security issues of the genus that the Supreme Court has held supports a determination that the actions taken are not judicially cognizable.[79] Indeed, federal courts have reviewed or held reviewable EPA decisions not to propose new or revised water quality standards under section 1313(c)(4)(B).[80] While these reviews have been deferential, by reviewing at all, those courts implicitly concluded that they had subject matter jurisdiction.[81]

Given the text, structure, and subject matter of section 1313(c)(4), we hold that the agency has not overcome the presumption in favor of reviewability of agency action, and that we have jurisdiction to review the EPA's decision not to make a necessity determination.

III.

We now turn to whether the EPA had discretion to decide not to make a necessity determination. The district court concluded that the agency lacked such authority.[82] We do not agree.

In *Massachusetts* v. *EPA*, the Court is explicit that the EPA could avoid making a threshold determination (in that case, that greenhouse gases do not contribute to climate change) "if it provides some reasonable explanation as to

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[79] *See, e.g.*, *Webster* v. *Doe*, 486 U.S. 592, 600-01 (1988).

[80] *See, e.g.*, *Envtl. Def. Fund, Inc.* v. *Costle*, 657 F.2d 275, 293-94 (D.C. Cir. 1981) (rejecting challenge which argued that EPA had unreasonably "fail[ed] to propose revised or new water quality standard,"); *Nat'l Wildlife Fed'n* v. *Browner*, Civ. A. No. 95-1811, 1996 WL 601451, at *6 (D.D.C. Oct. 11, 1996) ("[S]uch a discretionary decision is not committed to the agency as a matter of law, and EPA's failure to exercise its discretion under 33 U.S.C. § 1313(c)(4)(B) could be subject to a proper challenge under the APA."), *aff'd* 127 F.3d 1126 (D.C. Cir. 1997).

[81] *But see Mo. Coalition for the Env't Found.* v. *Jackson*, 853 F. Supp. 2d 903, 910-12 (W.D. Mo. 2012) (holding that the decision not to exercise discretionary authority under section 1313(c)(4)(B) is committed to agency discretion by law).

[82] *See Gulf Restoration Network* v. *Jackson*, No. 12-677, 2013 WL 5328547, at *6 (E.D. La. Sept. 20, 2013) (reading *Massachusetts* v. *EPA* to hold that "EPA lacks the discretion to simply decline to make the threshold determination in response to a rulemaking petition even where the statutory text does not explicitly require it to do so.").

why it cannot or will not exercise its discretion to determine whether they do."[83] In dissent, Justice Scalia explicitly recognized that the majority held that the EPA could decline to make a prerequisite determination:

> [T]he Court invents a multiple-choice question that the EPA Administrator must answer when a petition for rulemaking is filed. The Administrator must exercise his judgment in one of three ways: (a) by concluding that the pollutant does cause, or contribute to, air pollution that endangers public welfare (in which case EPA is required to regulate); (b) by concluding that the pollutant does not cause, or contribute to, air pollution that endangers public welfare (in which case EPA is not required to regulate); or (c) by "provid[ing] some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether" greenhouse gases endanger public welfare, (in which case EPA is not required to regulate).[84]

We recognize that the language of the CWA and that of the CAA is not identical. However, the CAA section at issue in *Massachusetts* and the CWA provision at issue here have the same structure: (1) a mandatory clause requiring the EPA Administrator to issue regulations on a certain topic, (2) if she makes a specific threshold determination, using her bounded discretion, (3) that a substantive standard has been satisfied.[85] We hold that the *Massachusetts* v. *EPA* "reasonable explanation" rule applies to section

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[83] *Massachusetts*, 549 U.S. at 533. That explanation must be grounded in the statute. *See id.* at 535 ("We hold only that EPA must ground its reasons for action or inaction in the statute.").

[84] *Id.* at 550 (Scalia, J., dissenting) (emphasis omitted) (quoting *id.* at 533 (majority op.)).

[85] *Compare* 42 U.S.C. § 7521(a)(1) ("The Administrator shall by regulation prescribe (and from time to time revise) in accordance with the provisions of this section, standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.") (CAA), *with* 33 U.S.C. § 1313(c)(4)(B) ("The Administrator shall promptly prepare and publish proposed regulations setting forth a revised or new water quality standard for the navigable waters involved . . . in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of this chapter.") (CWA).

1313(c)(4)(B), and that the EPA may decline to make a necessity determination if it provides an adequate explanation, grounded in the statute, for why it has elected not to do so.[86]

The district court ordered the "EPA to conduct a necessity determination in response to Plaintiffs' rulemaking petition."[87] Because the agency had the option of declining to make a necessity determination, this order was error. We remand this case to the district court to decide in the first instance whether the EPA's explanation for why it declined to make a necessity determination was legally sufficient.

In doing so, the district court must bear in mind several principles. First, the court applies the arbitrary and capricious standard of review set out in the APA.[88] "As applied to refusals to initiate rulemakings, this standard is 'at the

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[86] In so holding, we join other courts who have applied *Massachusetts* to similarly structured statutes and concluded that the agency is not required to make a predicate threshold finding. *See, e.g.*, *WildEarth Guardians* v. *U.S. E.P.A.*, 751 F.3d 649, 655 (D.C. Cir. 2014) (holding that agency had discretion to decide when to add categories of stationary sources "to the list of regulated air pollutants"); *Natural Res. Def. Council v. U.S. Food & Drug Admin.*, 760 F.3d 151, 191 (2d Cir. 2014) (Katzmann, C.J., dissenting) ("The statute construed in *Massachusetts v. EPA* was just like the statute at issue here – part discretionary (as to the agency's 'judgment'), and part mandatory (as to the ensuing regulation). Indeed, the Court recognized in its opinion that the EPA was not necessarily required to take any action beyond adequately responding to the citizen petition."). *But see Ctr. for Biological Diversity* v. *U.S. E.P.A.*, 794 F. Supp. 2d. 151, 162 (D.D.C. 2011) (holding that the structure of a provision of the CAA "strongly suggest that Congress intended the predicate endangerment finding to be a compulsory step").

[87] *Gulf Restoration Network*, 2013 WL 5328547, at *7.

[88] *See* 5 U.S.C. § 706(2)(A) (requiring a reviewing court to "hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law"); *see also New York* v. *U.S. Nuclear Regulatory Comm'n*, 589 F.3d 551, 554 (2d Cir. 2009) (applying arbitrary and capricious standard to denial of rulemaking petition); *EMR Network* v. *F.C.C.*, 391 F.3d 269, 272-73 (D.C. Cir. 2004) (same). In *Massachusetts* v. *EPA*, the Court applied the arbitrary and capricious standard found in the CAA's judicial review provision to the agency's refusal to make a threshold determination. 549 U.S. at 534 (citing 42 U.S.C. § 7607). This provision is subject to the same standard of review as the APA. *Catawba Cnty, N.C.* v. *E.P.A.*, 571 F.3d 20, 41 (D.C. Cir. 2009).

high end of the range' of deference,"[89] and "such review is 'extremely limited' and 'highly deferential.'"[90] Second, in deciding whether the EPA appropriately declined to make a necessity decision, the district court's review is limited to determining whether the EPA has "provide[d] some reasonable explanation as to why it cannot or will not exercise its discretion" to make a necessity determination.[91] That explanation must be grounded in the statute.[92]

In light of this highly deferential standard of review, the agency's burden is slight. That is particularly true when the statute is as broadly written as section 1313(c)(4)(B). Moreover, when a statute sets out competing considerations, agencies are generally given discretion to choose how to best give effect to those mandates.[93] Nonetheless, we leave it to the capable hands of the district court to determine in the first instance the propriety of the EPA's actions.

IV.

We VACATE the order of the district court requiring the EPA to make a necessity determination and REMAND this case for proceedings consistent with this opinion.

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[89] *EMR Network*, 391 F.3d at 273 (quoting *Am. Horse Protection Ass'n, Inc.* v. *Lyng*, 812 F.2d 1, 4-5 (D.C. Cir. 1987)); *see also Preminger* v. *Sec'y of Veterans Affairs*, 632 F.3d 1345, 1353 (Fed. Cir. 2011) (same); *Int'l Union* v. *Chao*, 361 F.3d 249, 254-55 (3d Cir. 2004) (same).

[90] *Massachusetts*, 549 U.S. at 527-28 (quoting *Nat'l Customs Brokers & Forwarders Ass'n. of Am.* v. *United States*, 883 F.2d 93, 96 (D.C. Cir. 1989)). *National Customs Brokers*, favorably cited by *Massachusetts* v. *EPA*, and written by then-Judge Ginsburg, held that the court "will overturn an agency's decision not to initiate a rulemaking only for compelling cause, such as plain error of law or a fundamental change in the factual premises previously considered by the agency." *Nat'l Customs Brokers*, 883 F.2d at 96-97.

[91] *Massachusetts*, 549 U.S. at 533.

[92] *Id.* at 535.

[93] *See WildEarth Guardians* v. *U.S. E.P.A.*, 751 F.3d 649, 654-55 (D.C. Cir. 2014) (interpreting CAA provision to "afford[] agency officials discretion to prioritize sources that are the most significant threats to public health to ensure effective administration of the agency's regulatory agenda").

State of Arkansas *As Engrossed: H2/18/15*
90th General Assembly **A Bill**
Regular Session, 2015 HOUSE BILL 1067

By: Representatives Collins, Davis*, Ballinger, Beck, Bell, Bentley, Cozart, Della Rosa, C. Douglas, Eubanks, Gonzales, M. Gray, Hillman, G. Hodges, Ladyman, Leding, Neal, Petty*
By: Senator U. Lindsey

For An Act To Be Entitled

AN ACT TO AMEND THE LAWS PERTAINING TO THE PROMULGATION OF WATER QUALITY REGULATIONS AND THE ISSUANCE OF WASTEWATER DISCHARGE PERMITS; TO AUTHORIZE THE IMPLEMENTATION OF NUTRIENT WATER QUALITY TRADING, CREDITS, OFFSETS, AND COMPLIANCE ASSOCIATIONS; AND FOR OTHER PURPOSES.

Subtitle

TO AMEND THE LAWS REGARDING WATER QUALITY REGULATIONS AND WASTEWATER DISCHARGE PERMITS; AND TO AUTHORIZE NUTRIENT WATER QUALITY TRADING, CREDITS, OFFSETS, AND COMPLIANCE ASSOCIATIONS.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF ARKANSAS:

SECTION 1. DO NOT CODIFY. Legislative findings and intent.

The General Assembly finds that:

(1) Water quality trading is a market-based approach to achieving water quality goals that can provide greater efficiency and cost savings by allowing one (1) source to meet its regulatory obligations by using pollutant reductions created by another source that has lower pollution control costs;

(2) Experience in other states has demonstrated that nutrient water quality trading programs, including the use of credits, offsets, and

compliance associations, can result in quicker and more efficient achievement of water quality protection goals; and

(3) Nutrient water quality trading should be encouraged wherever appropriate and facilitated by the development of applicable regulations and permit terms.

SECTION 2. Arkansas Code Title 8, Chapter 4, Subchapter 2, is amended to add an additional sections to read as follows:

8-4-232. Nutrient water quality trading programs.

(a) As used in this section, "nutrient" means a substance assimilated by an organism that promotes growth and replacement of cellular *constituents, including without limitation nitrogen, phosphorus, and carbon.*

(b)(1) The Arkansas Pollution Control and Ecology Commission may adopt regulations that specify requirements, standards, and procedures governing the establishment and implementation of nutrient water quality trading programs, including without limitation program scope, eligibility, and threshold treatment requirements.

(2) The nutrient water quality trading programs may include without limitation the following:

(A) The establishment and regulation of nutrient water quality trading exchanges;

(B) The establishment and regulation of nutrient water quality compliance associations;

(C) The authorization and regulation of nutrient water quality trading credits;

(D) The authorization and regulation of nutrient water quality offsets; and

(E)(i) The establishment of a schedule of user fees to be collected by the Arkansas Department of Environmental Quality from persons or entities utilizing nutrient water quality trades or offsets to comply with permit limits.

(ii) The user fees shall be based on a record calculating the reasonable costs to the department of implementing and enforcing each nutrient water quality trading, credit, or offset program.

(c) Under regulations adopted by the commission under subsection (b) of this section, the department *may*:

(1) Include terms and conditions in any appropriate permit that allow the eligible permit holder to use water quality trading arrangements such as water quality trading credits and water quality offsets as a means for complying with appropriate nutrient effluent limitations or conditions contained in the permit; and

(2) Issue permits to eligible compliance associations as a means for multiple eligible permit holders to collectively satisfy their aggregate permit limits for one (1) or more appropriate nutrient water quality parameters.

(d) A nutrient water quality trading program or arrangement established under this section shall provide that a decision to participate in the nutrient water quality trading program or arrangement shall be a matter of voluntary choice on the part of each participant in the nutrient water quality trading program or arrangement.

8-4-233. Nutrient Water Quality Trading Advisory Panel — Created — Members — Duties.

(a) The Nutrient Water Quality Trading Advisory Panel is created, consisting of *nine (9)* members as follows:

(1) One (1) member appointed by the President Pro Tempore of the Senate;

(2) One (1) member appointed by the Speaker of the House of Representatives;

(3) *Seven (7)* members appointed by the Governor as follows:

(A) One (1) member to represent agricultural interests;

(B) One (1) member to represent forestry interests;

(C) One (1) member to represent municipal wastewater treatment facility interests;

(D) One (1) member to represent public drinking water supply interests;

(E) One (1) member to represent the interests of industries that hold point source wastewater discharge permits; and

(F) Two (2) members to represent the interests of environmental organizations regarding water quality.

(b)(1) A member shall serve a term of two (2) years or until a successor is appointed.

(2) A member may serve successive terms without limitation.

(3) If a vacancy occurs, the officer who made the original appointment for that position shall appoint a person who represents the same constituency as the member being replaced.

(c)(1) A majority of the members shall constitute a quorum for the transaction of business.

(2) Meetings may be conducted with members participating via telephonic or other electronic conferencing methods.

(d)(1) The advisory panel shall elect a chair and vice chair.

(2) The advisory panel may adopt rules relating to the conduct of its meetings.

(e) Members shall serve without compensation but may be reimbursed for expenses in accordance with § 25-16-902, if funds are available.

(f) The Arkansas Department of Environmental Quality shall provide meeting space and administrative services for the advisory panel.

(g) The advisory panel *may*:

(1) Advise the department and the Arkansas Natural Resources Commission regarding the desirability, design, and operation of nutrient water quality trading programs; and

(2) Advise the Arkansas Pollution Control and Ecology Commission and the Arkansas Natural Resources Commission regarding the promulgation of regulations involving nutrient water quality trading programs.

(h) The Arkansas Pollution Control and Ecology Commission shall not *initiate a rulemaking proceeding to adopt a regulation that authorizes or governs nutrient water quality trading unless:*

(1) The proposed regulation has been recommended by the advisory panel; or

(2) A copy of the proposed regulation has been delivered to the advisory panel at least sixty (60) calendar days before the date the request to initiate the rulemaking is filed with the Arkansas Pollution Control and Ecology Commission.

(i) Subsection (h) of this section does not limit the authority of the Arkansas Pollution Control and Ecology Commission to:

(1) Alter a proposed regulation at any time during the rulemaking proceeding; or

(2) Initiate a rulemaking proceeding if:

(A) The members of the advisory panel have not been appointed; or

(B) The advisory panel lacks an actively serving quorum.

/s/Collins

APPROVED: 03/06/2015

U.S. Supreme Court Rejects Mississippi Water Suit Against Memphis

Mississippi v. City of Memphis, Tenn., —- S.Ct. —-, 2010 WL 250602 (Jan. 25, 2010).

Niki L. Pace, J.D., LL.M.

Five years after filing its first complaint, Mississippi's lawsuit against Memphis over withdrawals from the Memphis Sands Aquifer may have finally reached the end of the road. In late January, the U.S. Supreme Court denied Mississippi's petition for writ of certiorari[1] in the ongoing dispute between Mississippi and Memphis over water withdrawals from the aquifer. The Supreme Court also denied Mississippi's alternate petition to file an original action with the Court for resolution of the interstate dispute.

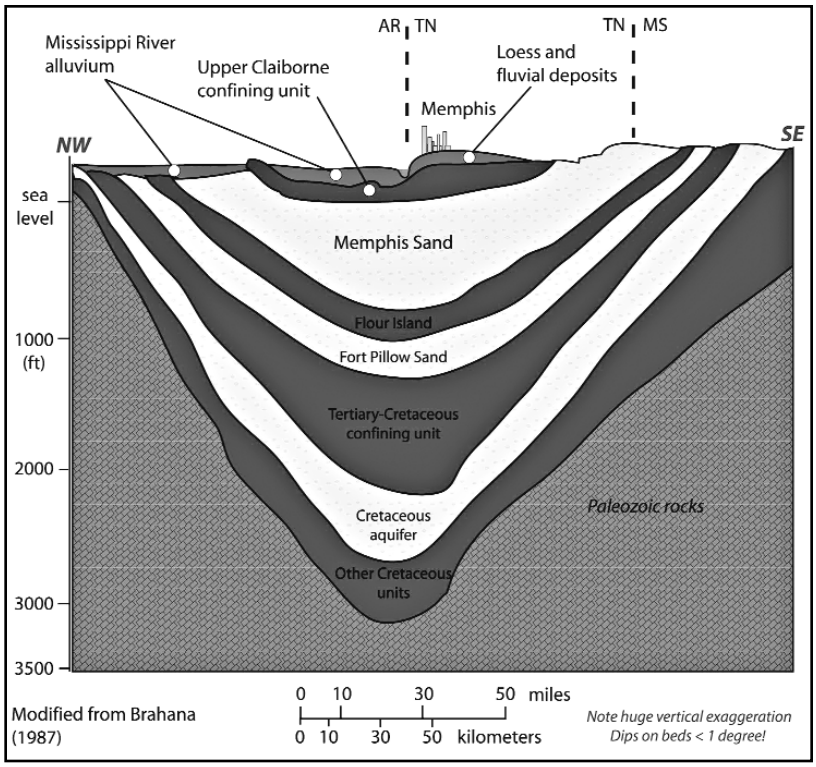
Background

As previously covered by *Water Log*,[2] Mississippi sued the City of Memphis and its utility company, Memphis Light, Gas and Water Division, over withdrawals from an aquifer underlying Mississippi, Tennessee, and Arkansas. Mississippi claimed that Memphis withdrew water that belonged to Mississippi and sought damages.

Agreeing with the lower court, the Fifth Circuit determined that Mississippi's claims required an equitable apportionment of water from the aquifer between the appropriate states. The Fifth Circuit affirmed the lower court's dismissal of the suit for failure to join indispensable parties. Specifically, the court held that resolution of the matter necessitated that Tennessee be joined as a party in the lawsuit. The Fifth Circuit, therefore, lacked subject-matter jurisdiction because the U.S. Supreme Court has original jurisdiction over disputes between states.[3]

On September 2, 2009, Mississippi appealed the Fifth Circuit opinion to the U.S. Supreme Court.[4] In the event that the Supreme Court denied Mississippi's request for appeal, Mississippi also filed an alternative motion for leave to bring an original action before the Supreme Court in this matter.[5] Without issuing an opinion, the Supreme Court denied both requests.

Graphic courtesy of Memphis State University.



Appeal of Fifth Circuit Decision

To distinguish between Mississippi's two requests, the appeal of the Fifth Circuit decision requested the Supreme Court to reconsider the holding of the lower court. As stated above, the lower court found that any resolution of the case would require an equitable apportionment of the aquifer and thus the joinder of Tennessee as a necessary party. In its request for appeal, Mississippi maintained, instead, that equitable apportionment was inapplicable because the groundwater in question was the sovereign property of Mississippi.[6]

The Supreme Court has never explicitly ruled that the doctrine of equitable apportionment governs transboundary aquifers like the Memphis Sands Aquifer. However, as noted by the Fifth Circuit, existing caselaw supports treating

aquifers as "any other part of the interstate water supply."[7] One inference that can be drawn from the Supreme Court's denial to reconsider this issue on appeal is that the Court considers this area of law settled, agreeing with the conclusions of the Fifth Circuit.

Original Action

The Court also denied Mississippi's motion for leave to file an original complaint in this matter.[8] Although no opinion was issued, the Court did cite two prior decisions dealing with interstate water disputes: *Virginia v. Maryland* and *Colorado v. New Mexico*. Both cases deal with equitable apportionment lending further support to the inference that the Court considers this a settled area of law.

In *Virginia v. Maryland*, Maryland sought to regulate Virginia's exercise of its riparian rights on the Virginia shore of the Potomac River.[9] An existing compact between the states regulated use and control of the Potomac River. In resolving the dispute, the Court noted that "[f]ederal common law governs interstate bodies of water, ensuring that the water is equitably apportioned between the States and that neither State harms the other's interest in the river."[10] In denying Mississippi's motion, the Court specifically references this principle from *Virginia v. Maryland*, suggesting that equitable apportionment does in fact govern a dispute over a transboundary aquifer.

The Court's reference to *Colorado v. New Mexico* adds even greater support to this conclusion. In *Colorado v. New Mexico*, Colorado sought to divert 4,000 acre-feet per year from an interstate river for future use. New Mexico challenged this decision. The Court held that the principle of equitable apportionment governed the situation and required a showing of harm: "Our cases establish that a state seeking to prevent or enjoin a diversion by another state bears the burden of proving that the diversion will cause it 'real or substantial injury or damage.'"[11] The Court went on to note that, in this instance, New Mexico bore the initial burden of proving that Colorado's diversion would cause substantial injury to New Mexico.

In other words, Mississippi, in challenging Tennessee's withdrawals from the aquifer, bears the burden of showing that Tennessee's withdrawals are causing, or will cause, real or substantial harm to Mississippi. The Court's dismissal of Mississippi's request for an original action suggests that the Court does not consider Mississippi's burden met at this time.

The Supreme Court has effectively closed the door on Mississippi's current claims over withdrawals from the aquifer.

Conclusion

The Supreme Court has effectively closed the door on Mississippi's current claims over withdrawals from the aquifer. However, Mississippi's request to file an original action was dismissed without prejudice. This frees Mississippi to file an original action with the Supreme Court in the future should Mississippi be able to sufficiently demonstrate injury. Current accounts suggest that Mississippi may seek to work with Tennessee and Memphis to reach a resolution of the matter without further litigation.[12]

Endnotes:

1. A writ of certiorari is used by the U.S. Supreme Court to review the cases that it wants to hear. BLACK'S LAW DICTIONARY 228 (6th ed. 1990). By petitioning the Supreme Court for a writ of certiorari, Mississippi is asking the Supreme Court to review the Fifth Circuit decision in this case.
2. Joanna C. Abe, *Fifth Circuit Dismisses Mississippi's Groundwater Claim*, 29:2 WATER LOG 6-7 (2009).
3. Hood v. City of Memphis, Tenn., 570 F.3d 625 (2009).
4. *See* Petition for Writ of Certiorari, Mississippi v. City of Memphis, Tenn., 2010 WL 250602 (Jan. 25, 2010) (No. 09-289).
5. *See* Mississippi's Motion for Leave to File Bill of Complaint in Original Action, Mississippi v. Memphis, No. 139 Original (2010).
6. Petition for Writ of Certiorari, *supra* note 4, at i.
7. *Hood v. Memphis*, 570 F.3d at 630, n. 5.
8. 559 U.S. ___ (Jan. 25, 2010), available at http://www.supremecourtus.gov/orders/courtorders/012510zor.pdf.
9. Virginia v. Maryland, 540 U.S. 56 (2003).
10. *Id.* at 74 n. 9.
11. Colorado v. New Mexico, 459 U.S. 176, 187, n.13 (1982).
12. Jack Elliot Jr., *Hood Weighs Options on Miss.-Tenn. Water Dispute,* SUN HERALD (Biloxi, Miss.), Jan. 27, 2010, http://www.sunherald.com/218/ story/1900727.html.

2014 WL 5319728 (U.S.) (Appellate Petition, Motion and Filing)
Supreme Court of the United States.

STATE OF MISSISSIPPI, Plaintiff,

v.

STATE OF TENNESSEE, City of Memphis, Tennessee, and Memphis Light, Gas & Water Division, Defendants.

No. 143, Original.
June 6, 2014.

On Motion for Leave to File Bill of Complaint in Original Action

The State of Mississippi's Motion for Leave to File Bill of Complaint in Original Action, Complaint, and Brief in Support of Motion

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MOTION FOR LEAVE TO FILE BILL OF COMPLAINT IN ORIGINAL ACTION

The State of Mississippi, pursuant to Supreme Court Rule 17, moves this Court for leave to file its Complaint (attached as an exhibit hereto) against the State of Tennessee, the City of Memphis, Tennessee, and Memphis Light, Gas & Water Division, for the reasons stated in the accompanying Brief in Support.

*1 COMPLAINT

The State of Mississippi, by its Attorney General, Jim Hood, brings this original action against the State of Tennessee, the City of Memphis, Tennessee, and Memphis Light, Gas & Water Division, as follows:

PARTIES

1.

1. Plaintiff, State of Mississippi ("Mississippi"), is a sovereign State of the United States of America ("United States"). Mississippi brings this suit in its capacity as sovereign, and as *parens patriae* for its citizens.

2. Defendant State of Tennessee ("Tennessee") is a sovereign State of the United States. Process may be served upon Tennessee as provided in Supreme Court Rules 17 and 29.

3. Defendant City of Memphis, Tennessee ("Memphis") is a political subdivision of Tennessee. Process may be served upon Memphis as provided in Supreme Court Rule 29.

***2** 4. Defendant Memphis Light, Gas & Water Division ("MLGW") is a division of Memphis. Process may be served upon MLGW as provided in Supreme Court Rule 29.

JURISDICTION

5. The exclusive and original jurisdiction of the Court over controversies between two States is invoked under Article III, Section 2, Clause 2 of the Constitution of the United States and 28 U.S.C. §1251(a)(2012). *See, e.g.*, *Mississippi v. Louisiana*, 506 U.S. 73, 77 (1992).

6. The presence of the non-state Defendants, Memphis and MLGW, is consistent with, and does not operate to alter or offend, the Court's original jurisdiction. *See, e.g.*, *Missouri v. Illinois*, 180 U.S. 208, 224-25 (1901).

7. Further, the Court has jurisdiction to grant the declaratory and injunctive relief sought against Tennessee, Memphis and MLGW, and to require Defendants to provide a full accounting and to pay damages, prejudgment interest, and all other monetary relief as prayed for herein relating to or resulting from Defendants' mechanical extraction of groundwater from the territory of the State of Mississippi from 1985 to date. *See Maryland v. Louisiana*, 451 U.S. 735-36 (1981) (Court's jurisdiction between states proper if "the complaining State has suffered a wrong through the action of the other State, furnishing ground for judicial redress, or is asserting a right … susceptible of judicial enforcement according to the accepted principles of the common law or equity systems").

*3 FACTS

8. On December 10, 1817, Mississippi was admitted as the twentieth state to the Union on an equal footing with the original thirteen colonies and, thereupon, became vested with ownership, control, and dominion over the land and waters within its territorial boundaries. U.S. Const. art. IV, § 3, cl. 1; *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469, 479 (1988); *Oregon ex rel. State Land Bd v. Corvallis Sand & Gravel Co.*, 429 U.S. 363, 370-78 (1977); *Illinois Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 452 (1892); *Pollard v. Hagan*, 44 U.S. 212, 222-23 (1845); *Martin v. Waddell's Lessee*, 41 U.S. 367 (1842). *See also Montana v. United States*, 450 U.S. 544, 551-52 (1981); *Idaho v. Coeur d'Alene Tribe*, 521 U.S. 261, 286-87 (1997).

9. Mississippi is sovereign over all matters not ceded to the federal government under the Constitution of the United States. U.S. Const. art. IV, § 3, cl. 1; U.S. Const. amend. X. It holds all right, title, and interest in, and lawfully possesses "full jurisdiction over the lands within its borders, including the beds of streams and other waters." *Rhode Island v. Massachusetts*, 37 U.S. 657, 733-35, 737-40 (1838).

10. The Mississippi Supreme Court affirmed the State's ownership and plenary authority over its water resources, including subterranean resources, in *Cinque Bambini P'ship v. Mississippi*, 491 So.2d 508, 511-14, 516-17 & 519-20 (1986), affirmed by this Court in *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469 (1988). The *Cinque Bambini P'ship* Court recognized that, once Mississippi had been admitted to the Union and the public trust had been created and funded, the role of the equal footing doctrine ended and the title to ***4** and plenary authority over the lands and resources conveyed in trust became vested in the State. 491 So.2d at 512-13.

11. Ever since the federal sovereign ceded title to Mississippi, state law has controlled ownership and allocation of the use of Mississippi's natural resources. *Oregon ex rel. State Land Bd.*, 429 U.S. at 378-82; *Cinque Bambini P'ship*, 491 So.2d at 513, 516-19. It is, thus, the State's prerogative to control and preserve state-owned resources. *Id.* at 513, 517; *see also PPL Mont., LLC v. Montana*, 132 S. Ct. 1215, 1235 (2012) (finding that "[u]nder accepted principals of federalism, the States retain residual power to determine the scope of the public trust over waters within their borders").

12. In 1985, the Mississippi legislature codified the public trust doctrine, acknowledging the State's ownership of all groundwater resources within Mississippi when it enacted the "Omnibus Water Rights Act" declaring:

> All water, whether occurring on the surface of the ground or underneath the surface of the ground, is hereby declared to be among the basic resources of this state and therefore belong to the people of this state, and is subject to regulation in accordance with the provisions of this chapter. The control and development and use of water for all beneficial purposes shall be in the state, which, in the exercise of its police powers, shall take such measures to effectively and efficiently manage, protect and utilize the water resources of Mississippi.

***5** Miss. Code Ann. §51-3-1 (2003). Under Mississippi's Act, "[b]oth surface water and groundwater are regarded as property of the State of Mississippi." Richard J. McLaughlin, "Mississippi" in 6 *Water and Water Rights*, 712 (Robert E. Beck, Ed., 1991 ed., repl. vol. 2005).

13. At the time Mississippi was admitted to the Union, its border with Tennessee, which had been admitted to the Union on June 1, 1796, was permanently established at the 35° latitude. The location of this border is not disputed.

14. This action arises from Defendants' authorization and intentional construction and operation of large commercial water well pumping fields by MLGW near the Mississippi-Tennessee border. MLGW's pumping forcibly extracts high quality groundwater from Mississippi into Tennessee for sale by MLGW. The groundwater mechanically taken from within Mississippi by Defendants is a limited natural resource which originated in Mississippi and was naturally stored and resided in Mississippi. Under natural conditions, it would not leave Mississippi's groundwater storage. By their actions, Defendants have

invaded Mississippi's sovereign territory, committed trespass against Mississippi, converted Mississippi natural resources, and intentionally violated Mississippi water law.

15. Mississippi's groundwater at issue was naturally collected and stored in a distinct deep sandstone geological formation known as the "Sparta Sand." In north Mississippi, the Sparta Sand begins at a surface outcrop within Mississippi, and descends with an east-to-west/southwest slope while thickening ***6** as it moves toward the Mississippi River. The Sparta Sand is sandwiched between upper and lower clay formations which are impermeable, or of very low permeability.

16. Originally, following the agency of natural laws, rainwater falling within Mississippi's current borders collected on the formation outcrops; was drawn by gravity into and down the natural east-to-west/southwest dip of the formation at a rate of about an inch a day; and was stored as groundwater within the territorial borders of Mississippi. This natural slope of the Sparta Sand formation and direction of water seepage was documented in United States Geological Survey ("USGS") reports.

17. Under these natural conditions, over thousands of years, the Sparta Sand beneath Mississippi was saturated with high quality groundwater stored as a fairly constant volume residing under significant hydrostatic pressure within Mississippi's borders. This high quality groundwater stored in Mississippi would never be available within Tennessee's territorial borders, as it is a finite, confined intrastate natural resource over which Mississippi became sovereign at the time it was admitted as a state in the United States. Under natural conditions, this groundwater volume and pressure would have remained within Mississippi as an available natural resource for Mississippi and its people.

18. MLGW is the nation's largest three service municipal utility providing water, gas, and electricity. For years MLGW has pumped groundwater from what it has called the "Memphis Sand Aquifer." By 1965, the USGS had determined that the Memphis Sand Aquifer ***7** was supplied in large part by the Sparta Sand, which also underlies southwest Tennessee and Memphis, and that MLGW's pumping from its five well fields was having an impact on the pressure and groundwater storage within Mississippi's Sparta Sand.

19. Between 1965 and 1985, under the oversight of Memphis and Tennessee, MLGW significantly expanded its groundwater pumping operations from five to nine well fields and its total pumping from approximately 72 million gallons a day ("MGD"), to over 131 MGD. This included the significant increase of the pumping capacity of its Lichterman field - located within three miles of the Mississippi border - from approximately 4 MGD to over 21 MGD. MLGW also developed two additional well fields within three miles of the Mississippi border, Davis and Palmer, which were collectively pumping approximately 11.5 MGD.

20. As a result of improvements in geological and hydrological science and methods, and the continued study of the Sparta Sand, by 1985 Defendants knew that MLGW was pumping over 20 MGD out of Mississippi's natural groundwater storage in the Sparta Sand within Mississippi. MLGW, Memphis, and Tennessee also knew that this high quality groundwater would never be available to them absent MLGW's large scale pumping operation. These facts have been confirmed by studies of Shelby County, Tennessee, and surrounding areas, conducted by MLGW, the USGS, the University of Memphis Groundwater Institute, and the University of Tennessee's Energy, Environment and Resources Center. Despite this knowledge, MLGW continued to ***8** increase the size and capacity of its system, which currently operates one of the world's largest groundwater pumping and distribution systems, now consisting of more than 170 wells in ten well fields pumping over 140 million gallons of groundwater daily for sale to MLGW's customers.

21. At all relevant times, Tennessee has supervised, authorized and regulated the construction, operation, and maintenance of Memphis-MLGW's public water system, including all features relating to quantity and source of water supply. Tennessee's control over public water systems extends to the location and drilling of water wells and the withdrawal of groundwater from MLGW wells. In this capacity, Tennessee has controlled, regulated, authorized, and supervised Memphis-MLGW's operations

and groundwater pumping through acts of its legislature and the actions of state agencies, including the Tennessee Department of Environment and Conservation ("TDEC") and predecessor entities.

22. MLGW's wells mechanically pump groundwater from the Sparta Sand formation, which extends into western Tennessee. As part of its operations since 1972 and extending past 1985, MLGW consistently increased its capacity and pumping from its well fields near the Mississippi-Tennessee border, permanently taking between 20 and 27 MGD of Mississippi's natural groundwater storage out of the Sparta Sand. This groundwater is a valuable natural resource belonging to Mississippi which would have never, under natural conditions, resided or been available within Tennessee's boundaries.

***9** 23. Through its water well development and mechanical pumping operations, MLGW has forcibly siphoned into Tennessee hundreds of billions of gallons of high quality groundwater owned by Mississippi and held in trust by Mississippi for its people. This taking by Defendants was without Mississippi's permission, without payment of compensation to Mississippi, and by an intentional intrusion into Mississippi's sovereign territory.

24. The Mississippi groundwater taken by Defendants from within Mississippi's borders would have never under normal, natural circumstances been drawn into Tennessee or available to Tennessee. Defendants' mechanical pumping is intended to and does pull Mississippi's groundwater out of natural storage in a northward direction, altering the water's natural east-to-west path. Defendants' actions use modern pumping technology to siphon Mississippi's groundwater northward at an accelerated velocity substantially in excess of the water's natural seepage rate. But for Defendants' massive pumping operation, the groundwater in dispute would still be stored within Mississippi's borders and available to Mississippi and its people for their use and economic development.

25. Defendants' wrongful taking is evidenced by a substantial drop in pressure and corresponding drawdown of stored groundwater in the Sparta Sand in Mississippi in a pattern covering substantially all of DeSoto County in northwest Mississippi across the state border from Memphis. This drawdown is illustrated by a potentiometric surface map showing a hydrologic feature called a "cone of depression," which was discovered by the USGS. This cone of depression ***10** extends miles into north Mississippi and was formed by, and continues to expand, as a direct result of Defendants' water well development and pumping operations.

26. Through these actions, Defendants have wrongfully taken more than 252 billion gallons (approximately 15-20% of Memphis' total wa ter supply) from within Mississippi since 1985. These groundwater quantities have been permanently taken from Mississippi and its people, even if MLGW's pumping immediately ceased altogether.

27. MLGW's water needs could have been, and can be, met without MLGW's wrongful taking from Mississippi's natural groundwater storage through its massive pumping operations. Available options include relocation of MLGW's water wells to the north and east of MLGW's distribution system, and/or use of Mississippi River water as an alternate or supplemental source of water supply. Rather than utilizing these available alternative water sources within Tennessee's sovereign territory for commercial sales to MLGW's customers, Defendants chose to utilize drilling and advanced pumping technology in commercial well fields located essentially on the Mississippi-Tennessee border to extract high quality groundwater from Mississippi's natural groundwater storage.

28. Since 1985, dozens of independent federal and state groundwater scientists, including experts from the USGS and the University of Memphis Ground Water Institute ("GWI") have recorded Defendants' huge forced extractions of groundwater from Mississippi into Tennessee, and the massive cone of ***11** depression it has created in Mississippi. These scientific publications confirm that MLGW has not only mechanically extracted billions of gallons of groundwater belonging to Mississippi, but has, for all practical purposes, permanently altered the natural path and rate of seepage within the Sparta Sand

in north Mississippi. Many of USGS's extensive, peer-reviewed publications, and GWFs research and studies were prepared for, and with funding and assistance from, the Defendants,

29. In the mid-1990's, the Mississippi Department of Environmental Quality proposed that Mississippi and Tennessee work together to jointly evaluate the impact of MLGW's massive pumping on Mississippi's groundwater storage, advising MLGW that Memphis was the largest pumper of groundwater from the Sparta Sand formation in northwest Mississippi. Defendants refused to participate in a cooperative effort.

30. In the late 1990's, Memphis news media published articles confirming the undisputed findings and conclusions of scientists and regulatory authorities, reporting that the cone of depression extending into Mississippi was created by heavy pumping of MLGW's water wells, which were, by artificial means, pulling Mississippi groundwater in a northward direction, into Tennessee, providing over 20% of Memphis' water supply.

31. In June 2000, Tennessee, through TDEC, commissioned a legal and water management policy study of MLGW's pumpage and the resulting taking of Mississippi groundwater. The TDEC report was directed to Defendants' senior officials and identified ***12** the cone of depression extending into Mississippi as one of the most serious water supply problems facing Tennessee. Still, no action was taken to stop the mechanical extraction and forcible taking of groundwater from within Mississippi.

32. Since the 2000 report, MLGW has decreased its rate of pumping from most of its well fields further north in Tennessee, but it has not reduced the total volume being pumped from the well fields it located on the Mississippi-Tennessee border.

33. In March 2002, the Tennessee Comptroller's Office prepared a Special Report advising Tennessee's legislature that Memphis' extractions of Mississippi groundwater represented a serious water scarcity issue, the final resolution of which would probably include reducing MLGW's reliance on the Sparta Sand. Nonetheless, Tennessee took no action to cease or mitigate the past and continuing pumping out of Mississippi's Sparta Sand storage, or to offer compensation to Mississippi for its forcible taking of a Mississippi natural resource.

34. Recently, Tennessee and Mississippi officials called for a comprehensive study of Defendants' siphoning of groundwater from Mississippi into Tennessee, the cause of Mississippi's declining groundwater storage and pressures in the Sparta Sand. Regional study initiatives were undertaken; however, they have had little or no meaningful effect or impact upon Memphis-MLGW's continued excessive pumping authorized by Tennessee.

35. Prior attempts to litigate these issues have been unsuccessful. ***13** *Hood, ex rel. Mississippi v. City of Memphis,* 533 F. Supp.2d 646 (N.D. Miss. 2008), *aff'd,* 570 F.3d 625 (5th Cir. 2009), *cert. denied, Mississippi v. City of Memphis,* 559 U.S. 904 (2010); *Mississippi v. City of Memphis,* 559 U.S. 901 (2010) (motion for leave to file bill of complaint denied without prejudice).

36. In May 2010, Mississippi's Attorney General directed correspondence to Tennessee's Attorney General proposing that the States work cooperatively to negotiate a settlement of Mississippi's claims, but Tennessee declined.

37. Neither State's legal regime provides any effective mechanism for resolving this dispute, absent voluntary measures by Tennessee, which has shown no inclination to enjoin this violation of Mississippi's sovereignty.

38. This case does not fall within the Court's equitable apportionment jurisprudence. For the reasons stated herein, the groundwater in dispute (a) naturally accumulated within Mississippi's sovereign territory before the formation of the States; and (b) would never through "the agency of natural laws" have moved into, or been available in Tennessee. It is not a shared natural resource. *Kansas v. Colorado,* 206 U.S. 46, 97-98 (1907). Rather, this is a dispute between sovereign States in which Defendants have violated one of Mississippi's core sovereign prerogatives under the Constitution of the United States: its right,

title, and interest in the waters naturally residing within its boundaries. *See Tarrant Reg'l Water Dist. v. Herrmann*, 133 S. Ct. 2120, 2132-33, 2134 (2013).

39. By their actions, Defendants have, through mechanical and technological means, reached into and ***14** invaded Mississippi's sovereign territory, and trespassed upon and wrongfully converted natural resources under the sovereign ownership and control of Mississippi.

REQUEST FOR DECLARATION OF OWNERSHIP AND FOR DAMAGES OR RESTITUTION

40. In prior litigation relating to this dispute, the United States District Court for the Northern District of Mississippi and the United States Court of Appeals for the Fifth Circuit held that, a determination of whether the Defendants' taking of groundwater from within the sovereign territory of Mississippi was wrongful, could not be made without first determining the relative rights of Mississippi and Tennessee to groundwater stored in the Sparta Sand formation. *See Hood ex rel Mississippi v. City of Memphis*, 570 F.3d 625, 629-30 (5th Cir. 2009). Those courts also held that Tennessee would be a necessary and indispensable party to any judicial proceeding by Mississippi seeking such a determination, and that "original and exclusive jurisdiction over a suit between Mississippi and Tennessee would reside in the United States Supreme Court." 570 F. 3d at 631. Mississippi, therefore, now requests that the Court enter a declaratory judgment establishing Mississippi's sovereign right, title and exclusive interest in the groundwater stored naturally in the Sparta Sand formation underlying Mississippi which would not, absent Defendant's pumping, be available to Defendants.

41. The geologic formation in which the groundwater is stored straddles two states, but the groundwater at issue is an intrastate natural resource, ***15** not a naturally shared interstate resource. Mississippi's groundwater at issue is not part of an underground river, stream or lake, and it would never naturally move or flow north into Tennessee. Rather, it has been stored naturally in Mississippi and has been, and is being, drawn into Tennessee by scores of powerful, high volume, commercial pumps. Thus, this action presents a different factual and legal situation from the shared interstate river or stream disputes resolved under the Court's original and exclusive jurisdiction through "equitable apportionment," where opposing states have co-equal ownership and rights to use water traversing and freely flowing across two or more states under natural conditions.

42. As a sovereign State, Mississippi has declared that "[a]ll water, whether occurring on the surface of the ground or underneath the surface of the ground, is … among the basic resources of this state [and belongs] to the people of this state," and has further declared, as a sovereign State, that "[t]he control and development and use of water for all beneficial purposes shall be in the state, which, in the exercise of its police powers, shall take such measures to effectively and efficiently manage, protect, and utilize the water resources of Mississippi." Miss. Code Ann. § 51-3-1 (2003).

43. "Groundwater" is defined by Mississippi to mean "water occurring beneath the surface of the ground," Miss. Code Ann. § 51-3-3(n) (2003), and Mississippi regulates the withdrawal and use of groundwater contained within its borders. *See, e.g.*, Miss. Code Ann. § 51-3-5 (2003) (stating that "[n]o person who is not specifically exempted by this chapter ***16** shall use water without having first obtained a permit as provided herein ….").

44. All groundwater located under Mississippi upon its admission to the Union in 1817 became the sovereign property of Mississippi at that time. Such groundwater and all other groundwater located and stored naturally under Mississippi is owned and held by Mississippi as a sovereign State and is subject to Mississippi's exclusive dominion and control.

45. Tennessee has similarly declared, as a sovereign State, "[t]hat the waters of the state are the property of the state and are held in public trust for the benefit of its citizens." Tenn. Code Ann. § 68-221-702 (2013). Tennessee law also specifically defines

"ground water" to mean "water beneath the surface of the ground, whether or not flowing through known or definite channels." *Id.* § 68-221-703(13) (2013).

46. Based on the sovereign rights of Mississippi and Tennessee as States, and based on their respective, independent declarations and pronouncements of their sovereign rights to groundwater ownership, Mississippi respectfully requests that this Court declare that, as between Mississippi and Tennessee, (a) since its admission into the United States, Mississippi has owned and continues to own all right, title and interest in groundwater stored naturally in the Sparta Sand formation underneath Mississippi's borders which does not cross into Tennessee under natural pre-development conditions; and (b) since its admission as a State into the United States, Tennessee has owned and continues to own all right, title and interest in groundwater located naturally in the Sparta Sand ***17** formation underneath Tennessee's borders which does not cross into Mississippi under natural conditions.

47. Mississippi further requests that, with regard to the Mississippi groundwater confined in the Sparta Sand formation claimed by Mississippi, the Court expressly declare that Mississippi's rights and remedies *vis-à-vis* the Defendants are to be determined based on its sovereign rights and the scientific evidence regarding the availability of groundwater within each state under natural, pre-pumping conditions.

48. Equitable apportionment principles have only been applied by this Court to those disputes in which two or more states possessed a claim to water available within each state under natural conditions such as rivers and other surface waters, and the watersheds supplying them. *See, e.g.*, *Kansas v. Colorado,* 206 U.S. 46 (1907); *New Jersey v. New York,* 283 U.S. 336 (1931); *Nebraska v. Wyoming,* 325 U.S. 589 (1945); *South Carolina v. North Carolina,* 558 U.S. 256 (2010).

49. The fundamental premise of this Court's equitable apportionment jurisprudence - that each of the opposing States has an equality of right to use the waters at issue - does not apply to this dispute. For example, *Kansas v. Colorado,* 206 U.S. 46 (1907), concerned the Arkansas River, which flows through both States, and the controversy concerned the flow of that stream. *Id.* at 95. The Supreme Court recognized that it had been "called upon to settle that dispute in such a way as will recognize the *equal rights* of both [States] and at the same time establish justice between them." *Id.* at 97-98 (emphasis added). Similarly, the Court recognized in *Connecticut v. Massachusetts,* 282 U.S. 660 (1931), a case concerning the Connecticut ***18** River, that "the principles of right and equity shall be applied having regard to the 'equal level or plane on which all the States stand, in point of power and right, under our constitutional system' and that, upon a consideration of the permanent laws of the contending States and all other relevant facts, this Court will determine what is an equitable apportionment of the use of such waters." *Id.* at 670-71.

50. This case must be decided under Article IV, Section 3, Clause 1 of the United States Constitution under which Mississippi was created and brought into the Union, and the Tenth Amendment to the Constitution, based on the unique location and hydrologic characteristics of the groundwater at issue. The Sparta Sand formation underlies both Mississippi and Tennessee, but this Court's analysis must distinguish between the location of the geological formation on the one hand, and, on the other hand, the source, location and hydrologic characteristics of the groundwater stored in the formation under natural conditions. The groundwater at issue originated in Mississippi, was stored in the Sparta Sand formation in north Mississippi, and would have, under natural conditions, never been available in Tennessee. It is *neither* interstate water *nor* a naturally shared resource. This is evidenced and confirmed by the fact that Defendants must mechanically pump the water from underneath Mississippi's borders in order to produce and use it. In the absence of such pumping, the water would have remained in Mississippi. Defendants simply have *no right* to the groundwater at issue, and no right to forcibly take it from Mississippi. There is, therefore, no foundational basis for equitable apportionment, which is premised upon balancing the ***19** interests of two or more states that have *equal rights* to waters flowing naturally between and within their respective boundaries. Indeed, in view of Mississippi's rights as a sovereign State and the powers preserved to it by the Tenth Amendment of the United States Constitution, Mississippi should not be - and cannot properly be - forced to "share" its natural resources with the Defendants under a claim by Tennessee to a right of equitable apportionment.

51. This case presents a state border and sovereignty issue, and the respective States' rights to the groundwater at issue should be determined based solely on Mississippi's and Tennessee's sovereign rights as States over their own territory; and should limit Tennessee's sovereign rights to groundwater resources stored naturally within, or naturally flowing through, its boundaries, and hold that Defendants have no right to invade Mississippi's sovereign territory through artificial, mechanical, or technological means to obtain groundwater or any other natural resource. Declaring a right to the groundwater at issue on any other basis would deprive Mississippi of its sovereign rights under the Constitution of the United States as confirmed by the Tenth Amendment.

52. For the reasons pleaded herein, Mississippi requests this Court to declare that Defendants have never been, and are not, entitled to take any groundwater from within Mississippi's borders by artificial mechanical means, and that Defendants' takings, as described hereinabove, constitute a violation of Mississippi's retained sovereign rights under the United States Constitution, and a wrongful and actionable trespass upon, and conversion, taking ***20** and misappropriation of, property belonging to Mississippi and its people.

53. Defendants' actions have resulted in a permanent taking of groundwater owned and held by Mississippi in trust for its people and which would never have resided naturally in, been owned by, or been available to Tennessee without Mississippi's permission and compensation for this natural resource. Mississippi has never consented to Defendants' taking of the groundwater at issue from Mississippi.

54. Mississippi has suffered actual, present, and substantial injury and damages as the proximate result of Defendants' wrongful conduct, including but not limited to the following:
(a) MLGW's pumpage presently siphons approximately 21 million gallons of groundwater each day, or 7.6 billion gallons annually, from storage within Mississippi's state boundaries into Tennessee to replace the groundwater taken out of storage within Tennessee beneath Memphis. Between 1985 and the present, an estimated volume of over 252 billion gallons of groundwater has been wrongfully taken from Mississippi into Tennessee. These volumes of high quality groundwater have been permanently lost to Mississippi.

(b) MLGW's pumpage has caused the groundwater storage and pressures in the Sparta Sand formation in north Mississippi to be drawn down dramatically, as the groundwater is being drawn down more ***21** rapidly than the Sparta Sand in north Mississippi can be recharged or replenished. As a result, water wells located in the Sparta Sand formation in Mississippi must now be drilled and pumps lowered to substantially greater depths, thereby imposing on the people of Mississippi well installation and electric operations costs for water wells located in north Mississippi that are significantly greater than the costs they would have borne in the absence of Defendants' wrongful conduct.

(c) Defendants' operations have materially altered Mississippi's groundwater budget or inventory, completely, artificially and materially changing the natural steady state equilibrium of groundwater in the Sparta Sand formation in north Mississippi, siphoning water at an accelerated, unnatural velocity and northward direction out of Mississippi directly into Defendants' wells.

55. Mississippi is entitled to recover damages from the Defendants, jointly and severally, in an amount equal to the value of the Mississippi groundwater Defendants have wrongfully taken, plus prejudgment interest thereon. It is estimated that such damages are not less than $615 million.

56. Mississippi alternatively asserts a claim for restitution and unjust enrichment. The law does not permit a person to profit by his own wrong. Defendants have obtained benefits by acts of trespass or conversion or comparable tortious interference with Mississippi's protected interests in tangible property and have been ***22** unjustly enriched by their receipt and retention of such benefits. Defendants are, therefore, liable in restitution for the value of all groundwater wrongfully taken from Mississippi. Furthermore, Defendants have drawn Mississippi groundwater into Tennessee despite a known risk that their conduct violates

Mississippi's rights. As conscious wrongdoers, Defendants should be stripped of all gains they have realized from their nonconsensual taking of and interference with Mississippi's property, and should be required to render an accounting and disgorge and pay over to Mississippi all profits, proceeds, consequential gains, saved expenditures, and other benefits realized by Defendants, or any of them.

57. The wrongful taking of groundwater from Mississippi into Tennessee will never stop until Defendants are required to take affirmative actions to alter their pumping operations. Defendants should be required to prospectively take all actions necessary to eliminate the cone of depression *vis-á-vis* Mississippi, including, *inter alia*, the funding, construction and modification or restructuring of Memphis-MLGW's groundwater pumping systems and/or the development of systems using water from the Mississippi River as an alternate or supplemental source of water supply.

***23 PRAYER FOR RELIEF**

WHEREFORE, the State of Mississippi prays:

A. That the Court enter a decree declaring Mississippi's ownership of and exclusive dominion and control over groundwater located naturally in the Sparta Sand formation underlying the sovereign borders of Mississippi;

B. That the Court enter a decree finding that the actions of Defendants described hereinabove constitute a violation of Mississippi's retained sovereign rights under the United States Constitution and a wrongful and actionable trespass upon, and conversion, taking, and misappropriation of, property belonging to Mississippi and its people;

C. That the Court enter a decree against Defendants, jointly and severally, (1) awarding Mississippi damages for retroactive periods from 1985 through the present in an amount equal to the value of the groundwater taken wrongfully by Defendants from Mississippi, plus prejudgment interest thereon; and/or (2) requiring Defendants to render an accounting and disgorge and pay over to Mississippi all profits, proceeds, consequential gains, saved expenditures, and other benefits realized by Defendants, or any of them, due to their nonconsensual taking of and interference with Mississippi's property, plus prejudgment interest thereon;

D. That the Court require Defendants to prospectively take all actions necessary to eliminate the subject cone of depression *vis-á-vis* Mississippi, including, *inter alia*, the funding, construction and modification or restructuring of Memphis-MLGW's ***24** groundwater pumping systems and/or the development of systems using Mississippi River water as an alternate or supplemental source of water supply; and

E. For such other or further relief as the Court may deem proper.

STATE OF MISSISSIPPI'S BRIEF IN SUPPORT OF MOTION FOR LEAVE TO FILE BILL OF COMPLAINT IN ORIGINAL ACTION

***i** QUESTIONS PRESENTED FOR REVIEW IN ORIGINAL ACTION

This is a dispute between two States over their retained sovereign territorial rights. Since 1985, the Tennessee Parties have used a massive commercial pumping operation to reach across the border into Mississippi's sovereign territory and forcibly take approximately 252 billion gallons of high quality groundwater. The groundwater taken is not a naturally shared interstate resource; rather, it is intrastate groundwater naturally collected and stored within Mississippi's borders in a sandstone formation over thousands of years. The geology of the sandstone naturally retained and stored water seeping into and through the formation

at one to two inches a day in an east-to-west/southwest direction across north Mississippi, and this stored groundwater has never been naturally available within Tennessee. Will the Court grant Mississippi leave to file an original action to seek relief from the Tennessee Parties' intentional violation of Mississippi's retained sovereignty over its lands and waters under the United States Constitution?

Under northwest Mississippi, the Sparta Sand is a deep sandstone formation confined above and below by geologic formations of very low permeability, allowing water to be trapped in the sandstone. In Mississippi, this sandstone formation surfaces at outcrops in west Mississippi and dips predominantly east-to-west/southwest toward the Mississippi River. Following laws of physics, under natural conditions a substantial, but limited amount of high quality groundwater was stored under pressure in the ***ii** sandstone within Mississippi's borders over thousands of years. Absent the Tennessee Parties' intentional cross-border pumping, the Mississippi groundwater would never be available within Tennessee's borders. Will the Court confirm Mississippi's sole sovereign authority over and control of groundwater naturally stored within its borders?

Is Mississippi entitled to damages, injunctive and other equitable relief for the Mississippi intrastate groundwater intentionally and forcibly taken by the Tennessee Parties?

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***vii** TABLE OF AUTHORITIES

CASES

*1 JURISDICTION

Mississippi's dispute with Tennessee and the other Tennessee Parties falls within the Court's exclusive and original jurisdiction over controversies between States under Article III, Section 2, Clause 2 of the United States Constitution and 28 U.S.C. § 1251(a): a conflict between two states over the extent, exercise, and right to protection of their retained sovereign rights under the Constitution. [1]

For the Court to exercise its original jurisdiction, the dispute between States must be "of that character and dignity which makes the controversy a justiciable one under our original jurisdiction." *Nebraska v. Wyoming*, 507 U.S. 584, 593 (1993) (quoting *Nebraska v. Wyoming*, 325 U.S. 589, 610 (1945)). "The model case for invocation of this Court's original jurisdiction is a dispute between States of such seriousness that it would amount to *casus belli* if the States were fully sovereign." *Mississippi v. Louisiana*, 506 U.S. 73, 77 (1992) (quoting *Texas v. New Mexico*, 462 U.S. 554, 571 n. 18 (1983)). [2] This is a model case.

*2 REASONS THE COURT SHOULD TAKE JURISDICTION

Character of Controversy

Over the last four decades, Memphis and MLGW have, under Tennessee's supervision, knowingly pumped 20 to 28 million gallons a day of high quality groundwater out of Mississippi's natural storage. This groundwater was never naturally available in Tennessee, and is permanently lost to Mississippi. The Tennessee Parties knowingly pumped this groundwater out of Mississippi's sovereign territory for commercial sale by MLGW without notice to, permission from, or compensation to Mississippi.

These actions constitute an intentional violation of Mississippi's retained sovereignty of the type for which the Court's Article III original and exclusive jurisdiction was created. *See* The Federalist No. 7 (Alexander Hamilton). [3] This violation of Mississippi's ***3** retained sovereignty and "full jurisdiction over the lands *within its borders, including the beds of streams and other waters*," *Kansas v. Colorado*, 206 U.S. 46, 93 (1907) (citations omitted) (emphasis added), goes to the foundations of the Union. *See Rhode Island v. Massachusetts*, 37 U.S. 657, 731 (1838) (exercise of jurisdiction over border disputes necessary to perfect bond of the Union and enforce domestic tranquility).

Mississippi Has Suffered Real and Substantial Damage

The actions of the Tennessee Parties have effectuated and continue to effectuate a permanent taking of a limited natural resource belonging to Mississippi and its people. *See* App., 20a-54a. MLGW's pumping from the Sparta Sand has dramatically increased since 1965, withdrawing 411.3 billion gallons out of Mississippi natural storage which would not have ever been naturally

available in Tennessee. App., 22a & 53a. The value of Mississippi groundwater pumped by MLGW from 1985 to date is estimated at $615 million, including prejudgment interest. App., 137a.

No Other Forum Can Resolve This Dispute

Mississippi's efforts to negotiate a resolution with Tennessee after learning that MLGW was the largest pumper from the north Mississippi Sparta Sand failed. In 2005, Mississippi filed suit against Memphis and MLGW, but the suit was dismissed for failure to join ***4** Tennessee as an indispensable party. *Hood ex rel. Mississippi v. City of Memphis*, 533 F. Supp. 2d 646 (N.D. Miss. 2008), *aff'd* 570 F.3d 625 (5th Cir. 2009), *cert. denied* 559 U.S. 904 (2010). Mississippi cannot invade Tennessee and destroy well fields in Tennessee to stop the Tennessee Parties' conversion of Mississippi's groundwater. This Court is Mississippi's only avenue of relief for these violations of its territorial sovereignty. *Rhode Island*, 37 U.S. at 724-25, 731.

CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

The relevant constitutional and statutory provisions involved are Article III, Section 2, Clause 2 of the United States Constitution; Article IV, Section 3, Clause 1 of the United States Constitution; the Tenth Amendment of the United States Constitution; 28 U.S.C. § 1251(a) (2012); Mississippi Code Annotated Sections 51-3-1 (2003), 51-3-3(n) (2003), and 51-3-5 (2003); and Tennessee Code Annotated Sections 68-221-701 (2013), 68-221-702 (2013), 68-221-703(13) (2013), 68-221-706 (2013), 69-3-102(a), 69-7-303(5) (2013), and 69-10-101 (2013), all of which are reproduced verbatim at Appendix A.

*5 STATEMENT OF THE CASE

Mississippi's Sovereign Rights Over Groundwater Naturally Stored Within Mississippi's Borders

On December 10, 1817, Mississippi was admitted to the Union on an "equal footing" with the original thirteen colonies. *Pollard v. Hagan*, 44 U.S. 212, 223 (1845); *see also Coyle v. Smith*, 221 U.S. 559, 573 (1911). On admission, Mississippi was granted "full jurisdiction over the lands within its borders, including the beds of streams and other waters." *Kansas v. Colorado*, 206 U.S. 46, 93 (1907) (citations omitted). As a sovereign State, Mississippi holds and retains full control and authority over the groundwater stored naturally within its territorial borders. *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469, 475-76 (1988), *aff'g Cinque Bambini P'ship v. State*, 491 So.2d 508 (Miss. 1986); *see also PPL Mont., LLC v. Montana*, 132 S. Ct. 1215, 1235 (2012) ("States retain residual power to determine the scope of the public trust over waters within their borders….").

Mississippi has consistently confirmed its sovereign rights over groundwater within its borders, and its legislature has declared by statute that all groundwater underlying its territory is a natural resource of the State belonging to its people; and, that "[t]he control and development and use of water for all beneficial purposes shall be in the state, which, in the exercise of its police powers, shall take such measures to effectively and efficiently manage, protect and utilize the water resources of Mississippi." Miss. Code Ann. § 51-3-1 (2003). Accordingly, Mississippi regulates the withdrawal and use of groundwater stored within its ***6** borders. *See* Miss. Code Ann. § 51-3-5 (2003) (stating, *inter alia*, that "[n]o person who is not specifically exempted by this chapter shall use water without having first obtained a permit as provided herein….").

Under the United States Constitution, Tennessee has no legitimate sovereign claim to groundwater naturally stored within Mississippi's borders which, under natural conditions, would never be available in Tennessee. Despite this fact, the Tennessee Parties constructed one of the world's largest groundwater pumping, distribution and sales systems with which they have reached into Mississippi and taken its valuable natural resource without notice, permission or compensation. These actions constitute an intentional invasion of Mississippi's territory and violation of Mississippi's retained sovereignty, giving rise to its claims and its requests for equitable relief.

A brief explanation of the Sparta Sand's geology and hydrology, together with an explanation of the natural behavior of the groundwater stored within Mississippi's Sparta Sand, illustrate the foundation for Mississippi's claims under the United States Constitution.

Mississippi's Natural Groundwater Storage

Mississippi seeks recovery for groundwater naturally stored and residing within its sovereign borders which would never have been available to Tennessee under natural conditions. Such water, which does not naturally move from one state to another, is not a shared natural resource. It is intrastate water. Mississippi's groundwater which the Tennessee Parties have taken and continue to take is not a shared natural resource, because it originated in and is stored in ***7** Mississippi and its natural movement (seepage) - in the absence of pumping - is east-to-west/southwest, down dip in the confined formation within Mississippi. [4]

The Sparta Sand in north Mississippi is a dense, permeable sandstone formation confined between the Flour Island and the upper Jackson formations. These confining formations are composed of impermeable, or very low permeability, clays, silts and fine sands. App.,20a, 28a-31a &67a. In north Mississippi and west Tennessee, the Sparta Sand outcrops (appears unconfined at or near the surface) in an essentially north-to-south strike crossing the border between Mississippi and Tennessee and extending into each State. From the outcrops in Mississippi, the formation has a predominant east-to-west/southwest dip toward the axis of the formation deep below the Mississippi River. App., 68a & 69a. It occurs at a depth of 0 feet (surface) at its outcrop to 600 feet deep, and the formation varies from 200 to 900 feet in thickness. App., 29a & 71a. [5]

***8** Given its geology, before pumping, rainwater entering the Sparta Sand at Mississippi outcrops was naturally drawn by the force of gravity and seeped through pores in the sandstone, migrating down dip at about an inch a day in a direction essentially parallel to the border between Mississippi and Tennessee. App., 28a-31a & 77a. [6] Over time the Sparta Sand within Mississippi became saturated with high quality groundwater stored under significant pressure. As the formation moves deeper, the natural pressures increase, and the very high pressure at the axis below the Mississippi River acts as a hydraulic boundary. Appendix Figure 14 (App., 77a) shows the natural pressure gradients within the formation and the resulting east-to-west/ southwest direction of groundwater seepage in north Mississippi under natural conditions, before pumping. Appendix Figure 7 (App., 70a) is a duplicate of Figure 14 with lines superimposed to show the natural pre-pumping direction of seepage and storage within the Sparta Sand in both Mississippi and Tennessee.

Because of the geological structure of the Sparta Sand in Mississippi, rainwater falling within Mississippi and trapped in this confined formation was naturally stored in Mississippi. Under natural conditions, this groundwater remained within Mississippi in storage under pressure as an available ***9** natural resource for Mississippi and its people, and would never have been available within Tennessee's territorial borders. [7]

Tennessee Groundwater Pumping

As an exercise of its retained sovereignty, Tennessee has controlled, regulated, authorized and supervised Memphis and MLGW through acts of its legislature and the actions of a state agency, the Tennessee Department of Environment and Conservation (“TDEC”), and predecessor entities.

MLGW is the nation's largest three service municipal utility providing water, gas, and electricity. In 1965, it sold approximately 26 billion gallons of water in and around Memphis. By 2000, MLGW's sales had increased to approximately 59 billion gallons a year. While Memphis is located on the Mississippi River, and has access to several other sources of surface water and

groundwater to the north and east within Tennessee, MLGW has intentionally elected to exclusively utilize groundwater, primarily pumped from the Sparta Sand, to obtain the lowest cost of both water and water transport for its sales. App., 138a-144a. MLGW's pumping has been consistently increased without regard to the depletion and draw down of natural groundwater storage in the Sparta Sand, and its well fields have been intentionally developed to reach into Mississippi and forcibly take Mississippi groundwater out of storage.

***10** As part of the expansion of its groundwater pumping operations between 1965 and 2000, MLGW increased the number of its well fields from five fields to ten, and increased its daily pumping capacity from approximately 72 million gallons a day ("MGD") to 163 MGD. This expansion included three well fields located and developed within two and a half miles of the Mississippi border which were pumping approximately 41.5 MGD in 2000. App., 58a. During this massive expansion of groundwater pumping by MLGW, an increasing number of studies were performed by the United States Geological Survey ("USGS") and Tennessee in the 1970s, 80s and 90s which clearly established that MLGW was pulling tens of millions of gallons of groundwater out of the Mississippi Sparta Sand, while claiming all its water came from what it called the Memphis "500-foot sand" (and subsequently called the "Memphis Sand"). App., 24a-28a, 31a-37a & 39a-43a. These studies also reported, as early as 1980, that MLGW's continuous expansion of well fields and commercial pumping was consistently drawing down groundwater storage in the Sparta Sand and progressively reaching further and further into Mississippi, taking groundwater out of natural storage in Mississippi to augment pumping from within Tennessee's borders. *Id.*

By 1995, MLGW's taking of Mississippi's natural groundwater resources through MLGW's pumping operation was notorious, and it was reported that MLGW was the largest pumper of groundwater from the Sparta Sand in Mississippi. App., 183a, 188a-189a & 191a-192a. *See also* App., 60a-61a. The Tennessee Parties had never either given notice of this activity to Mississippi, nor applied for a Mississippi permit; and ***11** the Mississippi Director of the Office of Land and Water Resources objected to MLGW's past and continued pumping, and proposed a joint cooperative study with MLGW, TDEC, and the USGS to establish the natural Sparta Sand groundwater storage within each State and the full effects of MLGW's groundwater pumping. App., 183a-189a.

MLGW would not participate and continued to increase its taking of Mississippi's groundwater. App., 189a. *See also* App., 60a-61a. A November 16, 1998, Memphis *Commercial Appeal* article, following interviews with Memphis, MLGW, USGS, and University of Memphis Groundwater Institute ("GWI") spokesmen, observed that "heavy pumping of municipal wells in Memphis" had created " 'cones of depression' that pull water from [Mississippi];" and that "Memphis each day sucks 20 million to 40 million gallons from under the feet of its neighbors in Desoto County [Mississippi], where wells already are straining to meet demand from rapid growth." App., 190a-193a. In the article, a USGS engineer stated preliminary analysis suggested 20-30% of MLGW's water came from Mississippi, and the former director of GWI acknowledged: "As we've increased our pumping rates, we've forced more water to come north from Mississippi into Shelby County." App., 194a.

A state wide water policy and legal study dated June 2000 by the University of Tennessee's Energy, Environment and Resources Center included findings on MLGW's pumping and cross-border taking from Mississippi's natural groundwater storage in the Sparta Sand and the resulting stress put on groundwater resources. App., 196a-215a. It noted a suit ***12** by Mississippi could have unfavorable results because "there is another source, the Mississippi River," for Memphis water. App., 209a-210a. In apparent response to the reported stresses on Tennessee groundwater resources, MLGW decreased its total pumping between 2000 and 2012; however, it maintained essentially constant pumping from the Mississippi border well fields: 41.5 MGD in 2000 and 42.0 MGD in 2012. App., 58a.

A March 5, 2002, *Special Report* from Tennessee's Comptroller, John Morgan, concluded that the MLGW pumping of groundwater from the Sparta Sand presented an interstate water scarcity issue which required Memphis' reduction of its reliance on the Sparta Sand formation as a source of water supply. App., 216a-220a. Mississippi's efforts to cooperatively address this issue with Tennessee never gained traction.

From 2005 to 2010, Mississippi pursued litigation with Memphis and MLGW in federal district court. *See Hood ex rel. Mississippi v. City of Memphis,* 533 F. Supp. 2d 646 (N.D. Miss. 2008), *aff'd* 570 F. 3d 625 (5th Cir. 2009), *cert. denied, Mississippi v. City of Memphis,* 559 U.S. 904 (2010); *Mississippi v. City of Memphis,* 559 U.S. 901 (2010) (motion for leave to file bill of complaint denied without prejudice). Following the dismissal of Mississippi's initial action - without prejudice - for failure to join Tennessee as a necessary party, Mississippi's Attorney General attempted to reopen discussions with Tennessee without success. Throughout Mississippi's efforts since 1995 to cooperatively resolve this dispute, the Tennessee Parties have consistently remained recalcitrant.

*13 PRESENT AND FUTURE DAMAGE TO MISSISSIPPI

Mississippi's expert hydrogeologists have collected available well data and relevant studies by others and performed groundwater modeling using scientifically valid methods, to determine the past, present, and probable future impact of the Tennessee Parties' massive commercial pumping operation on Mississippi's natural groundwater storage and the changes it has created in the Sparta Sand within Mississippi. App., 20a-130a. Its economic experts have taken the results of this work and calculated the economic impact on Mississippi. App., 131a-182a.

The results of this work can be summarized as follows:
(1) MLGW has been pumping high quality groundwater out of Mississippi's sovereign territory since at least 1965. App. 20a-22a

(2) Despite the Tennessee Parties' knowledge that MLGW was pumping Mississippi groundwater not naturally available within Tennessee, MLGW continually increased its pumping capacity and developed additional well fields on the Mississippi border. App., 58a-62a.

(3) MLGW's massive pumping has drawn down Mississippi's naturally stored groundwater, permanently taking an estimated 252 billion gallons out of Mississippi groundwater storage since 1985, and creating a gigantic cone of depression centered under Memphis and reaching into substantially all of DeSoto ***14** County, Mississippi, which will extract groundwater from Mississippi's natural storage for years to come, even if all MLGW pumping stopped today. App., 20a-22a & 24a-28a. [8]

(4) MLGW's current rate of pumping permanently takes approximately 21 MGD (or 7.6 billion gallons annually) of Mississippi groundwater out of its natural storage into Tennessee. App., 58a-62a.
(5) A conservative estimate of the value of Mississippi groundwater converted by the Tennessee Parties since 1985 is $615 million, including prejudgment interest. App., 134a-182a.

SUMMARY OF ARGUMENT

This is a dispute between states over their retained sovereign territorial rights. *Rhode Island v. Massachusetts,* 37 U.S. 657, 731 (1838). Individual states retained sovereignty over all waters within their borders under the Constitution, and this sovereignty over intrastate waters was affirmed in *Kansas v. Colorado,* 206 U.S. 46, 93 (1907). In *Kansas v. Colorado*, the Court created equitable apportionment ***15** as a remedy to address disputes over an obviously shared natural resource: "Before either Kansas or Colorado was settled the Arkansas River was a stream running through the territory which now comprises these two States." *Id.* at 98-99.

This fact - that the disputed natural resource was shared under pre-existing conditions of nature - has been a prerequisite to the Supreme Court's application of equitable apportionment in every case? we have found. Each case involved a volume of water (or salmon in one instance) which, under the conditions established by nature, was available to two or more states without human intervention. The apportioned resource was, by definition, an interstate natural resource shared by the competing states under the conditions put into place by nature. The Court's intervention was required because one state, through human intervention, was denying another state a shared sovereign attribute of that other state.

In contrast, this case is about the Tennessee Parties reaching beneath the state border into Mississippi's territory to seize and convert a Mississippi natural resource to which they have no such sovereign claim. It is a dispute over the Tennessee Parties' violation of Mississippi's sovereign territory. While the case involves very valuable groundwater, Tennessee has no sovereign claim to the water at issue, which is not naturally shared. Tennessee's operation of over 170 commercial water wells in ten well fields, three of which are just barely in Tennessee (*see* App., 64a), to admittedly take groundwater out of Mississippi storage, is not natural.

***16** Tennessee has never attempted to establish any sovereign right to reach into Mississippi and take the Mississippi groundwater. It has just taken it. Likewise, Tennessee has never offered any evidence that the groundwater residing and moving only within Mississippi's borders would ever enter into or reside in Tennessee under natural conditions.

Tennessee can make no sovereign claim of right to groundwater collected and stored in Mississippi under natural conditions which the Tennessee Parties have only obtained, and continue to obtain, through a massive pumping operation. Were such a claim raised, it might create a question of fact, but not a right to reach across the border into Mississippi territory - as the Tennessee Parties have admittedly done for decades - to forcibly extract Mississippi's naturally stored groundwater. Absent evidence establishing that Mississippi's groundwater would be available within Tennessee without its pumping, Tennessee has no legal basis for an argument that shared interstate groundwater is at issue. And even if it were, the Tennessee Parties have no right to use MLGW's massive pumping operation to literally reach through this confined geological formation into Mississippi and draw down the natural water pressures to seize water from within Mississippi.

The core issue in this case is the violation of sovereign territorial rights held by Mississippi under the United States Constitution. Mississippi has alleged, and tendered evidence to support, a *prima facie* case that the Tennessee Parties have intentionally violated Mississippi's sovereignty and converted its natural resources. *See* App., 11a-243a. ***17** This is a proper case for the Court's exercise of its jurisdiction to determine this dispute, and to provide all relief to which Mississippi may be entitled.

ARGUMENT

I. MISSISSIPPI'S SOVEREIGN RIGHTS OVER GROUNDWATER WITHIN ITS STATE BORDERS

Under the United States Constitution and the equal footing doctrine, Mississippi was admitted to the Union with sovereignty over all its "lands within its borders, including the beds of streams and other waters." *Kansas*, 206 U.S. at 93; *see also Shively v. Bowlby*, 152 U.S. 1, 14-15 (1894); *Rhode Island*, 37 U.S. at 733-38. The right of a state to control and regulate the use of natural resources within the state's territory "is an essential attribute of sovereignty." *Tarrant Reg'l Water Dist. v. Herrmann*, 133 S. Ct. 2120, 2132 (2013) (*quoting United States v. Alaska*, 621 U.S. 1 (1997)); *see also Oregon ex rel. State Land Bd. v. Corvallis Sand & Gravel Co.*, 429 U.S. 363, 377 (1977); *Phillips Petroleum Co.*, 484 U.S. at 475.

Both Mississippi and Tennessee claim all groundwater within their respective territorial borders as a natural resource controlled by the State under its retained sovereignty. Miss. Code Ann. § 51-3-1 (2003); Tenn. Code Ann. §§ 68-221-701 and 69-3-102(a) (2013).

This case must be decided under Article IV, Section 3, Clause 1 of the United States Constitution under which Mississippi was created and brought into the Union, and based upon the sovereign rights reserved to Mississippi by the Tenth Amendment to the Constitution. Neither ***18** *Kansas v. Colorado*, 206 U.S. 46 (1907) nor the cases following it diminish the power of the separate state's retained sovereignty over waters within their borders under the Constitution and laws of the United States. Indeed, it is the individual states' sovereignty, and their inability to impose their water policies on their neighboring states, "*coupled with its effect upon a stream passing through the two States*," which made the dispute over the Arkansas River "a matter for investigation and determination by this court." *Id.* at 95-96 (emphasis added). Intrastate water simply cannot be subject to equitable apportionment, because it is not a naturally shared natural resource; rather, it falls under the exclusive sovereignty of the state in which it resides.

The Tennessee Parties' arguments for equitable apportionment rely on an image of the Sparta Sand geological formation as an underground river or a lake within a cave. Such arguments rely on widespread misconceptions, as noted in the USGS Water-Supply Paper presented at App., 222a-243a. The Preface of this Paper, and its opening chapter titled *Ground-Water Hydrology*, both immediately point out that unlike surface water, or even flowing water in a limestone cave, groundwater is trapped in "myriad openings that exist between the grains of sand and silt, between particles of clay …" (App., 232a); and unlike the rapid movement of flowing water, "the movement of most groundwater is exceedingly slow." App., 233a.

Beyond these basic differences, the occurrence and movement of groundwater in a confined aquifer must be determined by the application of the physical and mathematical sciences to a complex subsurface environment. The studies performed on the Sparta ***19** Sand since the mid-1960s have uniformly found pre-pumping groundwater storage, pressures, and directional movements in Mississippi across north Mississippi and not into Tennessee. This represents the natural condition of Sparta Sand groundwater stored exclusively in Mississippi's sovereign territory and seeping predominantly east-to-west/southwest since before Mississippi became a state. This groundwater naturally stored in a confined aquifer within Mississippi's borders does not meet the first requirement for equitable apportionment. It is not naturally shared.

Accordingly, the Tennessee Parties have never had and simply do not have any claim of right to the Mississippi groundwater under the Constitution and laws of the United States. Absent proof that the groundwater in Mississippi would ever naturally reside (even moving at an inch a day) within Tennessee's borders, there is no basis for the court to apply the cardinal rule of "equality of right" between states. There is no naturally shared resource to subject to legitimate competing claims. Indeed, in view of Mississippi's rights as a sovereign State and the powers preserved to it by the Tenth Amendment of the United States Constitution, Mississippi should not be - and cannot properly be - forced to "share" its natural resources with the Tennessee Parties under a claim by Tennessee to a right of equitable apportionment.

Tennessee has never denied that MLGW's massive pumping operation, developed and operated under its oversight, has been reaching across the State border into Mississippi for decades and forcibly seizing ***20** Mississippi groundwater and siphoning it into Tennessee. This act alone violates Mississippi's sovereignty by imposing Tennessee's groundwater policy on Mississippi. *Kansas v. Colorado*, 206 U.S. at 95 ("Neither State can legislate for or impose its own policy upon the other.").

The Tennessee Parties have knowingly taken these actions in defiance of Mississippi's sovereign territorial rights. They have never made any effort to establish a legitimate claim to the Mississippi groundwater; to notify Mississippi that the groundwater was being taken from within Mississippi; to obtain a permit from Mississippi to take groundwater residing within its borders; or to offer compensation to Mississippi for the taking of a limited natural resource from within Mississippi's borders. [9] Mississippi has found no authority supporting these actions of Tennessee and its political subdivisions. Were Mississippi entitled under the Constitution to declare war on Tennessee, it would have just cause; that is, *casus belli.*

The honoring of territorial boundaries has always been, and continues to be at the foundation of the Union. *Rhode Island,* 37 U.S. at 733 ("when a place is within the boundary, it is a part of the territory of a state; title, jurisdiction, and sovereignty, are inseparable incidents, and remain so till the state ***21** makes some cession."). The right to preserve, protect, control and regulate the use of water within those boundaries continues to be a fundamental incident of that sovereignty. *Tarrant Reg'l Water Dist.,* 133 S. Ct. at 2132.

As between sovereigns, the Court has consistently found that the territorial boundary is the beginning and end of each state's sovereign rights. *See United States v. Louisiana,* 363 U.S. 1 (1960)(dispute between the United States and five states on Gulf of Mexico over lands, minerals and other natural resources); *Louisiana v. United States,* 656 F. Supp. 1310, 1312 (W.D. La. 1986), *aff'd sub nom. Louisiana ex rel. Guste v. United States,* 832 F.2d 935 (5th Cir. 1987) (Louisiana suit for drainage dismissed because United States had already paid for drainage beneath Louisiana sovereign lands).

II. THE TENNESSEE PARTIES ARE LIABLE TO MISSISSIPPI FOR THE UNLAWFUL TAKING OF MISSISSIPPI GROUNDWATER

Through the TDEC, Tennessee exercises supervisory power over the construction, operation, and maintenance of the State's public water systems, including all features or aspects regarding quantity and quality of water supply. Tenn. Code Ann. §§ 68-221-706(a)(2) and 68-221-707(b) (2013). Tennessee also regulates the drilling and maintenance of water wells within the State, *see* Tenn. Code Ann. § 69-10-101 (2013), and under its Water Resources Information Act, Tennessee regulates and requires the registration of withdrawals of groundwater "from any source on a regular or recurring basis by means of an intake structure, pipe and pump that diverts water away from ***22** a source, or by any other conveyance with or without the use of suction." Tenn. Code Ann. at § 69-7-303(5). Tennessee has also enacted a variety of rules and regulations to implement its powers to control and authorize groundwater well pumpage and public water supply facilities. *See, e.g.,* Tenn. Comp. R. & Regs. 1200-4-9-.01 & 1200-5-8-.01.

The Tennessee Parties' intentional actions to reach into Mississippi to forcibly extract Mississippi groundwater from within Mississippi into Tennessee, and to create the cone of depression underlying Mississippi constitute trespass, [10] conversion, [11] and ***23** intentional tortious conduct. [12] Mississippi seeks damages in an amount equal to the value of the water wrongfully taken. In addition, the Tennessee Parties' actions present a classic claim for restitution. The Tennessee Parties have violated Mississippi's territorial sovereignty to take natural resources held by Mississippi in trust for its citizens, without consent or compensation. [13] Mississippi is entitled to recover the ***24** value of the benefits conferred and an accounting and disgorgement of all proceeds and consequential gains realized by the Tennessee Parties as "conscious wrongdoers." [14]

III. THE COURT'S DECISIONS AUTHORIZE THE AWARD OF DAMAGES AND/OR RESTITUTION IN AN ORIGINAL ACTION

The Court's precedent confirms the propriety of damages awards in actions brought by a state against another state. In *Kansas v. Colorado,* 533 U.S. 1, 7-9 (2001) (citation omitted), the Court held that "a State may recover monetary damages from another State in an original action," and accepted the Special Master's recommendation that Kansas be awarded monetary damages against Colorado for violation of the Arkansas River Compact. *See also Texas v. New Mexico,* 482 U.S. 124, 128 (1987) (permitting damages for violation of compact). Such damages should include prejudgment interest. *West Virginia v. United States,* 479 U.S. 305, 310-11, n. 2 (1987).

The fact that Mississippi also demands damages, restitution and injunctive relief from the non-state entities, Memphis and MLGW, does not alter the Court's powers to award such relief. Provided at least one state is on each side of the controversy,

the ***25** presence of non-state parties, even indispensable parties, does not affect the exclusive original jurisdiction of the Supreme Court. *See, e.g.*, *Arizona v. California*, 373 U.S. 546, 564 (1963); *California v. Arizona*, 440 U.S. 59, 61 (1979); *see also Maryland v. Louisiana*, 451 U.S. 725, 735-44 (1981); *Louisiana v. Mississippi*, 516 U.S. 22 (1995) (settling a boundary dispute between Louisiana and Mississippi and denying Louisiana's title claim against a private defendant).

Mississippi's expert economist has conducted detailed analyses of the value of the groundwater wrongfully taken from Mississippi. The principal amount of the State's monetary damages is approximately $197 million for wrongful takings of Mississippi's groundwater from 1985-2012, plus prejudgment interest of $418 million, for total damages approximating $615 million. App., 137a.

IV. THIS IS AN APPROPRIATE CASE FOR THE IMPOSITION OF INJUNCTIVE RELIEF

Unless the Tennessee Parties are required to restructure their pumping system, or to construct and operate a system to obtain water from other readily available sources, such as the Mississippi River, MLGW's pumping from Mississippi will continue until Mississippi's natural resource is exhausted. Three of MLGW's well fields are essentially on the Mississippi border, and the cone of depression created by MLGW's total pumping will continue to draw down the hydraulic pressures further and further into Mississippi.

***26** The Court has granted injunctive relief in cases brought as original actions involving or threatening territorial encroachments. *Missouri v. Illinois*, 180 U.S. 208, 218, 224 & 248-49 (1901) (injunction against city's drainage district, a public corporation controlled by the State of Illinois, to stop construction of a channel that would reverse the flow of the Chicago River causing the natural flow of sewage to be discharged into the Mississippi River); *Wisconsin v. Illinois*, 278 U.S. 367, 420-21 (1929) (injunction granted “as a means of avoiding the diversion [of lake water] in the future” and requiring “the District to devise proper methods for providing sufficient money and to construct and put in operation with all reasonable expedition adequate plants for the disposition of the sewage through other means than the Lake diversion.”).

Tennessee's internal water management and long-term planning studies suggest that Memphis may have to reduce its reliance upon Mississippi groundwater and use Mississippi River water as a supplemental source of supply. App., 220a. Memphis and MLGW have long been on notice that the Court may enjoin their taking of Mississippi groundwater. *Cf. New Jersey v. New York*, 283 U.S. 336, 346 (1931) (limiting New York to diverting no more than “440 million gallons of water daily” from the Delaware River or its tributaries).

*27 CONCLUSION

Groundwater trapped in a confined formation such as the Sparta Sand bears no resemblance to a river, stream, lake or other body of surface water. Equitable apportionment assumes the existence of interstate surface water which visibly moves freely from one state to another without human intervention. This assumption cannot be automatically applied to deep confined groundwater consistent with state territorial sovereignty under the Constitution. Such groundwater may, or may not, be naturally shared. This is a matter of evidence, not unsupported presumptions.

Mississippi has put evidence before the Court with its Motion which disputes any conclusion that the groundwater at issue is naturally shared with Tennessee, and respectfully requests the Court's leave to file its Complaint, and an order appointing a Special Master, *see, e.g.*, *South Carolina v. Regan*, 465 U.S. 367 (1984); *United States v. Raddatz*, 447 U.S. 667, 683 n. 11 (1980), to enable full development of the record and to make recommended findings of fact and conclusions of law supporting Mississippi's claims for damages, restitution, and injunctive relief as set forth herein.

Footnotes

1 "Mississippi" refers to the State of Mississippi; "Tennessee" refers to the State of Tennessee; "Memphis" refers to the City of Memphis, Tennessee; and "MLGW" refers to Memphis Light Gas & Water Division. Tennessee, Memphis, and MLGW will sometimes be collectively referred to herein as "the Tennessee Parties."

2 In *Mississippi v. City of Memphis,* 559 U.S. 901 (2010), the Court cited *Virginia v. Maryland,* 540 U.S. 56, 74 n. 9 (2003), and *Colorado v. New Mexico,* 459 U.S. 176, 187 n. 13 (1982) in a note to its denial, without prejudice, of Mississippi's previous motion for leave to file a bill of complaint. Counsel have studied these and other cases involving actions between states and understand the burden carried by states making claims against other states in original actions. However, Mississippi has found no directly applicable opinions of the Court creating a presumption that groundwater trapped within a deep confined sandstone formation in one state - which would not naturally move to a sister state absent pumping - is as a matter of law, a naturally shared resource. Mississippi submits that the separate states' sovereign authority over such groundwater is an undecided Constitutional question of great seriousness and magnitude which must be resolved by this Court before equitable apportionment can even be discussed.

3 When Alexander Hamilton argued for New York's ratification of the Constitution and the creation of the Court's Article III original and exclusive jurisdiction - as an alternative to armed conflict - he explained that the "competitions of commerce would be another fruitful source of contention." *Id.*

4 *See* App., 77a (Figure 14, showing pre-pumping hydraulic gradients); and App., 70a (Figure 7 with directional groundwater movement lines shown). *See also* Preface to United States Geological Survey *Basic Ground-Water Hydrology,* Water-Supply Paper (2004) (App., 222a-243a), which explains that groundwater is subject to many widespread misconceptions, including "the belief that ground water occurs in underground rivers resembling surface streams" or reservoirs. App., 228a. In fact, groundwater movement depends on the complex subsurface environment in which it is stored. App., 231a, 233a, 242a-243a.

5 App., 71a (Figure 8) reflects a commonly used method to demonstrate the general directional slope and thickness of the geological formations in the relevant area, although the vertical scale is greatly exaggerated.

6 App., 77a (Figure 14) is based on United States Geological Survey modeling which established the pre-pumping conditions and is widely used.

7 Water which might enter Tennessee from the yellow highlighted area on Figure 7, App., 70a is not included in Mississippi's claim. *See* App., 37a-43a. (discussion of groundwater modeling).

8 Technically, with the cessation of all pumping, and unchanged climatological conditions, groundwater storage *may* eventually be replenished naturally in the distant future, but the high quality water which has already been and will be taken is permanently gone, and an eventual natural recharge of the equivalent natural resource within any reasonable time is, at best, far from certain. In no event would this compensate Mississippi for what the State and its citizens have already lost.

9 Even the Texas water district in the Court's recent *Tarrant* decision advanced a claim of right to surface water stored within Oklahoma and applied for a permit to obtain the water in recognition of Oklahoma's police power within its sovereign territory and then filed suit in Federal District Court to confirm its rights. *Tarrant Reg'l Water Dist.,* 133 S.Ct. at 2128-29.

10 *Great N. Nekoosa Corp. v. Aetna Cas. & Sur. Co.,* 921 F. Supp. 401, 415 (N.D. Miss. 1996) (discussion of trespass law in Mississippi); *Morrison v. Smith,* 757 S.W.2d 678, 681 (Tenn. Ct. App. 1988) (*quoting Daughtery v. Stepp,* 19 N.C. 371 (N.C. 1835) ("[E]very unauthorized, and therefore unlawful, entry into the close of another, is a trespass."). *See* Restatement (Second) of Torts § 158 (one is subject to liability for trespass if he intentionally enters land in the possession of another or causes a thing to do so); *id.,* § 159 (trespass may be committed beneath the surface of the earth); *id.* § 161(1) (trespass may be committed by the continued presence on the land of a thing the actor has tortiously placed there, whether or not the actor has the ability to remove it). *See also Gregg v. Delhi-Taylor Oil Corp.,* 344 S.W.2d 411, 416 (Tex. 1961) (*quoting Glade v. Dietert,* 295 S.W.2d 642, 645 (Tex. 1956) ("entry upon another's land need not be in person, but may be made by causing or permitting a thing to cross the boundary of the premises"); *Forbell v. City of New York,* 164 N.Y. 522, 526 (N.Y. 1900) (trespass when city constructed pumping stations that caused water underlying plaintiffs land to flow into its own wells).

11 *Mississippi Motor Fin., Inc. v. Thomas,* 149 So. 2d 20 (1963) (conversion is the exercise of dominion or control over property inconsistent with the true owner's rights). *See also Barger v. Webb,* 391 S.W.2d 664, 665 (Tenn. 1965) (conversion is the appropriation of property to defendant's "own use and benefit, by the exercise of dominion over it, in defiance of plaintiffs right").

12 *Capital Elec. Power Ass'n v. Hinson,* 92 So. 2d 867, 871 (Miss. 1957) ("A tortious act has also been defined as the commission or omission of an act by one, without right, whereby another receives some injury, directly or indirectly, in person, property, or reputation.") (citation omitted); *Stokes v. Newell,* 165 So. 542, 545 (Miss. 1936) ("It is a general principal of law that the breach

of a legal duty owed by one person to another when damages have resulted therefrom gives the right to a cause of action."). *See also* Restatement (Second) of Torts § 927 (remedy for "destruction or impairment of any legally protected interest in the land or other thing").

13 *Magnolia Fed. Sav. & Loan Ass'n v. Randal Craft Realty Co.*, 342 So. 2d 1308, 1311 (Miss. 1977) (unjust enrichment and restitution recognize that a person should not be allowed to enrich himself unjustly through his retention or use of property or money which belongs to another); *Freeman Indus., LLC v. Eastman Chem. Co.*, 172 S.W.3d 512, 524-25 (Tenn. 2005) (elements of unjust enrichment claim). *See* Restatement (Third) of Restitution and Unjust Enrichment § 40 (2011) ("A person who obtains a benefit by an act of trespass or conversion, by comparable interference with other protected interests in tangible property, or in consequence of such an act by another, is liable in restitution to the victim of the wrong."). *See also id.* § 1 ("A person who is unjustly enriched at the expense of another is subject to liability and restitution."); *id.* § 3 ("A person is not permitted to profit by his own wrong.").

14 *Id.* §§ 49 and 51. *See also id.* § 51(3)(b) (a "conscious wrongdoer" is a defendant who is enriched by misconduct and acts "despite a known risk that the conduct in question violates the rights of the claimant"). Such consequential gains include, *inter alia*, saved expenditures, such as where a defendant's unauthorized taking or use of the claimant's property has saved the defendant the "greater cost of making alternative arrangements." *Id.* § 1, cmt. d.

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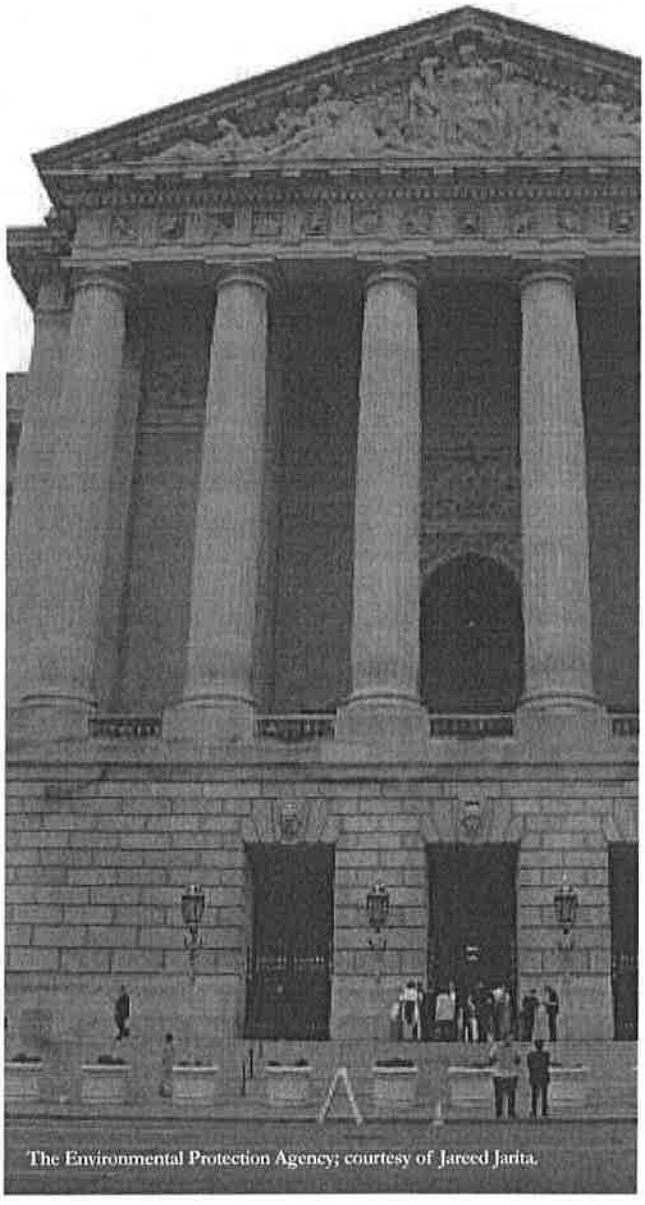
Agencies' Proposed Rule Would Expand CWA Jurisdiction

Jesse E. Hardval[1]

Last April, motivated by complex U.S. Supreme Court decisions in 2001 and 2006, the Environmental Protection Agency and the U.S. Army Corps of Engineers proposed a rule to streamline determinations of federal regulatory jurisdiction over navigable waters under the Clean Water Act. The agencies based the proposed rule on a scientific report, which synthesized more than one thousand scientific articles, and plan to create new classes of water bodies that are categorically subject to jurisdiction under the Act.



The Environmental Protection Agency; courtesy of Jareed Jarita.

Background

With its regulatory power rooted in the Commerce Clause of the U.S. Constitution, the Clean Water Act of 1972 (CWA) allows the Environmental Protection Agency (EPA) and the Army Corps of Engineers (Corps) to regulate navigable waters.[2] The states retain the power to regulate all other waters.[3] The CWA defines "navigable waters" as "waters of the United States."[4] Some thirty years ago, the Supreme Court established that this language allows for the regulation of some waters, like wetlands, that are not navigable in the traditional sense.[5] Still, the limit of this allowance has remained unsettled since the CWA's enactment.

In 2001, the Supreme Court gave a little guidance as to what waters are covered under the CWA's "waters of the United States" language. When the Corps refused to issue a fill permit to the Solid Waste Agency of Northern Cook County (SWANCC), litigation ensued to determine whether isolated ponds were protected under the CWA.[6] The Court ruled that the ponds, which were wholly within Illinois, were not "waters of the United States," so SWANCC did not need a permit to fill them.[7] It found no significant nexus between the ponds and a traditionally navigable water body. The Court ruled such a nexus was necessary for CWA jurisdiction to be extended to non-traditionally navigable water bodies.[8] It held that the presence of migratory birds did not create a significant nexus to navigability.[9]

Little River Canyon stream in Alabama; courtesy of Richard Lyon.

In 2006, the Court returned to the issue of navigability under the CWA after a Michigan resident, John Rapanos, backfilled wetlands on his property without a permit.[10] In a 4-4-1 decision, Justice Antonin Scalia's plurality opinion in *Rapanos* interpreted "waters of the United States" to cover only those bodies of water that are relatively permanent or continuously flowing, and described as streams, rivers, or lakes.[11] Nonetheless, a water that does not meet this test may still fall under CWA jurisdiction if a continuous surface connection exists between it and "bodies that are 'waters of the United States' in their own right."[12] This is known as the continuous surface connection test.

Justice Anthony Kennedy created a different test for determining CWA regulatory jurisdiction in his concurring opinion in *Rapanos*. After examining the purposes and objectives of the CWA, he ruled that it was the intent of Congress that all waters affecting the chemical, physical, and biological integrity of traditionally navigable waters should fall under the scope of the CWA.[13] Kennedy, in clarifying the significant nexus test from *SWANCC*, ruled that the extent of the chemical, physical, and biological connections determines if a significant nexus exists. This test extends the scope of regulatory jurisdiction to cover non-traditionally navigable waters that are substantially connected to other jurisdictional waters.[14] But not all connections will support the extension of CWA jurisdiction. Merely speculative or insubstantial connections are not significant nexuses, and do not allow the CWA's jurisdiction to be extended.[15] Most courts have found that Justice Kennedy's opinion, as the "narrower" opinion, is controlling and have applied the significant nexus test to jurisdictional determinations.

The Proposed Rule

The tests from *Rapanos* call for case-by-case analyses to determine whether waters that are not traditionally navigable fall within the scope of CWA jurisdiction. These analyses are complex, expensive, and time consuming. The proposed rule seeks to categorically extend the scope of the CWA to two classes of non-traditionally navigable waters: tributaries of traditionally navigable waters and water bodies adjacent to traditionally navigable waters.[16] The agencies hope that establishing these classes of "waters of the United States" will reduce confusion and time consumption within the regulatory and permit application processes.[17] Also, the rule seeks to extend CWA jurisdiction to encompass a third class, "other waters," in certain instances.[18]

The agencies based the rule on scientific information from over one thousand articles the EPA synthesized into a single report.[19] The report reached four major conclusions. First, streams strongly influence the functioning of downstream waters no matter how small or how frequently they flow.[20] Second, wetlands with bidirectional hydrologic connections to downstream waters, like those within riparian areas and floodplains, strongly influence downstream waters.[21] Third, wetlands that lack a bidirectional hydrologic connection to downstream waters, like vernal pools and prairie potholes, can still influence downstream waters.[22] And finally, "the effects of small water bodies in a watershed need to be considered in aggregate."[23] After reviewing these conclusions in light of the tests for CWA jurisdiction, the agencies created three classes of non-traditionally navigable waters: "tributaries," "adjacent waters," and "other waters."[24]

First, based on the scientific report, the proposed rule classifies "tributaries" within the definition of the "waters of the United States" and therefore categorically within the scope of CWA regulation.[25] The new rule defines "tributary" as a water that: (1) creates geographic features; (2) has an ordinary high water mark; and, (3) contributes flow to traditionally navigable waters directly or through other waters.[26] For wetlands, lakes, and ponds, however, the rule allows "tributary" classification upon satisfaction of only the third requirement, the contribution of flow.[27] No distinction is made between continuously flowing waters and ephemeral waters when determining if the waters fall within the "tributaries" category, a distinction required by Justice Scalia's test.[28]

The proposed rule also classifies all "adjacent waters" as waters within the definition of the "waters of the United States" and within the scope of federal regulatory power.[29] The rule defines "adjacent waters" as bordering, neighboring, or contiguous with traditional navigable waters.[30] It defines "neighboring" as within the riparian area or floodplain of, or sharing a shallow subsurface or confined surface connection with, a traditionally navigable water or a "tributary."[31]

With respect to "other waters," the agencies' proposed rule retains the case-by-case analysis. For other waters to be jurisdictional, a significant nexus must be shown.[32] In some instances these analyses will consider the waters within a group of similarly situated waters.[33] This type of grouping is consistent with the report's aggregation conclusion.[34] The rule defines "other waters" as waters that are neither traditionally navigable nor "tributaries," "adjacent waters," or excluded waters.[35] Excluded waters include waste treatment plants consistent with the CWA, prior converted cropland, and waters over which the agencies have not asserted jurisdiction based on policy matters.[36]

THE PROPOSED RULE ALSO CLASSIFIES ALL "ADJACENT WATERS" AS WATERS WITHIN THE DEFINITION OF THE "WATERS OF THE UNITED STATES" AND WITHIN THE SCOPE OF FEDERAL REGULATORY POWER.

Conclusion

The objective of the proposed rule is to reduce confusion concerning the scope of the Clean Water Act. But it may raise more questions than it answers. Will the proposed rule accomplish this goal? Costly, complex, and time consuming case-by-case determinations are still needed for the "other waters" category. Furthermore, do the definitions of "adjacent waters" and "other waters" violate the continuous surface connection test from the *Rapanos* plurality? Those definitions seem to rely solely on Justice Kennedy's significant nexus test. Will this rule finally calm the Clean Water Act's jurisdictional ebb and flow? If history is any indication, more litigation on the scope of the Clean Water Act's jurisdiction is all but assured.

Endnotes

1 2015 J.D. Candidate, University of Oregon School of Law.
2 33 U.S.C § 1251(a).
3 U.S. Const. Amend. 10.
4 33 U.S.C § 1362.
5 United States v. Riverside Bayview Homes, Inc., 474 US 121, 133 (1985).
6 Solid Waste Agency of Northern Cook County v. United States Army Corps of Eng'rs, 531 U.S. 159, 165 (2001).
7 *Id.* at 167.
8 *Id.* at 159.
9 *Id.* at 172.
10 Rapanos v. United States, 547 U.S. 715, 719 (2006).
11 *Id.* at 732.
12 *Id.* at 742.
13 *Id.* at 759 (Kennedy, J., concurring).
14 *Id.* at 780.
15 *Id.*
16 Definition of "Waters of the United States" Under the Clean Water Act, 79 Fed. Reg. 22,198 (Apr. 21, 2014).
17 *Id.* at 22,190.
18 *Id.* at 22,211.
19 *Id.* at 22,222. *See* U.S. ENVIRONMENTAL PROTECTION AGENCY, CONNECTIVITY OF STREAMS AND WETLANDS TO DOWNSTREAM WATERS: A REVIEW AND SYNTHESIS OF THE SCIENTIFIC EVIDENCE (2013).
20 Definition of "Waters of the United States" Under the Clean Water Act, *supra* note 16, at 22,222.
21 *Id.* at 22,223.
22 *Id.*
23 *Id.* at 22,196.
24 *Id.* at 22,198.
25 *Id.*
26 *Id.* at 22,199.
27 *Id.*
28 *Id.* at 22,206.
29 *Id.* at 22,198.
30 *Id.* at 22,199.
31 *Id.*
32 *Id.*
33 *Id.* at 22,211.
34 *Id.*
35 *Id.*
36 *Id.* at 22,189.

Drainage Districts, Agriculture, and the Clean Water Act:
What Happens in Des Moines Stay in Des Moines?

Co-authored by Harrison Pittman and Rusty Rumley[1]

Summary

On January 9, 2015, Des Moines Water Works (DMWW), an Iowa water utility, communicated its intent to file a lawsuit involving several Iowa drainage districts "for the discharge of pollutants into the Raccoon River in violation of the Clean Water Act, Iowa Code § 455B.186, and for other claims under state statute and common law of nuisance, trespass, and negligence."[2] This article focuses on the DMWW Clean Water Act (CWA) arguments raised in the letter of intent to sue. [3]

On March 10, DMWW voted to move forward with the lawsuit.[4] DMWW filed the complaint in mid-March after the requisite sixty-day notice period mandated by the CWA for private party lawsuits.[5] The DMWW action is a high stakes and novel legal challenge that will have far-reaching impacts on agricultural production as well as the ongoing debate over the impact of agricultural production on water quality in Iowa and beyond, especially in the Mississippi River Basin states.

This article provides a very brief and objective discussion of the DMWW action and key legal issues involved regarding the Clean Water Act (CWA) claim. The article also highlights two related legal and policy issues that help shape the broader context in which the DMWW action arises. These issues include the debate over the jurisdictional scope of the CWA and the development of numeric nutrient water quality criteria under the CWA. These two issues are important standing alone or coupled together independent of the DMWW action, but are of added importance in light of a legal proceeding that challenges whether drainage districts are point sources under the CWA.

Should the drainage districts be required to obtain an NPDES permit that placed effluent limitations on nitrates or other nutrients, there would likely be increased scrutiny towards farm fields and other actors that that contribute flows into the drainage districts. This potential shift is accentuated in light of ongoing debate regarding the jurisdictional scope of the CWA and the development of numeric nutrient criteria. Moreover, the outcomes of the DMWW action will influence whether or how similar actions are instituted in other jurisdictions.

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[1] Harrison Pittman is Director of the National Agricultural Law Center. Rusty Rumley is a Senior Staff Attorney at the National Agricultural Law Center. The National Agricultural Law Center (www.nationalaglawcenter.org) serves as the nation's leading source of agricultural and food law research and information.

[2] Letter from William Stowe, Sixty-day Notice of intent to Sue, (January 9, 2015) available at http://www.dmww.com/upl/documents/about-us/announcements/notice-of-intent-to-sue.pdf (hereinafter DMWW Letter). In its January 9, letter, DMWW sometimes refers only to the Raccoon River, but refers to both the Raccoon River and the Des Moines River at other times.

[3] This article is based off the letter of intent to sue sent by William Stowe. The complaint was filed on March 17, 2015 and is available at http://nationalaglawcenter.org/wp-content/uploads/2015/03/258963666-Board-of-Water-Works-Trustees.pdf.

[4] Des Moines Water Works Announcement, (March 10, 2015) available at http://www.dmww.com/about-us/announcements/board-of-water-works-trustees-votes-to-pursue-lawsuit-against-drainage-districts.aspx.

[5] 33 U.S.C.A. § 1365(b)(1)(A).

Background

The DMWW was established in 1919 to serve as an independently owned and operated public utility. Today, DMWW is the largest water utility in Iowa and is managed by a five member Board of Trustees, each of whom is appointed by the Mayor of the City of Des Moines.

On January 8, 2015, the DMWW Board of Trustees voted unanimously to formally notify the Chairpersons for the Sac County Board of Supervisors, the Calhoun County Board of Supervisors, and the Buena Vista County Board of Supervisors of their intent to sue over their concerns about nitrate pollution entering the Raccoon River and the Des Moines River. The following day, DMWW issued its letter to the three County Chairpersons, along with other local and state officials.

In the January 9 letter, DMWW detailed its concerns over nitrates in the water supply, the financial costs it claims it must bear to properly clean the water as a result of the presence of high concentrations of nitrates, and human health risks associated with high levels of nitrates. In light of the numeric nutrient criteria issue, discussed more below, it bears noting that the January 9 letter also states that "[e]utrophication and the development of hypoxic conditions in the Gulf of Mexico's dead zone are also directly attributable to nutrient transport from agriculture into the tributaries of the Mississippi, including the Raccoon River and Des Moines River."[6]

To understand the legal issues raised in the DMWW, one must have at least a cursory understanding of the use of tile drainage in agriculture.[7] The use of tile drainage in agriculture is a longstanding and common practice in Iowa and other states. Generally stated, tile drainage optimizes the productivity of agricultural lands by removing excess subsurface moisture from the soil. The tile drainage transports flows through numerous underground pipes that are typically transported into open ditches or other pathways until they reach a surface water. Drainage districts, such as the ones at issue in the DMWW action, are the administrative entities that typically oversee the construction and maintenance of the ditches, streams, and similar structures that facilitate drainage from the watershed. Technically, the process initiated by DMWW focuses on drainage districts rather than tile drainage at farm fields.

DMWW Clean Water Act Argument

In 1972, Congress enacted the CWA "to restore and maintain the chemical, physical, and biological integrity of the nation's waters."[8] The CWA applies to "navigable waters", which is defined as "the waters of the United States, including the territorial seas."[9] The CWA distinguishes between "point source" and nonpoint source pollution. Nonpoint source pollution is water runoff that emanates from broad areas such as that from agricultural and non-agricultural areas, rather than from a specific point of discharge. Specifically, the CWA requires that a "point source" must obtain an NPDES permit in order to discharge a pollutant into a navigable water, while nonpoint source is addressed through voluntary programs that do not involve permitting.

The CWA defines "point source" as follows:

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[6] *See* DMWW Letter.
[7] The explanation provided here is cursory in nature, and does not account for the varying types of legal status drainage districts may have from one jurisdiction to another.
[8] 33 U.S.C.A. § 1251(a).
[9] 33 U.S.C.A. § 1362(7).

> any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.[10]

The core argument raised by DMWW is that the drainage districts are point sources under the CWA and, therefore, must obtain an NPDES permit. Specifically, DMWW alleges in its January 9 letter that the "elaborately engineered government drainage systems consisting of pipes and conduits have been overlooked as point sources under the CWA but they transport high concentrations of nitrate and are the main source of nitrate pollution in the Raccoon River and Des Moines River."[11]

This is a novel legal argument that triggers the fundamental question of whether the flows at issue -- or some part of those flows -- fall under the "agricultural stormwater discharge" exclusion.[12] Consequently, the assertion that the drainage districts are point sources is one that tests the boundaries of the CWA agricultural stormwater exclusion found in the definition of point source.[13] The results of this legal test is of great significance to the DMWW parties, but will also cast a long shadow over similarly situated parties in other states.

For its part, DMWW alleges that the flows at issue do not fall under the agricultural stormwater discharge exemption. DMWW argues that "the high nitrate effluent from artificial drainage systems created and maintained by the Drainage Districts is not exempt from NPDES permitting under the agricultural stormwater exemption for the simple reason that the effluent is not a stormwater discharge, but rather is composed of artificially drained groundwater."[14] However, in the *Closter Farms* case, the United States Court of Appeals for the Second Circuit held that "the discharged groundwater and seepage can be characterized as 'return flow from irrigation agriculture.'"[15]

Regardless of the outcome of any action DMWW ultimately pursues, the legal process will likely take years to conclude. And, assuming DMWW ultimately prevailed on its CWA argument, the role of the drainage districts in their post-NPDES permit world could also take years to address. As noted, this process would evolve at the same time as the ongoing issues of jurisdictional scope of the CWA and the development of numeric nutrient criteria which are briefly discussed below.

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[10] 33 U.S.C.A. § 1362(14).
[11] *See* DMWW Letter.
[12] 33 U.S.C. § 1362(14).
[13] There have been cases regarding drainage and drainage tile from irrigated farming operations, however, this case law has primarily focused on the "return flows from irrigated agriculture" exclusion and not the agricultural stormwater language. *See, e.g.,* Pac. Coast Fed'n of Fishermen's Ass'n v. Glaser, No. CIV S-2:11-2980-KJM, 2013 WL 5230266, (E.D. Cal. Sept. 16, 2013) and Fisherman Against the Destruction of the Env't v. Closter Farms, 300 F.3d 1294, 1297–98 (11th Cir.2002).
[13] *See* DMWW Letter.
[14] *See* DMWW Letter.
[15] *See* Closter Farms, 300 F.3d at 1297.

Related CWA Issues

As noted earlier, the jurisdictional scope of the CWA extends to "the waters of the United States, including the territorial seas."[16] The CWA does not further define "waters of the United States", leaving it to the Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (Corps) to define. The issue of what waters fall under the jurisdictional scope of the CWA remains controversial and the subject of debate in the judicial, legislative, and executive branches of government. The EPA and the Corps have defined the term several times and the application of those definitions has been litigated on many occasions.

In 2001 and 2006, the United States Supreme Court issued rulings that interpreted the jurisdictional scope of the CWA more narrowly than the agency definition. These decisions contributed to ongoing confusion regarding the jurisdictional scope of the CWA, and triggered, among other things, the EPA and the Corps to issue agency guidance documents in 2003 and 2008. As a general rule, waters that are usable in interstate commerce -- "traditional navigable waters" -- are accepted as being within the jurisdictional scope of the CWA. Likewise, the more isolated or removed waters are from being used in interstate commerce, the more likely there is to be disagreement between the agency and others regarding whether it is within the jurisdictional scope of the CWA.

Against this backdrop, the EPA and the Corps published a proposed rule on April 21, 2014 designed to define the jurisdictional scope of the CWA. The agencies' perspective, generally stated, is that the proposed rule revises the definition of "waters of the United States" in a manner consistent with the 2001 and 2006 U.S. Supreme Court decisions and provides clarification to the ongoing confusion about scope of CWA jurisdiction. Others disagree, specifically including agricultural stakeholders, arguing, generally speaking, that the proposed rule is a regulatory overreach by the agency outside the scope of the CWA.

Regardless of one's view on the proposed rule, it would expand the jurisdictional scope of the CWA beyond the scope set out in the agency guidance document. For example, current implementation of the CWA includes, among other waters, a tributary to a traditional navigable water. The proposed rule broadens the definition of the term tributary beyond that which is currently implemented. Another example is that current CWA implementation includes *wetlands* that are adjacent to traditional navigable waters. The proposed rule modifies the scope of the CWA to include all *waters* adjacent to, among other waters such as interstate wetlands, traditional navigable waters.

The jurisdictional scope of the CWA is an important issue nationwide, but specifically in the DMWW process. This issue could be central to determining whether certain parts of a drainage district are within the jurisdictional scope of the CWA currently or in the years ahead. If the areas at issue are determined to be outside the scope of the CWA, then the DMWW CWA claims would fail. However, it bears noting that the DMWW state claims could survive even if the CWA claims are defeated.

Numeric vs. Narrative Water Quality Standards

The CWA requires that states and tribes develop water quality standards that, among other requirements, specify designated uses for water bodies and the water quality criteria that will be implemented to protect those designated uses. The water quality criteria are stated as narrative or

[16] 33 U.S.C. § 1362(7).

numeric standards. An example of a narrative criteria is "[s]urface waters shall be virtually free from floating non-petroleum oils of vegetable or animal origin, as well as petroleum-derived oils."[17] An example of numeric criteria is "[t]he ambient water quality criterion for cadmium is recommended to be identical to the existing drinking water standard, which is 10 µg/L (micrograms per liter)."[18] Consequently, numeric criteria focuses on establishing limits on the presence of specific pollutants in a water body, such as phosphorous or nitrogen that enter water bodies such as the Des Moines River, its tributaries, or adjacent water bodies.

The states and tribes must submit their self-recommended standards to EPA for EPA review and approval. In the event EPA declines approval of a state-recommended standard, the state has the opportunity to resubmit approved standards. If the state does not resubmit revised standards, then EPA is required to establish federal standards. However, the CWA provides EPA authority to initiate a process to establish standards independently of state-recommended standards.

In recent years, several environmental groups have attempted to compel EPA to establish numeric nutrient criteria for up to 31 states located in the Mississippi River Basin. These groups assert that nutrient loading into the Mississippi River substantially contributes to the Gulf of Mexico hypoxic "dead zone" referenced in the DMWW January 9 letter. EPA has taken the position that it does in fact have legal authority to establish numeric criteria, but prefers to work in partnership with states and tribes in developing those standards. Unsatisfied with the EPA position, these groups filed a lawsuit against EPA in March of 2012 that seeks to compel EPA to establish numeric nutrient criteria for the Mississippi River Basin states.

That litigation is ongoing, and like the DMWW action, carries far-reaching implications for agricultural production as well as the ongoing debate over the impact of agricultural production on water quality throughout the Mississippi River Basin states.

Conclusion

The DMWW action initiated on January 9, 2015 is a significant legal development that warrants attention of stakeholders in Iowa and beyond, specifically including within the Mississippi River Basin states. The DMWW action tests the boundaries of the CWA agricultural stormwater exemption, as well as whether or to what extent drainage districts in Iowa and beyond may be a point sources and, therefore, subject to NPDES permit requirements. The outcome of this issue alone raises serious implications for the agricultural sector, the conservation community, and others involved in the ongoing debate over the impact of agricultural production on water quality. The importance of the issue is heightened further when in tandem with continued consideration of what constitutes a jurisdictional water under the CWA as well as the establishment of numeric nutrient criteria.

If the DMWW were to ultimately succeed on its CWA claim, the drainage districts at issue would be required to obtain a NPDES permits that placed limits on pollutants that flowed out of the drainage districts and into the Raccoon River and the Des Moines River. This would be a dramatic legal development that would reverberate throughout Iowa and other states. And, it would represent a very significant shift in the environmental regulation of agriculture. That said, the DMWW legal process could

[17] Environmental Protection Agency, http://water.epa.gov/learn/training/standardsacademy/mod3/page6.cfm.
[18] Environmental Protection Agency, http://water.epa.gov/learn/training/standardsacademy/mod3/page6.cfm.

take years to conclude, which will overlap with the ongoing debates over the jurisdictional scope of the CWA and the development of numeric nutrient criteria.

The development of numeric nutrient criteria in those water bodies would establish specific limits on specific pollutants -- i.e., phosphorous, nitrogen, and pathogens -- present in the water body, which could then lead to more rigid and traceable discharge requirements under the applicable NPDES permit. One net effect of this scenario would likely be that the drainage districts would institute measures that controlled or further managed the flow of water through its infrastructure with the goal of reducing one or more targeted pollutants. Because of the relationship between drainage districts and farmers it may require the districts to shift the burden of compliance “upstream” to the farmers themselves which would create a new paradigm in the way agriculture is regulated in the future.

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF IOWA
WESTERN DIVISION

BOARD OF WATER WORKS TRUSTEES OF THE CITY OF DES MOINES, IOWA, Plaintiff vs. SAC COUNTY BOARD OF SUPERVISORS AS TRUSTEES OF DRAINAGE DISTRICTS 32, 42, 65, 79, 81, 83, 86, and CALHOUN COUNTY BOARD OF SUPERVISORS and SAC COUNTY BOARD OF SUPERVISORS AS JOINT TRUSTEES OF DRAINAGE DISTRICTS 2 AND 51 and BUENA VISTA COUNTY BOARD OF SUPERVISORS and SAC COUNTY BOARD OF SUPERVISORS AS JOINT TRUSTEES OF DRAINAGE DISTRICTS 19 and 26 and DRAINAGE DISTRICTS 64 and 105. Defendants.	NO.: 5:15-cv-04020 **COMPLAINT**

Plaintiff, Board of Water Works Trustees of the City of Des Moines, Iowa submits its Complaint as follows:

NATURE OF ACTION

1. This is a citizen enforcement action under 33 U.S.C. § 1365 of the Federal Water Pollution Control Act (commonly known as the "Clean Water Act" or the "CWA") and Iowa Code § 455B.111 against Sac County Board of Supervisors as Trustees of Drainage Districts 32, 42, 65, 79, 81, 83, 86, and Calhoun County Board of Supervisors and Sac County Board of Supervisors as Joint Trustees of Drainage Districts 2 and 51 and Buena Vista County Board of Supervisors and Sac County Board of Supervisors as Joint Trustees of Drainage Districts 19 and

26 and Drainage Districts 64 and 105 (collectively the "Drainage Districts") brought on behalf of the Board of Water Works Trustees of the City of Des Moines, Iowa ("Des Moines Water Works") for the discharge of nitrate pollution into the Raccoon River and the failure to obtain a National Pollution Discharge Elimination System ("NPDES") permit or other state permit in violation of the Clean Water Act, 33 U.S.C. §§ 1311(a) and 1342(a), Iowa Code § 455B.186, and state and federal regulations enacted thereunder.

2. This complaint seeks a declaratory judgment that the Drainage Districts have violated the Clean Water Act and the Iowa Code by failing to comply with the effluent limitations prescribed by the Clean Water Act's NPDES permit system and the state's NPDES program, injunctive relief, civil penalties, and the award of costs, including attorney and expert witness fees. This is also an action for civil claims for damages and other equitable and legal relief under the United States and Iowa Constitutions, federal statutes, and Iowa statutory and common law.

3. Des Moines Water Works is a regional water utility providing drinking water to approximately half a million Iowans, both by direct service and by wholesale service to other utilities and districts, that obtains its raw water supply primarily from the Raccoon and Des Moines Rivers.

4. This case concerns the detrimental impact of the activities of the Drainage Districts on the sources of raw water from the Raccoon River relied upon by Des Moines Water Works.

5. Under the Safe Drinking Water Act, 42 U.S.C. § 300f et seq. (1996), Des Moines Water Works is obligated to meet the maximum contaminant level ("MCL") standards set by the Environmental Protection Agency (the "EPA") in its finished water. The MCL for nitrate is 10

mg/L.

6. The health risks associated with nitrate contamination include blue baby syndrome and potential endocrine disruption impacts.

7. In addition to health risks to drinking water, nitrate pollution also causes eutrophication and the development of hypoxic conditions in public waters, including the Gulf of Mexico's "dead zone".

8. Over the last thirty years, Des Moines Water Works has invested millions of dollars in capital infrastructure and has developed strategies to manage periodic high nitrate levels in the Raccoon River.

9. Despite the investments and efforts of Des Moines Water Works, record nitrate peaks in the Raccoon River watershed in the summer of 2013, the fall of 2014, and the winter of 2015 have threatened and continue to threaten the security of the water supply and the ability of Des Moines Water Works to deliver safe water in reliable quantities at reasonable cost.

10. A major source of nitrate pollution in the Raccoon River watershed is the artificial subsurface drainage system infrastructure, such as those created, managed, maintained, owned and operated by the Drainage Districts, consisting of pipes, ditches, and other conduits that are point sources which transport high concentrations of nitrate contained in groundwater.

11. Although this problem has been scientifically studied and documented for decades there has been no adequate or effective response to nitrate pollution from drainage systems.

12. In order for Des Moines Water Works to continue to provide clean and safe water at reasonable cost, and to protect the State of Iowa and the United States from a further environmental and health crisis, the discharge of nitrate from drainage district infrastructure must be addressed.

13. As explained more fully below, the discharge of nitrate by the Drainage Districts is pollution by a point source in violation of the CWA and Iowa Code § 455B.186(1) and an NPDES permit or other permit is required for the ongoing discharges by the Drainage Districts.

14. Alternatively, in addition to relief under the CWA and Iowa Code Chapter 455B, the discharge of nitrate pollution into the Raccoon River by the Drainage Districts constitutes a nuisance, a trespass; negligence; an unconstitutional taking of rights secured to Des Moines Water Works by the constitution and laws of the United States and the State of Iowa, and a deprivation of rights under color of law.

JURISDICTION AND VENUE

15. This Court has jurisdiction in accordance with 33 U.S.C. § 1365(a) (action arises under the CWA's citizen suit provision), 28 U.S.C. § 1331 (action raises a federal question under the laws of the United States); and 28 U.S.C. §§ 2201, 2202 (action requests declaratory and injunctive relief in a case of actual controversy), 28 U.S.C. § 1343(a) (action for the vindication of civil rights); 28 U.S.C. § 1367 (supplemental jurisdiction over claims that are part of the same case or controversy under Article III of the United States Constitution), 28 U.S.C. § 1651 (authorizing the district court to issue all writs necessary in aid of its jurisdiction); and 42 U.S.C. §§ 1981, 1983 (action for the vindication of civil rights).

16. Venue is proper in the United States District Court for the Northern District of Iowa, Western Division, pursuant to 28 U.S.C. § 1391 because all of the defendants are residents of the state where the district is located, and a substantial part of the events giving rise to the claims occurred there.

17. Filing in the Western Division of the Northern District is proper under 28 U.S.C. § 95 because Buena Vista and Sac counties are within the Western Division and a substantial

part of the events giving rise to the claims occurred there.

18. The unlawful discharge of pollutants by the Drainage Districts occurred in the United States District Court judicial district for the Northern District of Iowa and therefore venue is proper under the CWA, 33 U.S.C. §1365(c)(1).

19. Des Moines Water Works has provided the Drainage Districts with a Notice of the Intent to Sue (the "Notice") for the violations alleged in this Complaint as required under 33 U.S.C. § 1365(b)(1)(A) and by Iowa Code § 455B.111(2). A copy of the Notice is attached as **Exhibit 1.** This Notice was sent to each of the Chairs of the Boards of Supervisors in Sac County, Calhoun County, and Buena Vista County, Iowa on January 9, 2015. Copies of the Notice were also mailed to the Administrator and Regional Administrator of the EPA and to the Iowa Department of Natural Resources.

20. More than sixty days have passed since the Notice was postmarked and mailed and based on information and belief the violations outlined in the Notice and alleged in this Complaint continue unabated and the Drainage Districts remain in violation of the CWA and Iowa Code Chapter 455B.

21. Neither the United States nor the State of Iowa has commenced or is diligently prosecuting a civil or criminal enforcement action to redress the asserted violations of 33 U.S.C. § 1365(b)(1)(B) and Iowa Code § 455B.111.

22. Des Moines Water Works has standing to assert the claims made herein in that it has a direct and pecuniary interest in the quality and purity of its source waters and it is directly injured by source water polluted by high levels of nitrate.

PARTIES

23. Des Moines Water Works is a municipal water utility in Des Moines, Iowa

organized and acting under Iowa Code Chapter 388, which provides water service regionally in the Des Moines area. It is located at 2201 George Flagg Parkway, Des Moines, IA 50321.

24. Des Moines Water Works has the statutory power to be a party to a legal action under Iowa Code § 388.4.

25. Drainage Districts 32, 42, 65, 79, 81, 83, 86, and 2-51, 19-26, 64-105 are managed or jointly managed by the Sac County Board of Supervisors, Buena Vista County Board of Supervisors, and Calhoun County Board of Supervisors as trustees under Iowa Code Chapter 468. They are political subdivisions of the State of Iowa located as shown in the map attached as **Exhibit 2**.

26. The Drainage Districts are each a "person" within the meaning of 33 U.S.C. § 1362(5) and Iowa Code § 455B.171(18).

27. The Drainage Districts are organized and existing under authority of Article I, § 18 of the Iowa Constitution and Iowa Code Chapter 468.

28. The Drainage Districts have created, operated and maintained drainage facilities which collect and discharge groundwater directly into ditches and streams, including discharges that reach the Raccoon River.

29. The Boards of Supervisors named herein, as governing trustees of the Drainage Districts, have power and control over the drainage infrastructure within their boundaries under Iowa Code § 468.526, and as such are legally responsible for compliance with applicable state and federal law, including but not limited to the CWA, Chapter 455B, and other statutory and common law.

30. Under Iowa Code § 468.89 a board of supervisors and the drainage districts the board represents may be named as defendants in an action concerning the drainage districts.

31. The Iowa Supreme Court has held, most recently in Chicago Cent. & Pacific R. Co. v. Calhoun County Bd. of Sup'rs, 816 N.W.2d 367 (Iowa 2012), that a drainage district is exempt from suit in tort and for money damages based on its "special and limited duties conferred by the Iowa Constitution," but as set forth herein such exemption either does not apply, or if otherwise applicable, would deprive Des Moines Water Works of due process of law, or the equal protection of law under the United States Constitution, the Constitution of the State of Iowa, or both.

FACTS

A. THE NATIONAL & STATE NITRATE PROBLEM

32. The pollution of the rivers and streams of Iowa by nutrients, including nitrate, is a problem of statewide and national significance.

33. Iowa's streams and rivers, including the Raccoon River, contribute significantly to hypoxia in the Gulf of Mexico.

34. The issue of Gulf hypoxia has been identified by federal law as a problem since at least 1998 by adoption of Title VI of the Coast Guard Authorization Act of 1998, Pub. L. No. 105–383, 112 Stat. 3411, as recently amended by the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act of 2014, Pub. L. No. 113-124, 128 Stat. 1379 (June 30, 2014), codified at 33 U.S.C, § 4001, et seq.

35. Although the above cited provisions by their terms neither expand nor contract any regulatory authority as provided in 33 U.S.C. §§ 4006-4007, such Acts identify the national significance of nutrient pollution and the degree of federal concern.

36. By May of 1999, the National Oceanic and Atmospheric Administration established that agricultural drainage is a significant contributor to hypoxia in the Gulf of Mexico

as follows:

> Drainage of agricultural land by tile drains and other means contributes to the high nitrate concentration and flux in the Mississippi River. Tile drains short-circuit the flow of ground water by draining the top of the ground water system into tile lines and ditches and eventually to the Mississippi River. Tile drainage water can have very high nitrate concentrations.

Flux and Sources of Nutrients in the Mississippi-Atchafalaya River Basin, NOAA Coastal Ocean Program, Decision Analysis Series No 17 at xyi (May 1999), available at http://oceanservice.noaa.gov/products/hypox_t3final.pdf

37. Iowa has over 640 waters that are currently considered to be impaired, some by reason of nutrient pollution including nitrate. http://www.iowadnr.gov/Environment/WaterQuality/WaterMonitoring/ImpairedWaters.aspx

38. Scientific research and technical studies show that high nitrate concentrations in the Raccoon River watershed are a direct result of nitrate discharged from agricultural drainage district facilities.

39. The Iowa Nutrient Reduction Strategy (the "Strategy"), is a 204 page report developed by the Iowa Department of Agriculture, Iowa Department of Natural Resources, and Iowa State University to assess the issues of nutrients in Iowa waters and the Gulf of Mexico. Almost 160 pages of the Strategy are devoted to agricultural sources, such as drainage tile. The Strategy is available online at http://www.nutrientstrategy.iastate.edu/sites/default/files/documents/NRSfull-141001.pdf

40. According to the Strategy, sources not currently regulated as point sources create 92% of nitrate pollution entering Iowa's waterways. These sources include agricultural drainage, which is noted as a major contributor in the Strategy at page 9.

41. Despite its factual findings, the Strategy addresses agricultural pollution only

through voluntary measures implemented by private parties.

42. The Strategy lacks: (i) a timeframe for when the nutrient reduction will be achieved; (ii) numeric nutrient criteria standards; (iii) guidance on water quality monitoring; and (iv) any required conservation practices.

43. In the face of both growing national pressure regarding hypoxia in the Gulf of Mexico and within the state of Iowa regarding waters listed as impaired, an entirely voluntary "strategy" with no benchmarks or timeline to measure success is an inadequate response to a problem with a well-documented cause.

44. To address nitrate pollution in Iowa, agricultural drainage infrastructure and drainage districts can be, should be, and are required by law to be regulated as "point sources" under the Clean Water Act, Iowa Code Chapter 455B, and state regulation.

B. THE RACCOON RIVER WATERSHED & NITRATE POLLUTION

45. The Raccoon River drains 3,625 square miles or 2.3 million acres in west-central Iowa. It is a tributary of the Mississippi River Basin draining into the Gulf of Mexico. *Raccoon River Watershed Water Quality Master Plan, Agren, Inc. 2011.* http://www.iowadnr.gov/Portals/idnr/uploads/water/watershed/files/raccoonmasterwmp13.PDF

46. The Raccoon River receives water from portions of 17 Iowa counties including Buena Vista, Sac, and Calhoun. It flows approximately 186 miles from its origin in Buena Vista County to its mouth south of downtown Des Moines and its confluence with the Des Moines River. *Raccoon River Watershed Water Quality Master Plan, Agren, Inc. 2011.*

47. The main stem of the Raccoon River, also known as the North Raccoon, spans from its origin in northeastern Buena Vista County, flows into Sac County, then runs southeastward through Calhoun, Carroll, Green, and Dallas counties to the confluence with the

Des Moines River. *Raccoon River Watershed Water Quality Master Plan, Agren, Inc. 2011.*

48. The two main tributaries to the North Raccoon are the Middle and South. The Middle Raccoon River begins in northwestern Carroll County and flows southeastwardly for 74.5 miles through Guthrie and Dallas counties to join the South Raccoon near Redfield, Iowa. The South Raccoon rises in northeastern Audubon County and flows generally southeastwardly for 49.7 miles through Guthrie and Dallas Counties, past the town of Guthrie Center. *Raccoon River Watershed Water Quality Master Plan, Agren, Inc. 2011.*

49. The North Raccoon and South Raccoon forks join in Dallas County west of Van Meter and flow east into Polk County. *Raccoon River Watershed Water Quality Master Plan, Agren, Inc. 2011.*

50. The North, Middle, and South Raccoon Rivers are navigable bodies of water used by rafts, canoes, kayaks, and other recreational watercraft.

51. The watershed of the Raccoon River primarily includes drainage from two Iowa regions, the first defined by continental-scale glaciers in the eastern portion and the second defined by wind-blown loess in the western portion. *Raccoon River Watershed Water Quality Master Plan, Agren, Inc. 2011.*

52. The North and Middle Raccoon Rivers flow through the region of Iowa known as the Des Moines Lobe, an area covered by glaciers less than 14,000 years ago. The natural geology of the Des Moines Lobe consists of glacial drift composed of sand, silt, and clay. The low permeability of this geologic material coupled with a topography filled with closed depressions created very poor natural surface and subsurface drainage in the Des Moines Lobe. As a result, long-term water and nitrogen is stored on the landscape. *Raccoon River Watershed Water Quality Master Plan, Agren, Inc. 2011, at 19.*

53. Conversely the South Raccoon River drains a landscape characterized by uniform and finely grained soil, rolling hills, greater stream density, and well-developed drainage. *Raccoon River Watershed Water Quality Master Plan, Agren, Inc. 2011, at 19.*

54. In the North Raccoon, seven major tributary streams flow above its confluence with the Middle and South Raccoon rivers. One of the major tributary streams is Cedar Creek which drains just north of Sac City.

55. The United States Geological Survey (the "USGS") maintains a nationwide network of about 7,600 stream gages designed to "provide and interpret long-term, accurate, and unbiased streamflow information." *National Streamflow Information Program Implementation Status Report* *http://pubs.usgs.gov/fs/2009/3020/*.

56. In the Raccoon River watershed at least fifteen gages are maintained by the USGS including gauge 05482300, a monitoring station in the North Raccoon River near Sac City, Iowa. The drainage area for the Sac City gage is 700 square miles.

57. Daily data available from the Sac City gage includes temperature, discharge by cubic feet per second, and nitrate loads and concentrations. Some of the daily data available from the Sac City USGS site such as stream flow dates back to 1958; other information such as nitrate has only been maintained since 2008.

http://waterdata.usgs.gov/nwis/inventory/?site_no=05482300&agency_cd=USGS

58. Other USGS monitoring stations in the Raccoon River watershed south of Sac City include 05482500, North Raccoon near Jefferson, Iowa draining 1,619 square miles, 05483600 Middle Raccoon River at Panora, Iowa draining 440 square miles, and 05484500, Raccoon River near Van Meter, Iowa, draining 3,441 square miles.

http://maps.waterdata.usgs.gov/mapper/index.html?state=ia

59. Overall land use in the Raccoon River watershed is predominately agricultural consisting of corn and soybeans. Row crop land use comprises 85% of the land area in the North Raccoon River with 77% of row crop ground tile drained above Sac City while 61% of the area in the South Raccoon River is row cropped with 42% tile drained above Redfield. *Water Quality Improvement Plan for Raccoon River, Iowa; Iowa Department of Natural Resources Watershed Improvement Section; K.E. Shilling and C.F. Wolter (2008), available at* *http://www.epa.gov/waters/tmdldocs/IARaccoonRiverBasinTMDL.pdf*

60. The Raccoon River watershed is also characterized by intensive livestock production, with a total of 135 cattle feedlots and 424 confinement operations distributed across the watershed. *Water Quality Improvement Plan for Raccoon River, Iowa; Iowa Department of Natural Resources Watershed Improvement Section; K.E. Shilling and C.F. Wolter, (2008).*

61. Land applied manure generated by the livestock operations is a contributing source of nitrate and phosphorous in the watershed, minor nutrient inputs to the watershed occur from cattle grazing on pasture. *Water Quality Improvement Plan for Raccoon River, Iowa; Iowa Department of Natural Resources Watershed Improvement Section; K.E. Shilling and C.F. Wolter (2008)* (internal citations omitted*).*

62. In 2009, the Iowa Department of Natural Resources (the "IDNR") identified three segments of the Raccoon River as impaired by nitrate-nitrogen and established a Total Maximum Daily Load ("TMDL") target for nitrate in the Raccoon River at 9.5 mg/l to meet water quality standards.

63. The Raccoon River also appears on Iowa's 303(d), 33 U.S.C. § 1313(d), list of impaired waterways under the CWA.

64. There are at least seventy-seven (77) entities in the Raccoon River watershed with

NPDES permits. These sources include municipal, industrial, semi-public, sanitary district stormwater, agricultural, and operational permits. *Water Quality Improvement Plan for Raccoon River, Iowa; Iowa Department of Natural Resources Watershed Improvement Section; K.E. Shilling and C.F. Wolter (2008).*

65. These permitted point sources "do not contribute substantially to the nitrate impairment at Des Moines Water Works." *Water Quality Improvement Plan for Raccoon River, Iowa; Iowa Department of Natural Resources Watershed Improvement Section; K.E. Shilling and C.F. Wolter, at p. 45 (2008).*

66. The IDNR estimates that during periods when nitrate levels in the Raccoon River exceed 9.5 mg/L sources that are currently unpermitted contribute 89.7% nitrate while permitted entities contribute only 10.3%. *Water Quality Improvement Plan for Raccoon River, Iowa; Iowa Department of Natural Resources Watershed Improvement Section; K.E. Shilling and C.F. Wolter, at p. 45 (2008).*

67. Despite Iowa occupying less than 5% of the Mississippi River drainage basin, average annual export of nitrate from surface water in Iowa is estimated to range from approximately 204,000 to 222,000 Mg. or 25% of the nitrate that the Mississippi River delivers to the Gulf of Mexico. *K. E. Schilling & R.D. Libra. The relationship of nitrate concentrations in streams to row crop land use in Iowa. J.Environ. Qual. 29, 1846-1851 (2000).*

68. Nitrate-nitrogen export from the Raccoon River Watershed is among the highest in the United States with annual yields at 26.1 kg/ha/year which ranked as the highest loss of nitrate out of 42 Mississippi subwatersheds evaluated for a Gulf of Mexico hypoxia report and contributes to impairment of downstream water quality. *D.A. Goolsby, W.A. Battaglin, B.T. Aulenbach, and R.P. Hooper." "Nitrogen input to the Gulf of Mexico," J. Environ.Qual. 30,*

329-336 (2001); D.A. Goolsby, W.A. Battaglin, G.B. Lawrence, R.S. Artz, B.T. Aulenbach, R.P. Hooper, D.R. Kenney, G.J. Stensland. Flux and sources of nutrients in the Mississippi Atchalfalaya River Basin, White House Office of Science and Technology Policy Committee on Environmental and Natural Resources Hypoxia Work Group (1999).

C. DES MOINES WATER WORKS & NITRATE POLLUTION

69. Des Moines Water Works is an independently operated, municipal water utility providing drinking water to approximately 500,000 Iowans. It is the largest water utility in Iowa.

70. Des Moines Water Works began operating as a municipal water utility serving the Des Moines metro area in 1871 and since that time has obtained water from the Raccoon River for use as a public water supply.

71. Des Moines Water Works seeks to operate with fiscal discipline while delivering superior quality water in reliable quantities.

72. Des Moines Water Works primarily obtains its raw water supply from the Raccoon and Des Moines Rivers by means of direct river intake and by access to shallow alluvial aquifers and surface waters recharged by the rivers.

73. Des Moines Water Works takes water from the Raccoon River and sources influenced by the Raccoon River pursuant to a permit issued by IDNR pursuant to Iowa Code § 455B.261 et seq.

74. Des Moines Water Works' treatment plants and real estate are located in central Iowa approximately 100 miles from the Drainage Districts.

75. Des Moines Water Works maintains and utilizes three treatment plants: Fleur Drive Treatment Plant (the "Fleur Plant"), LD McMullen Treatment Plant at Maffitt Reservoir (the "McMullen Plant"), and its newest plant is at Saylorville Reservoir (the "Saylorville Plant").

76. The Fleur Plant has the capacity to pump 75 million gallons of water per day, the McMullen Plant 25 million gallons per day, and the Saylorville Plant 10 million gallons per day.

77. The main source of water at the McMullen and Saylorville Plants is shallow groundwater collected from the Raccoon River by wells located along the river. Course sand and gravel filter the groundwater and naturally remove river sediment prior to treatment.

78. In addition to shallow groundwater, the McMullen plant also relies on a river–influenced surface water source originally created as quarry pit, and known within Des Moines Water Works as "Crystal Lake." Crystal Lake is managed to provide reduced nitrogen water through natural biologic processes.

79. The Dale Maffitt Reservoir is a 200 acre man-made lake located at the intersection of Polk, Warren, Dallas, and Madison Counties, used as an emergency backup water source with a potential to provide 1.3 billion gallons to the McMullen Plant.

80. The main sources of water at the Fleur Plant are the Raccoon River and Des Moines River through direct intake and an infiltration gallery laid underground along the banks of the Raccoon River.

81. The infiltration gallery is an underground collection system that has been in use since the late 1880s. The gallery system consists of a long series of pipes that run parallel to the Raccoon River roughly 32 feet below surface grade. Water from the Raccoon River collects in the pipes and the water benefits from the bankside filtration which removes much of the solid and suspended matter present. Water from the Raccoon River is also diverted to a series of constructed ponds that lie above the gallery which saturates the soil structure and increases water yield.

82. Permanent direct intakes on the Raccoon and Des Moines River supplement the

infiltration galleries' supply of source water to the Fleur Plant.

83. Except for an initial pretreatment step the water treatment process at the Fleur and the McMullen Plant is similar.

84. At the Fleur Plant and at the McMullen plant when surface water is used, powdered activated carbon is applied to the river or surface water to reduce dissolved organic matter resulting from decayed leaves and vegetation in addition to agricultural and municipal wastewater discharges.

85. The next step in the water treatment process is lime softening which ameliorates the water's hardness and kills viruses. Next the water is filtered through sand and gravel to remove all particles.

86. When nitrate levels are unusually high, a fraction of water at the Fleur Plant undergoes an ion exchange process and is blended with post-filtered water to stay safely below the nitrate health standard. Water at the McMullen Plant can be blended with nitrate-free water from Maffitt Reservoir to remain below the MCL standard when needed.

87. The final step in the water treatment process at the Fleur and McMullen Plants is the addition of fluoride to help prevent dental cavities and chlorine to disinfect the water.

88. The water treatment process at the Saylorville Plant relies on different technologies than the McMullen Plant or Fleur Plant.

89. At the Saylorville Plant, water pumped from collector wells undergoes a pre-treatment step to oxidize and remove iron and manganese. After pre-treatment, the water is passed through ultra-filtration which removes any non-dissolved particles and then through reverse osmosis filtration. The final step in the process is the addition of fluoride, chlorine to disinfect the water, and sodium hydroxide to adjust the pH. Unlike the other plants the

Saylorville Plant does remove nitrate but has far more limited treatment capacity.

90. Throughout the treatment process at each of the three facilities, Des Moines Water Works' state certified laboratory staff performs fifty to one hundred tests each day to ensure the highest quality water is produced. An additional series of tests on the untreated water sources allows Des Moines Water Works plant operators and laboratory staff to select the river source that has the highest quality water before it enters the plants.

91. The mix of raw water sources and treatment plant options available to Des Moines Water Works allow Des Moines Water Works to manage its sources of water to create the highest quality water and to meet water quality standards under many conditions that it encounters.

92. Despite constant monitoring and advanced treatment technologies the nutrient levels in Des Moines Water Works source water have necessitated greater protections, particularly when water demand is high or nitrate concentrations are high, or both.

93. In 1991, faced with increasing levels of nitrate in its source water, Des Moines Water Works constructed the world's largest ion exchange facility to remove nitrate from its finished water.

94. The nitrate removal facility became operational in 1992.

95. At a cost of $4.1 million, the nitrate removal facility was designed to operate on an as needed basis with a maximum capacity of 10 million gallons per day and a cost of up to $7,000 per day to operate.

96. From 1995 to 2005, the nitrate removal facility operated over 500 days.

97. In June of 2005, the utility again nearly violated the nitrate standard when the level of nitrate in the Raccoon River exceeded 10 mg/L for over 94 days concurrent with high

water demand. This near violation precipitated an extensive review of long-term flow and nitrate data for the Raccoon River. USGS flow data dating back to 1919 along with nitrate data generated from Des Moines Water Works testing laboratory dating to 1931 provided a data source to evaluate the relationship between water discharge and flow and nitrate levels. *Nitrate-nitrogen patterns in the Raccoon River Basin related to agricultural practices." J.L. Hatfield, L.D. McMullen, & C.S. Jones, J. of Soil and Water Conservation vol. 64, no. 3, 190-199 (2009).*

98. Since the 1970s, the concentration of nitrate in the Raccoon River at Des Moines Water Works intake points has steadily increased as depicted in **Exhibit 3**.

99. From 1995 to 2014, nitrate concentrations in the Raccoon River at the Des Moines Water Works intake points exceeded the 10 mg/L standard for drinking water at least 1,636 days or 24% of the time. From 1995 to 2014, the nitrate removal facility has operated a total of 673 days with protracted use in 1995, 1998, 1999, 2001, 2002, 2003, 2005, 2006, and most recently 2013, 2014, and 2015.

100. In 2013 and 2014, persistent peaks in nitrate levels reached record highs with the Raccoon River reaching 24 mg/L and the Des Moines River reaching 18.6 mg/L.

101. In the summer of 2013, the nitrate load in Des Moines Water Works' raw water supply in one week was greater than the *entire* nitrate load in 2012. In order to comply with the Safe Drinking Water Act, Des Moines Water Works was forced to rely on its nitrate removal facility for 74 days during peak demand in the summer, when customer demands average 80 million gallons daily.

102. A voluntary conservation request was issued in the summer of 2013 in order to control demand, and Des Moines Water Works expended over $500,000 to treat the source water burdened by excessive nitrate levels.

103. In 2014, despite a difference in both average temperature and precipitation from 2013, the nitrate load in Des Moines Water Works' water supply was again record setting.

104. In July 2014 the average nitrate concentration in Des Moines in the Raccoon River was 11.98 mg/L, the 3rd highest average in the last forty years. Similarly, in September, October, November, and December 2014, the average nitrate concentration was 11.89 mg/L, 13.23 mg/L, 13.43 mg/L and 12.56 mg/L respectively.

105. On December 4, 2014, Des Moines Water Works had to again rely on its nitrate removal facility and continuous use of the facility was required as nitrate concentrations continued to exceed safety standards until March 10, 2015. The continuous operation for a total of 96 days is the longest in the history of the facility's operation during the winter season.

106. Due to its age and the limited capacity of the existing nitrate removal facility, Des Moines Water Works anticipates that it will need to design and construct a new nitrate removal facility with a 50 million gallon per day capacity at a capital cost of between $76 million and $183.5 million before 2020. Operation and maintenance costs will be in addition to the initial estimated capital cost.

107. Nitrate discharged into the Raccoon River watershed is a permanent, physical invasion of and impairment to Des Moines Water Works' real estate and its right to withdraw water from the Raccoon River.

D. DRAINAGE DISTRICTS GENERALLY

108. There are approximately 3,000 drainage districts, including the ten named Drainage Districts, which are primarily concentrated in the Des Moines Lobe, generally paralleling the Raccoon and Des Moines River watersheds.

109. Drainage in Iowa began in the 1800s when early settlers found the region to be

nearly uninhabitable due to the swampy landscape resulting from glaciers previously covering the state which melted to form a prairie pothole region in the Des Moines Lobe.

110. The settlers realized that with the help of artificial drainage the soil found under the wetlands was ideal for cultivation. Under the Swamp Land Acts enacted in the middle of the 19th century to encourage drainage and development of wetlands for agricultural purposes, widespread agricultural drainage projects were facilitated. Thereafter, networks of agricultural tile were installed to turn native wetlands into a terrain suitable for farmland.

111. The original purpose for drainage was limited to improving the natural waterlogged conditions of the land, but by the end of the 19th century the practice of drainage expanded to water management, raising crop yields, broadening the range of land use, and lowering production costs.

112. Today, subsurface drainage has the effect of lowering the water table and removing water from the root zone of corn and soybean plants.

113. By lowering the water table or the level at which soil is entirely saturated with water, subsurface drainage tile permits groundwater to drain. This drainage creates less interference with root growth and development of field crops which require both water and air for production.

114. At the turn of the 19th century, the installation of drainage was costly, labor intensive, and required cooperation so legislation was enacted in Iowa to facilitate the formation and financing necessary to install drainage district infrastructure across multiple parcels of land.

115. The State of Iowa enacted drainage legislation in 1873 authorizing the creation of drainage districts and in 1908 the Iowa Constitution was amended to provide drainage districts with the authority necessary to carry out the purposes of the drainage districts as provided by

statute. Iowa Constitution, Article I, § 18.

116. By 1930, 22% of all farmland in the state of Iowa was drained and 18% of farmland was included in a drainage district. *C.D. Ikenberry, M.L. Soupir, K.E. Schilling, C.S. Jones, A. Seeman, Nitrate-Nitrogen Export: Magnitude and Patterns from Drainage Districts to Downstream River Basins, J. of Environ. Qual. 43:2024-2033 (2014) (citing McCorvie and Lant, 1993).*

117. Drainage of the prairie pothole ecosystem enabled the central part of the state to become one of the most agriculturally productive areas in the world.

118. Under the Iowa Code there are nearly seventy-five pages of law and 500 sections detailing the purpose and creation of drainage districts and the construction, administration, and maintenance of levees, drains, drainage tiles, and drainage ditches within each district.

119. Under the Iowa Code any county board of supervisors is authorized to establish a drainage district for public utility or for public health, convenience, and welfare. Iowa Code § 468.1.

120. Included in this power is the authority to construct levees, ditches, drains, water courses and settling basins as well as straightening, widening, deepening, or changing of a natural water course. Iowa Code § 468.1.

121. Costs associated with installation, maintenance, or repair of drainage tile, drains, or ditches are defrayed by levying assessments on property owners within the district in proportion to the benefit that accrues to each property owner. *See* Iowa Code §§ 468.1, 468.50.

122. The Drainage Districts are empowered to issue bonds and levy to cover costs and expenses necessary to discharge its duties pursuant to the Iowa Code. Iowa Code §§ 468.74, 468.527.

123. To establish a drainage district within a watershed area, two or more landowners file a petition with the county auditor's office and the board of supervisors in the county where the district is located. Iowa Code § 468.6.

124. When a drainage district is established the board of supervisors serves as trustees unless the landowners in a district petition the county auditor to call for a special election to elects trustees from the membership of the landowners in the district. Iowa Code §§ 468.1, 468.500, 486.501.

125. When the boundaries of a drainage district fall in two or more counties, control of the district is exercised jointly by the board of supervisors or boards of trustees in each county. *E.g.,* Iowa Code § 468.281.

126. The authority and responsibility to construct, improve, and make repairs is the same for joint or inter-county drainage districts as it is for intra-county drainage districts. *E.g.*, Iowa Code §§ 468.277, 486.281.

E. POINT SOURCE NITRATE POLLUTION BY THE DEFENDANT DRAINAGE DISTRICTS

127. The Drainage Districts named in this Complaint have been established as provided by law and are managed or jointly managed by the Boards of Supervisors in Calhoun, Buena Vista, and Sac Counties.

128. The Drainage District have created and operate and maintain infrastructure consisting of tiles, pipes, drains, collector mains, surface ditches, culverts and other conveyances of water.

129. The locations of the Drainage Districts are described more particularly below and depicted in maps obtained from the Sac County Auditor's Office in exhibits C-1, C-2, C-3 to the Notice, **Exhibit 1** hereto.

130. The primary purpose of the Drainage District infrastructure is to remove water from agricultural lands, including groundwater containing a high concentration of nitrate, but under the Iowa Code such infrastructure may also drain non-agricultural land.

131. Subsurface tile and pipe and surface ditches and channels created and maintained by the Drainage Districts are connected to private subsurface tiles to convey groundwater within each of the Drainage Districts to streams and rivers, and ultimately to the Raccoon River.

132. Privately owned subsurface tiles consist primarily of perforated pipes installed in a parallel configuration at intervals four to six feet beneath the surface of a field.

133. These privately owned pipes drain to a system of larger sub-collector tiles and to collector mains made of clay, concrete, steel or plastic owned and operated by the Drainage District.

134. Sub-collector tiles and collector mains outlet to open ditches and streams also maintained by the Drainage Districts, which discharge into the Cedar Creek and the Raccoon River.

135. The infrastructure of the Drainage Districts transports both groundwater and stormwater, but little or no irrigation return flow.

136. The location of the Drainage Districts are as follows:

a. Drainage District 86 lies in Sac County in Iowa. The watershed of the district is located in Sections including 13, 14, 23, and 24 of Cedar Township (T-88-N, R-35-W).

b. Joint Drainage Districts 2 and 51 lie over the boundary of Calhoun and Sac Counties in Iowa. The watershed of the joint districts is located in Sections including 10, 11, 12, 13, 14, 15, 23, 24 of Cedar Township (T-88-N, R-35-W) in Sac County and

Sections including 7, 8, 18 of Garfield Township (T-88N, R-34W) in Calhoun County.

c. Drainage District 81 lies in Sac County in Iowa. The watershed of the district is located in Sections including 3, 4, 5, 6, 9 of Cedar Township (T-88-N, R-35-W), Section 1 of Jackson Township (T-88-N, R-36-W), and Sections including 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, 36 of Douglas Township (T-89-N, R-35-W) in Sac County.

d. Drainage District 42 lies in Sac County in Iowa. The watershed of the district is located in Sections including 23, 25, 26 in Douglas Township (T-89-N, R-35-W).

e. Drainage District 65 lies in Sac County in Iowa. The watershed of the district is located in Sections including 20, 21, 28, 29, 32, and 33 of Douglas Township (T-89-N, R-35-W).

f. Drainage District 79 lies in Sac County in Iowa. The watershed of the district is located in Sections including 26, 27, 28, 33, 34, 35 of Douglas Township (T-89-N, R-35-W).

g. Drainage District 83 lies in Sac County in Iowa. The watershed district is located in Sections including 7, 8, 17, 18, 20, 21 in Douglas Township (T-89-N, R-35-W).

h. Joint Drainage Districts 19 and 26 lie over the boundary of Sac and Buena Vista Counties in Iowa. The watershed of the joint districts is located in Sections including 28, 29, 30, 31, 32, 33 of Newell Township (T-90-N, R-35-W) in Buena Vista County and Sections including 4, 5, 6, 7, 8, 9, 16, 17, 18, 20, 21, 22, 27, 28 of Douglas Township (T-89-N, R-35-W) in Sac County.

i. Joint Drainage Districts 64 and 105 lie over the boundary of Sac and

Buena Vista Counties in Iowa. The watershed of the joint districts is located in Sections including 1, 2, and 3 of Delaware Township (T-89-N, R-36-W) in Sac County and Sections including 34, 35, 36 in Providence Township (T-90-N, R-36-W) in Buena Vista County.

j. Drainage District 32 lies in Sac County, Iowa. The watershed of the joint districts is located in Sections including 7 and 18 in Douglas Township (T-89-N, R-35-W).

137. From March 28, 2014, until December 30, 2014, Des Moines Water Works staff drew water samples on 40 separate occasions from 72 sample site locations in drainage districts in Sac, Calhoun, and Buena Vista counties.

138. The samples from each site visit were processed by Des Moines Water Works laboratory staff and blind tested by the Iowa Soybean Association.

139. The following data from nine sample sites reflects that groundwater containing nitrate in excess of 10 mg/L was discharged from a pipe or ditch from the following Drainage Districts on at least the following dates:

Date	Location	Drainage District/s	Nitrate (Mg/L)
7/15/14	Drainage Ditch at 240th St and Xavier (SC15)	86 & 2 (Sac County) and 51 (Calhoun County)	37.67
7/15/14	Drainage Ditch – Wadsley Ave 0.4 miles North of 220th St (SC19)	81, 79, 83 and 19-26	18.77
7/15/14	Drainage Ditch – Wadsley Ave 200 feet North of 210th St (SC20)	42	17.31
7/15/14	Drainage Ditch – Union Ave 0.2 miles North of 200th St (SC32)	83 and 19-26	21.49
7/15/14	Tile Discharge – 200th St. 0.9 miles West of Voss (SC34)	79	22.09
7/15/14	Drainage Discharge – 220th St. 0.6 miles West of Sierra Ave. (SC36)	65	21.16
7/15/14	Tile at North end of Ditch – Sierra Ave. 0.3 miles North of 170th St. (SC43)	19 (Sac County) and 26 (Buena Vista County)	28.8

Date	Location	Drainage District/s	Nitrate (Mg/L)
7/15/14	Drainage Discharge – 170th St. 400 feet East of Quincy Ave. (SC47)	32	24.53
7/15/14	Stream – 170th St. 0.8 miles West of Quincy Ave. (SC52)	64 (Sac County) and 105 (Buena Vista County)	21.44
9/9/14	Drainage Ditch at 240th St and Xavier (SC15)	86 & 2 (Sac County) and 51 (Calhoun County)	31.8
9/9/14	Drainage Ditch – Wadsley Ave 0.4 miles North of 220th St (SC19)	81, 79, 83 and 19-26	20.07
9/9/14	Drainage Ditch – Wadsley Ave 200 feet North of 210th St (SC20)	42	17.58
9/9/14	Drainage Ditch – Union Ave 0.2 miles North of 200th St (SC32)	83 and 19-26	20.39
9/9/14	Tile Discharge – 200th St. 0.9 miles West of Voss (SC34)	79	27.61
9/9/14	Drainage Discharge – 220th St. 0.6 miles West of Sierra Ave. (SC36)	65	20.68
9/9/14	Tile at North end of Ditch – Sierra Ave. 0.3 miles North of 170th St. (SC43)	19 (Sac County) and 26 (Buena Vista County)	20.46
9/9/14	Drainage Discharge – 170th St. 400 feet East of Quincy Ave. (SC47)	32	20.6
9/9/14	Stream – 170th St. 0.8 miles West of Quincy Ave. (SC52)	64 (Sac County) and 105 (Buena Vista County)	16.36
10/15/14	Drainage Ditch at 240th St and Xavier (SC15)	86 & 2 (Sac County) and 51 (Calhoun County)	32.17
10/15/14	Drainage Ditch – Wadsley Ave 0.4 miles North of 220th St (SC19)	81, 79, 83 and 19-26	19.12
10/15/14	Drainage Ditch – Wadsley Ave 200 feet North of 210th St (SC20)	42	19.58
10/15/14	Drainage Ditch – Union Ave 0.2 miles North of 200th St (SC32)	83 and 19-26	21.31
10/15/14	Tile Discharge – 200th St. 0.9 miles West of Voss (SC34)	79	28.66
10/15/14	Drainage Discharge – 220th St. 0.6 miles West of Sierra Ave. (SC36)	65	19.82
10/15/14	Tile at North end of Ditch – Sierra Ave. 0.3 miles North of 170th St. (SC43)	19 (Sac County) and 26 (Buena Vista County)	22.36
10/15/14	Drainage Discharge – 170th St. 400 feet East of Quincy Ave. (SC47)	32	19.69

Date	Location	Drainage District/s	Nitrate (Mg/L)
10/15/14	Stream – 170th St. 0.8 miles West of Quincy Ave. (SC52)	64 (Sac County) and 105 (Buena Vista County)	16.76
12/17/14	Drainage Ditch at 240th St and Xavier (SC15)	86 & 2 (Sac County) and 51 (Calhoun County)	28.15
12/17/14	Drainage Ditch – Wadsley Ave 0.4 miles North of 220th St (SC19)	81, 79, 83 and 19-26	14.76
12/17/14	Drainage Ditch – Wadsley Ave 200 feet North of 210th St (SC20)	42	12.97
12/17/14	Drainage Ditch – Union Ave 0.2 miles North of 200th St (SC32)	83 and 19-26	16.13
12/17/14	Tile Discharge – 200th St. 0.9 miles West of Voss (SC34)	79	22.42
12/17/14	Drainage Discharge – 220th St. 0.6 miles West of Sierra Ave. (SC36)	65	14.43
12/17/14	Tile at North end of Ditch – Sierra Ave. 0.3 miles North of 170th St. (SC43)	19 (Sac County) and 26 (Buena Vista County)	15.44
12/17/14	Drainage Discharge – 170th St. 400 feet East of Quincy Ave. (SC47)	32	16.92
12/17/14	Stream – 170th St. 0.8 miles West of Quincy Ave. (SC52)	64 (Sac County) and 105 (Buena Vista County)	13.71

140. The location of the nine sample sites are detailed in exhibit B to the Notice, **Exhibit 1** hereto.

141. Photographs of the areas from which samples were taken are attached as **Exhibit 4-A, 4-B, 4-C, 4-D, 4-E, 4-F, 4-G, 4-H, 4-I**.

142. Other similar discharges are detailed in exhibit A-1, A-2, A-3 to the Notice, **Exhibit 1** hereto.

143. After taking into account transport times and weather events the above data also correlates with excessive nitrate concentrations observed at Des Moines Water Works Raccoon River intake points.

144. Nitrate is a soluble ion of Nitrogen (N) found in the soil that moves only with water. This allows it to be both readily available for plant consumption but also easily leached

through groundwater.

145. Nitrate primarily occurs in groundwater and streams receive this pollutant because streams receive the majority of their yearly discharge from groundwater in moist temperate climates such as Iowa.

146. Under natural hydrologic conditions very little nitrate is discharged from groundwater to streams, but artificial subsurface drainage short-circuits the natural conditions that otherwise keep nitrate from entering streams and rivers.

147. Subsurface drainage tile artificially lowers the water table by removing water from the saturated zone and expanding the volume of soil in which mineralization of organic matter, including plant residues and manure can generate nitrate in the unsaturated zone.

148. Rapid mineralization in the unsaturated zone in the absence of perennial vegetation to consume it provides a large source of nitrate and continuous drainage allows little opportunity for natural attenuation or de-nitrification.

149. Seasonally large concentrations of nitrate occur in the Raccoon River watershed because mineralization rates increase as temperatures rise in spring and remain high late into autumn.

150. The presence of subsurface tiles provides a continuous mechanism for transporting nitrate to streams only reduced during the relatively short (60-70 days) annual-crop growing season when mineralization rates may be in balance with crop uptake demands.

151. After a rainfall event nitrate concentration in ditches, streams, and rivers is diluted when stormwater increases flow; subsequently nitrate concentrations rise as tile carrying groundwater diverts nitrate from the water table into surface waters.

152. Because stormwater flowing across a field or into a surface intake of a drainage

district has little opportunity to dissolve nitrate produced by soil microorganisms or to interact with soil containing dissolved nitrate, only a very small concentration of nitrate can be found in agricultural stormwater runoff.

153. Elimination of natural subsurface storage and acceleration of groundwater removal from soils by the Drainage Districts' infrastructure short-circuits deep groundwater recharge and substantially increases discharge to streams and open ditches having the additional hydraulic effect of increasing stream velocity.

154. Although infrastructure of the Drainage Districts transports both stormwater and groundwater into streams and rivers, the conveyance of nitrate is almost entirely by groundwater transport.

155. The discharges by the Drainage Districts observed to contain high nitrate concentrations are almost entirely groundwater.

156. To the extent stormwater was included in the water sampled it would have diluted and thus reduced the observed concentration of nitrate.

F. INJURY AND DAMAGES TO DES MOINES WATER WORKS

157. There is no foreseeable likelihood that the Drainage Districts will voluntarily alter or reduce the discharge of nitrate into the Raccoon River watershed and the discharge of nitrate is a permanent invasion of Des Moines Water Works' use of property.

158. The existence and persistence of high concentrations of nitrate in the Raccoon River caused by the operation of the Drainage Districts have caused injury to Des Moines Water Works in the following respects and particulars:

a. By requiring the design, construction and operation of a nitrate removal facility that costs $4.5 million to construct and approximately $4,000- $7,000 per day to

operate;

b. By requiring Des Moines Water Works to design and maintain operational modifications to remain in compliance with safe drinking water requirements, including source water collection improvements, and utilization of technically complex and high cost treatment systems at the Saylorville Plant;

c. By creating a waste stream from the operation of its nitrate removal facility that requires a disposal or discharge permit, the continuing availability and cost of which are uncertain;

d. By reducing the availability of safe drinking water for delivery to customers during periods of high demand;

e. By diminishing the reputation of Des Moines Water Works as a provider of safe, abundant and affordable water, resulting in the direct loss of revenue and potential revenue and the indirect loss of revenue to the extent economic growth is adversely impacted by concerns respecting availability of water; and

f. By imposing on Des Moines Water Works a need to replace and augment its ability and capacity to remove nitrate in the future at expected capital costs currently estimated to range between $76 million and $183 million.

COUNT I: CLEAN WATER ACT

159. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

160. The Clean Water Act was created by Congress to protect sources of drinking water and the quality of the waters of the United States. To achieve its objectives the CWA relies upon the NPDES permit program that controls water pollution by regulating "point sources" that discharge pollutants.

161. As alleged more particularly herein, the facilities of the Drainage District are point sources, as "discrete conveyances" of nitrate pollution under the CWA that are not exempt from regulation and are required to have an NPDES permit.

162. The stated objective of the CWA is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters" by, among other things, achieving the goal of "eliminat[ing]" "the discharge of pollutants into the navigable waters." 33 U.S.C. § 1251(a).

163. Under the CWA and implementing regulations, the discharge of a pollutant by any person is prohibited, except in compliance with other sections of the CWA, including 33 U.S.C. § 1342 which governs activities subject to the issuance of NPDES permits.

164. A "pollutant" is defined to include, "among other things … industrial, municipal, and agricultural waste." 33 U.S.C. § 1362(6).

165. The "discharge of a pollutant" is defined as "any addition of any pollutant to navigable waters from any point source." 33 U.S.C. § 1362(12).

166. Under the CWA, "navigable waters" is defined as "the waters of the United States." 33 U.S.C. § 1362(7).

167. A "point source" is generally defined to include "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, [or] channel . . . from which pollutants are or may be discharged." However, the term "does not include agricultural stormwater discharges and return flows from irrigated agriculture." 33 U.S.C. § 1362(14).

168. Under 33 U.S.C. § 1342 the Administrator of the EPA may issue NDPES permits that authorize the discharge of pollutants from a point source into navigable waters of the United States, subject to the conditions and limitations set forth in such permits.

169. Effluent limitations, as defined in 33 U.S.C. § 1362(11), are established on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters.

170. Effluent limitations, monitoring, and reporting discharges are among the conditions and limitations prescribed in an NPDES permit under 33 U.S.C. § 1342(a) and under state NPDES programs.

171. The CWA provides that a state may establish its own permit program, and after receiving EPA's approval, may administer its own NPDES permits. 33 U.S.C. § 1342(b).

172. In 1978, under the authority of CWA, 33. U.S.C. § 1342(b), the EPA approved the State of Iowa's permit program and today the IDNR administers its own NDPES permits. Iowa Code § 455B.197.

173. Under the Code of Federal Regulations, a "facility or activity" is defined as any "NPDES point source or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program." 40 C.F.R. § 122.2.

174. Under the Code of Federal Regulations the "owner or operator" of any "facility or activity" is subject to regulation under the NPDES program. 40 C.F.R. § 122.2.

175. The Raccoon River is a navigable water as defined in the CWA. 33 U.S.C. § 1362(7).

176. The Cedar Creek is a navigable water as defined in the CWA. 33 U.S.C. § 1362(7).

177. Nitrate is an agricultural waste and a pollutant under the CWA. 33 U.S.C. § 1362(6).

178. The Drainage Districts are point sources of nitrate pollution as defined by, and

under, the CWA, 33 U.S.C. § 1362(14), because they are discernible, confined and discrete conveyances and the discharge of nitrate pollutants is neither agricultural stormwater discharge nor return flow from irrigated agricultural.

179. The Drainage Districts are managed or jointly managed by the Sac County Board of Supervisors, Buena Vista County Board of Supervisors, and Calhoun County Board of Supervisors. 40 C.F.R. § 122.2.

180. The Drainage Districts are the "owners" and "operator[s]" of the drainage facilities and infrastructure as defined by 40 C.F.R. 122.2.

181. Discharges from the Drainage Districts' facilities constitute "discharge of pollutants" within the meaning of the CWA, 33 U.S.C. § 1362(12).

182. The Drainage Districts have discharged, and are discharging on a regular basis, nitrate into ditches and streams which lead directly to the Cedar Creek and the Raccoon River without an NPDES permit issued under 33 U.S.C. § 1342(a) and Iowa's NPDES programs in violation of the CWA. 33 U.S.C. § 1311(a).

183. Upon information and belief, these discharges will continue after the date of filing of this Complaint. 33 U.S.C. § 1362(6), (12).

184. Under the CWA citizen suit provision a civil action may be maintained against the Drainage Districts. 33 U.S.C. § 1365.

185. By committing these acts and omissions alleged above, the Drainage Districts are subject to an assessment of civil penalties pursuant to 33 U.S.C. § 1319(d) and 40 C.F.R. § 19.4, Table 1.

186. The Drainage Districts are subject to the Clean Water Act pursuant to Article VI of the United States Constitution.

WHEREFORE, the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count I:

A. Declare the Drainage Districts to have violated and continue to be in violation of the Clean Water Act;

B. Enjoin the Drainage Districts from any and all ongoing and future violations of the CWA by ordering compliance with the CWA and the NPDES permit program limitations under 33 U.S.C. § 1342(a) and under Iowa's NPDES program;

C. Assess civil penalties under 33 U.S.C. § 1319(d) and 40 C.F.R. § 19.4, Table 1 payable to the U.S. Treasury for each continuing day of violation;

D. Award litigation costs and reasonable attorneys' fees to Des Moines Water Works as authorized by the CWA; and

E. Grant such other relief as is deemed just, equitable, and proper by the Court.

COUNT II: CHAPTER 455B

187. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

188. Chapter 455B is the principal Iowa statute enacted to protect the quality of the waters of the State of Iowa, including navigable waters of the United States within Iowa, both by enforcement of delegated authority under the CWA and by establishment of standards under the state's sovereign authority over the waters of the state.

189. As alleged more particularly herein, the Drainage Districts are point sources of nitrate pollution under Chapter 455B, not exempt from regulation and required to have a permit under Iowa state law and regulation.

190. Under Iowa law, IDNR maintains jurisdiction over the surface and groundwater of the state to "prevent, abate, and control water pollution by establishing standards for water

quality… and by regulating potential sources of water pollution through a system of general rules or specific permits… the discharge of any pollutant to a water of the state requires a specific permit from the department unless exempted by the department." Iowa Admin. Code r. 567-60.1(455B); *see also* Iowa Code § 455B.172(2), (5).

191. Under Chapter 455B water pollution is "the contamination or alteration of the physical, chemical, biological, or radiological integrity of any water of the state by a source resulting in whole or in part from the activities of humans, which are harmful, detrimental, or injurious to public, health, safety, or welfare…" Iowa Code 455B.171(40).

192. Under the Iowa Code "a pollutant shall not be disposed of by dumping, depositing, or discharging such pollutant into any water of the state" without a permit issued by the director of the IDNR. Iowa Code § 455B.186(1).

193. Under the Iowa Code, a pollutant is defined as "sewage, industrial waste, or other waste." Iowa Code § 455B.171(20). "Other waste" is defined as "heat, garbage, municipal refuse, lime, sand, ashes, offal, oil, tar, chemicals, and all other wastes which are not sewage or industrial waste." Iowa Code § 455B.171(17).

194. Although the term is not defined by Code Chapter 455B, under IDNR Rules 60.2, "discharge of a pollutant" is defined as "an addition of any pollutant or combination of pollutants to navigable waters or waters of the state from any point source" including "discharges through pipes, sewers, or other conveyances owned by a state, municipality, or other person which do not lead to a treatment works." Iowa Admin. Code r. 567-60.2(455B).

195. As defined by Iowa Code § 455B.171(19), "Point source" means "any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or

vessel or other floating craft, from which pollutants are or may be discharged."

196. Under IDNR Rule 60.2, the definition of "point source" mirrors the definition under Iowa Code Chapter 455B but specifically excludes from the definition "return flows from irrigated agriculture or agricultural stormwater runoff." Iowa Admin. Code r. 567-60.2(455B).

197. The Iowa Code defines "water of the state" as any stream, lake, pond, marsh, watercourse, waterway, well, spring, reservoir, aquifer, irrigation system, drainage system, and any other body or accumulation of water, surface or underground, natural or artificial, public or private, which are contained within, flow through or border upon the state or any portion thereof." Iowa Code § 455B.171(39).

198. Under the rules issued pursuant to Iowa Code Chapter 455B, an "NPDES permit" is defined as an "operation permit, issued after the department has obtained approval of its National Pollutant Discharge Elimination System (NDPES) program from the administrator that authorizes the discharge of any pollutant into a navigable water." Iowa Admin. Code r. 567-60.2(455B).

199. Under IDNR Rule 62.1(1) "the discharge of any pollutant from a point source into a navigable water is prohibited unless authorized by an NPDES permit." Iowa Admin. Code r. 567-62.1(1)(455B).

200. Under IDNR Rule 64.4(1), "[a]n individual NPDES permit is required when there is a discharge of a pollutant from any point source into navigable waters" except a discharge of a pollutant is exempt from permitting when it introduces "pollutants from non-point source agricultural and silvicultural activities, including stormwater runoff from orchards, cultivated crops, pastures, range lands, and forest lands…." Iowa Admin. Code r. 567-64.4(1)(e)(455B).

201. Under IDNR Rule 60.2, a "nonpoint source" is defined as "a source of pollutants

that is not a point source." Iowa Admin. Code r. 567-60.2(455B).

202. Under the rules issued pursuant to Iowa Code Chapter 455, an "operation permit" is a "written permit . . . authorizing the operation of a wastewater disposal system or part thereof or discharge source and, if applicable, the discharge of wastes from the disposal system or part thereof or discharge source to waters of the state. An NPDES permit will constitute the operation permit in cases where there is a discharge to a water of the United States and an NPDES permit is required by the Act [Federal Water Pollution Control Act]." Iowa Admin. Code r. 567-60.2(455B).

203. Under IDNR Rule 60.2, a "disposal system" is defined as "a system for disposing of sewage, industrial waste, or other wastes, or for the use or disposal of sewage sludge. 'Disposal system' includes sewer systems, treatment works, point sources, dispersal systems, and any systems designed for the usage or disposal of sewage sludge." Iowa Admin. Code r. 567-60.2(455B).

204. Under IDNR Rule 64.3, an operation permit is required for any person who shall "operate a wastewater disposal system or part thereof without, or contrary to the condition of, an operation permit" subject to enumerated exclusions including discharges from geothermal heat pump discharge, water well construction, and the application of biological and chemical pesticides, none of which apply here. Iowa Admin. Code r. 567-64.3(1)(d), (e),(f)(455B).

205. Under Iowa law, a citizen shall have standing to commence an action if the person is adversely affected by the alleged violation of Iowa Code Chapter 455B or rule adopted pursuant to Iowa Code Chapter 455B. Iowa Code § 455B.111(3).

206. Under Iowa law, Des Moines Water Works is a person adversely affected by a violation of Iowa Code Chapter 455B or rule adopted pursuant to, with standing to commence an

action against the Drainage Districts. Iowa Code § 455B.171(18).

207. The Raccoon River, its tributary streams including Cedar Creek, and all waters flowing into such waters are part of the waters of the state under Iowa Code Chapter 455B and state regulations.

208. The "drainage system" in the Drainage Districts is part of the waters of the state under Iowa Code Chapter 455B and state regulations.

209. Nitrate is a "pollutant" under Iowa Code Chapter 455B and state regulation.

210. The Drainage District facilities are point sources of nitrate pollution under Iowa Code Chapter 455B and state regulations.

211. The Drainage Districts have discharged and are discharging nitrate pollutants into ditches and streams which lead directly to Cedar Creek and the Raccoon River on a regular basis.

212. The discharge of nitrate by the Drainage Districts is neither return flows from irrigated agriculture nor agricultural stormwater runoff.

213. The discharge of nitrate by the Drainage Districts is not a non-point source from agricultural and silvicultural activities or stormwater runoff from orchards, cultivated crops, pastures, range lands, and forest lands.

214. The Drainage Districts have discharged and continue to discharge nitrate into ditches and streams without an NPDES or state operating permit in violation of Chapter 455B and state regulations.

215. Upon information and belief, these discharges will continue after the date of filing of this Complaint.

216. Unless the Drainage Districts desist in violations of Chapter 455B Des Moines Water Works will suffer irreparable harm.

WHEREFORE, the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count II:

A. Declare the Drainage Districts to have violated and continue to be in violation of Chapter 455B;

B. Enjoin the Drainage Districts from any and all ongoing and future violations of Iowa Code Chapter 455B and state regulation by ordering compliance with state law including ceasing all discharges of nitrate that are not authorized by an NPDES or state operating permit;

C. Assess civil penalties for each continuing day of violation;

D. Award litigation costs and reasonable attorney fees to Des Moines Water Works as authorized by citizen suit provision pursuant to Iowa Code Chapter 455B; and

E. Grant such other relief as is deemed just, equitable, and proper by the Court.

COUNT III: PUBLIC NUISANCE

217. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

218. Nitrate discharged by the Drainage Districts has caused public harm by contributing to eutrophication and the development of hypoxic conditions in waters, including the Gulf of Mexico's "dead zone," rendering water in the Raccoon River unsafe for human consumption, and costing the City of Des Moines economic development opportunities.

219. The Drainage Districts are created for the purpose of modifying the existing flow of water and for effecting drainage of water. *See* Iowa Code 468.1 et seq.

220. The Drainage Districts normal and intended operation results in nitrate discharge in excess of 10mg/L to be conveyed to Raccoon River.

221. The Boards of Supervisors for Buena Vista, Calhoun, and Sac Counties, as trustees of the Drainage Districts have acted for the purpose of conveying water to the Raccoon

River.

222. The Boards of Supervisors for Buena Vista, Calhoun, and Sac Counties know that by maintaining and operating the Drainage Districts they convey water to the Raccoon River, and are substantially certain that the Drainage Districts convey groundwater to the Raccoon River and that affects downstream users such as Des Moines Water Works.

223. The Boards of Supervisors for Buena Vista, Calhoun, and Sac Counties know that that conveyance of groundwater by the Drainage Districts causes unsafe concentrations of nitrate to enter the Raccoon River, and continue to operate the Drainage Districts so that they discharge unsafe concentrations of nitrate to the Raccoon River.

224. The harm caused by the discharge of nitrate by the Drainage Districts into the Raccoon River watershed is not outweighed by the public benefit from the Drainage Districts' drainage of land in the Raccoon River watershed.

225. Nitrate discharged by the Drainage Districts presents a threat to human health.

226. Iowa Code § 455B.262(2) provides that the water resources of the State of Iowa are for the beneficial use of the public.

227. Iowa Code §455E.3(1) recognizes that the water resources of the State of Iowa are a precious and vulnerable resource and that its protection is essential to the health, welfare, and economic prosperity of the public. Iowa Code § 455E.5(3) grants all persons in the State of Iowa the right to lawful use of groundwater unimpaired by the activities of any other person that render the water unsafe or unpotable.

228. Iowa Code §§ 468.1, .2, .11, .21, .22, .24, and .64 require drainage districts to be operated in the interests of public health and welfare.

229. The present operation of the Drainage Districts is unlawful and antisocial because

it is contrary to the public health and welfare.

230. The discharge of nitrate by the Drainage Districts into the Raccoon River watershed creates a foreseeable and unreasonable risk of harm to public health, safety, comfort, and convenience because the discharge contains nitrate concentrations that pose a danger to the public's health and welfare.

231. The discharge of nitrate by the Drainage Districts affects a substantial number of persons because Des Moines Water Works distributes water from the Raccoon River to over 500,000 people in central Iowa.

232. Des Moines Water Works and the public have been injured by the Drainage Districts' public nuisance.

233. The conduct of the Drainage Districts together with the conduct of similarly situated drainage districts contributes to a single, indivisible harm making the Drainage Districts jointly and severally liable for the damage caused to Des Moines Water Works.

WHEREFORE, the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count III:

A. Declare that the Drainage Districts have created and continue to maintain and operate a public nuisance;

B. Order the Drainage Districts to take all actions necessary to abate the public nuisance;

C. Award damages to Des Moines Water works in an amount required to compensate Des Moines Water Works for the unlawful discharge of nitrate by all drainage districts in the Raccoon River watershed together with interest as provided by law;

D. Award the costs of this action to Des Moines Water Works; and

E. Grant such other relief as is deemed just, equitable, and proper by the Court.

COUNT IV: STATUTORY NUISANCE

234. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

235. The Drainage Districts normal and intended operation results in nitrate discharge in excess of 10 mg/L to be conveyed to Raccoon River.

236. The Drainage Districts exist within real estate legally described in the fact sections above.

237. Concentrations of nitrate in the Raccoon River watershed exceed levels that are safe for human consumption and, without treatment, the levels of nitrate in the Raccoon River are dangerous to human health.

238. Such concentrations of nitrate render water in rivers and streams flowing to the Raccoon River corrupt, unwholesome, and impure in violation of Iowa Code Chapter 657.

239. The discharge of nitrate by the Drainage Districts into the Raccoon River is an obstruction that unreasonably interferes with Des Moines Water Works' statutory right to withdraw water from the Raccoon River, and is an obstruction that unreasonably interferes with Des Moines Water Works' use of its real estate and treatment plants by requiring Des Moines Water Works to undertake costly and elaborate treatment processes to remove the excess nitrate from water drawn from the Raccoon River.

240. Des Moines Water Works has been injured and suffered damages by the Drainage Districts' statutory nuisance.

241. The conduct of the Drainage Districts together with the conduct of similarly situated drainage districts contributes to a single, indivisible harm making the Drainage Districts jointly and severally liable for the damage caused to Des Moines Water Works.

WHEREFORE, the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count IV:

A. Declare that the Drainage Districts have created and continue to maintain and operate a statutory nuisance;

B. Order the Drainage Districts to take all actions necessary to abate the public nuisance;

C. Award damages to Des Moines Water works in an amount required to compensate Des Moines Water Works for the unlawful discharge of nitrate by all drainage districts in the Raccoon River watershed together with interest as provided by law;

D. Award the costs of this action to Des Moines Water Works; and

E. Grant such other relief as is deemed just, equitable, and proper by the Court.

COUNT V: PRIVATE NUISANCE

242. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

243. Addition of high concentrations of nitrate by operation of the Drainage Districts to the Raccoon River is a substantial and unreasonable interference with Des Moines Water Works' property right to withdraw high quality water from the Raccoon River and with Des Moines Water Works' real estate and treatment plants because Des Moines Water Works must implement elaborate, costly, and burdensome treatment processes to remove the excess nitrate.

244. Des Moines Water Works has been injured and suffered damages by the Drainage Districts' private nuisance.

245. The conduct of the Drainage Districts together with the conduct of similarly situated drainage districts contributes to a single, indivisible harm making the Drainage Districts jointly and severally liable for the damage caused to Des Moines Water Works.

WHEREFORE, the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count V:

A. Declare that the Drainage Districts have created and continue to maintain and operate a private nuisance;

B. Order the Drainage Districts to take all actions necessary to abate nitrate pollution;

C. Award damages to Des Moines Water works in an amount required to compensate Des Moines Water Works for the unlawful discharge of nitrate by all drainage districts in the Raccoon River watershed together with interest as provided by law;

D. Award the costs of this action to Des Moines Water Works; and

E. Grant such other relief as is deemed just, equitable, and proper by the Court.

COUNT VI: TRESPASS

246. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

247. Nitrate conveyed into the Raccoon River by the Drainage Districts is a substantial physical invasion of Des Moines Water Works' exclusive use and enjoyment of its real estate and personal property.

248. The discharge of nitrate to the Raccoon River by operation of the Drainage Districts is an intentional physical invasion of Des Moines Water Works' property right to withdraw water from the Raccoon River and an intentional physical invasion to the real estate and treatment plants operated by Des Moines Water Works.

249. The physical invasion is ongoing so long as the Drainage Districts continue to discharge nitrate unabated.

250. The Drainage Districts' physical invasion of Des Moines Water Works' property

is a reasonably foreseeable consequence of the operation of the Drainage Districts.

251. Des Moines Water Works has suffered substantial damage from the Drainage Districts' trespass.

252. The conduct of the Drainage Districts together with the conduct of similarly situated drainage districts contributes to a single, indivisible harm making the Drainage Districts jointly and severally liable for the damage caused to Des Moines Water Works.

WHEREFORE, the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count VI:

A. Declare that the Drainage Districts have created and continue to maintain and operate a trespass;

B. Order the Drainage Districts to take all actions necessary to abate nitrate pollution;

C. Award damages to Des Moines Water works in an amount required to compensate Des Moines Water Works for the unlawful discharge of nitrate by all drainage districts in the Raccoon River watershed together with interest as provided by law;

D. Award the costs of this action to Des Moines Water Works; and

E. Grant such other relief as is deemed just, equitable, and proper by the Court.

COUNT VII: NEGLIGENCE

253. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

254. The Drainage Districts have a duty under Iowa and federal law not to discharge nitrate pollution into Raccoon River watershed that represents a threat to public health and welfare, and impairs downstream users such as Des Moines Water Works.

255. The Drainage Districts have breached their duty to Des Moines Water Works by

failing to exercise ordinary care in the construction and operation of the network of drainage facilities which now collect and discharge harmful concentrations of nitrate into the Raccoon River watershed.

256. The Drainage Districts provide a direct and artificial means of transport for nitrate to the Raccoon River watershed.

257. The Drainage Districts' conduct causes harm to Des Moines Water Works.

258. The Drainage Districts know their operation conveys unsafe levels of nitrate to the Raccoon River watershed and those levels will affect downstream users such as Des Moines Water Works.

259. The harm to Des Moines Water Works is a reasonably foreseeable consequence of the Drainage Districts' normal and intended operation.

260. Des Moines Water Works has been damaged by the Drainage Districts' breach of their duty.

261. The conduct of the Drainage Districts together with the conduct of similarly situated drainage districts contributes to a single, indivisible harm making them jointly and severally liable for the damage caused to Des Moines Water Works.

WHEREFORE, the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count VII:

A. Declare that the Drainage Districts have acted negligently and caused harm to Des Moines Water Works;

B. Order the Drainage Districts to take all actions necessary to abate nitrate pollution;

C. Award damages to Des Moines Water works in an amount required to compensate

Des Moines Water Works for the unlawful discharge of nitrate by all drainage districts in the Raccoon River watershed together with interest as provided by law;

D. Award the costs of this action to Des Moines Water Works; and

E. Grant such other relief as is deemed just, equitable, and proper by the Court.

COUNT VIII: TAKING WITHOUT JUST COMPENSATION

262. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

263. The Drainage Districts are persons within the meaning of 42 U.S.C. § 1983 as interpreted by Monell v. Dep't of Soc. Servs. of City of New York, 436 U.S. 658, 690 (1978), because, pursuant to Iowa Code Chapter 468, they are political subdivisions of the State of Iowa.

264. The Drainage Districts at all times relevant to this case acted under color of state law within the meaning of 42 U.S.C. § 1983 because they are operated pursuant to Iowa Code Chapter 468.

265. The Drainage Districts are operated independently of the State of Iowa by trustees who are the respective county boards of supervisors.

266. The Drainage Districts' policy and practice of discharging unregulated quantities of nitrate in high concentrations into the Raccoon River watershed causes harm to Des Moines Water Works and the general public.

267. The State of Iowa is not obligated to pay the indebtedness of the Drainage Districts; the Drainage Districts are self-funding and their finances are separate and independent from the finances of the State of Iowa.

268. The discharge of nitrate by the Drainage Districts into the Raccoon River watershed is permanent, physical invasion of and impairment to Des Moines Water Works' real estate and its right to withdraw water from the Raccoon River, and restricts Des Moines Water

Works' use of its real estate and property.

269. The discharge of nitrate by the Drainage Districts into the Raccoon River watershed has a substantial negative economic impact on Des Moines Water Works.

270. The discharge of nitrate by the Drainage Districts into the Raccoon River watershed interferes with Des Moines Water Works' expectation that it will have source water free of excess pollutants and unnaturally high concentrations of nitrate.

271. The character of the Drainage Districts' conduct is a physical invasion of Des Moines Water Works' property because nitrate discharged by the Drainage Districts interferes with the ownership interests of Des Moines Water Works.

272. The Drainage Districts' benefits to public health and welfare from draining the land do not justify the substantial harm to public health and welfare caused by nitrate discharge into the Raccoon River watershed.

273. The Drainage Districts have not compensated Des Moines Water Works for the taking of Des Moines Water Works' property.

274. The conduct of the Drainage Districts together with the conduct of similarly situated drainage districts contributes to a single, indivisible harm making them jointly and severally liable for the damage caused to Des Moines Water Works.

275. The discharge of nitrate by the Drainage Districts into the Raccoon River watershed is a regulatory and physical taking within the meaning of the Fifth Amendment to the United States Constitution as made applicable to the states by the Fourteenth Amendment to the United States Constitution and Article I, § 18 of the Constitution of the State of Iowa, and therefore Des Moines Water Works is entitled to just compensation for the permanent invasion of its property.

WHEREFORE, the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count VIII:

A. Declare that the Drainage Districts have taken property and continue to take property of Des Moines Water Works without just compensation in violation of the United States and Iowa Constitutions;

B. Award just compensation to Des Moines Water works in an amount required to compensate Des Moines Water Works for the unlawful discharge of nitrate by all drainage districts in the Raccoon River watershed together with interest as provided by law;

C. Award the costs of this action to Des Moines Water Works;

D. Award reasonable attorneys' fees; and

E. Grant such other relief as is deemed just, equitable, and proper by the Court.

COUNT IX: DUE PROCESS & EQUAL PROTECTION

276. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

277. The Drainage Districts are person within the meaning of 42 U.S.C. § 1983, and at all times relevant to this case have acted pursuant to a policy and practice under color of state law that deprives Des Moines Water Works of its rights guaranteed by the United States Constitution.

278. The Iowa Code and decisions of the Iowa Supreme Court have developed a constitutionally defective immunity for drainage districts that violates Des Moines Water Works' due process and equal protection rights.

279. To the extent the Drainage Districts have and enjoy any immunity from suit for claims herein, such immunity violates the Due Process and Equal Protection Clauses of the Fourteenth Amendment to the United States Constitution, the Due Process and Equal Protection

Clauses of the Iowa Constitution. U.S. Const., amend XIV; Iowa Const., art. I, §§ 6, 9.

280. Des Moines Water Works is being deprived of its substantive right to just compensation for governmental takings under the Iowa and United States Constitutions.

281. Granting the Drainage Districts immunity from suit in tort and for damages is not necessary to aid any compelling governmental interest because the discharge of nitrate creates a demonstrated hazard to the public health and welfare.

282. The benefits derived from providing Des Moines Water Works redress against the Drainage Districts outweighs any harm to the Drainage Districts because they are already subject to injunctive and other forms of equitable relief based on their failure to discharge their duties, and because they are already permitted to institute litigation as a plaintiff by Iowa Code § 468.90.

WHEREFORE, the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count IX:

A. A declaration from the Court that the Drainage Districts are subject to suit at law and equity for damages in tort and other relief resulting from their tortious conduct;

B. Award damages to Des Moines Water works in an amount required to compensate Des Moines Water Works for the unlawful discharge of nitrate by all drainage districts in the Raccoon River watershed together with interest as provided by law;

C. Award the costs of this action, including reasonable attorneys' fees, to Des Moines Water Works; and

D. Grant such other relief as is deemed just, equitable, and proper by the Court.

COUNT X: INJUNCTIVE RELIEF

283. Des Moines Water Works repleads all prior paragraphs as if fully set forth herein.

284. The discharge of nitrate by the Drainage Districts into the Raccoon River watershed is a breach of the duties of the Drainage Districts and an invasion of the public interest and the rights of Des Moines Water Works in all of the respects and particulars set forth in Counts I through IX.

285. Des Moines Water Works has suffered, and will continue to suffer, substantial damage.

286. In the alternative to the remedies requested in the prior Counts and to the extent no other adequate remedy is provided herein, remedies at law are inadequate to redress the ongoing and perpetual nature of the harm the Drainage Districts will cause Des Moines Water Works.

287. The Drainage Districts will not suffer unreasonable hardship if they are required to mitigate the discharge of nitrate into the Raccoon River or to obtain a permit, or both.

288. The public interest in reducing nitrate pollution is substantial given the dangerous health effects of nitrate and the number of people Des Moines Water Works serves.

289. Des Moines Water Works will succeed on the merits of its claims as set forth in the prior Counts.

290. The Court may frame an injunction that permits sufficient flexibility for the Drainage Districts to comply with the injunction without undertaking an unreasonable burden.

WHEREFORE the Plaintiff, Des Moines Water Works, respectfully prays that the Court grant the following relief under this Count X:

A. A permanent, prospective injunction enjoining the Drainage Districts to take all steps reasonably necessary within a reasonable period of time to reduce the discharge of nitrate to the Raccoon River to concentrations that do not exceed 10 mg/L;

B. Award the costs of this action to Des Moines Water Works; and

C. Grant such other relief as is deemed just, equitable, and proper by the Court.

Dated: March 16, 2015

By: /s/ Richard A. Malm

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UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF WASHINGTON

COMMUNITY ASSOCIATION FOR RESTORATION OF THE ENVIRONMENT, INC., a Washington Non-Profit Corporation; and CENTER FOR FOOD SAFETY, INC., a Washington, D.C. Non-Profit Corporation, Plaintiffs, v. COW PALACE, LLC, a Washington Limited Liability Company, et al., Defendants.	NO: 13-CV-3016-TOR ORDER RE: CROSS MOTIONS FOR SUMMARY JUDGMENT

BEFORE THE COURT are the following motions: Defendant Cow Palace, LLC's Motion for Summary Judgment (ECF No. 190); Defendants The Dolsen Companies' and Three D Properties' Motion for Summary Judgment (ECF No. 191); Plaintiffs' Motion to Exclude Expert Testimony of Scott Stephen (ECF No. 193); Defendant Cow Palace, LLC's *Daubert* Motion to Exclude Testimony in

Reliance on the EPA Report and to Exclude EPA Report Under Rule 403 (ECF No. 200); Plaintiffs' Motion to Exclude Expert Testimony of James Maul (ECF No. 202); Plaintiffs' Motion to Exclude Expert Testimony of Michael Backe (ECF No. 206); Defendant Cow Palace LLC's Motion to Dismiss Under FRCP 12(b)(1) (ECF No. 209); Plaintiffs' Motion for, and Memorandum in Support of, Summary Judgment (ECF No. 211; *see* ECF No. 234-1 (praecipe)); and Cow Palace, LLC'S Motion to Strike Undisclosed Expert Testimony (ECF No. 237).

These matters were heard on January 6, 2015. Charles M. Tebbutt, Elisabeth A. Holmes, Daniel Snyder, Jessica L. Culpepper, and Blythe H. Chandler appeared on behalf of Plaintiffs. Debora K. Kristensen and Brendon V. Monahan appeared on behalf of Defendant Cow Palace. Ralph H. Palumbo appeared on behalf of Defendants Three D Properties and The Dolsen Companies. The Court has reviewed the motions and the file herein and heard from counsel, and is fully informed.

BACKGROUND

This is a case concerning Defendants' manure management practices and their effect on public health and the environment. Cow Palace Dairy ("Dairy"), located in Lower Yakima Valley, houses a large number of animals and must handle significant amounts of manure generated by its herd. The Dairy manages its manure in a variety of ways, including transforming it into compost and selling

it, temporarily storing it in several earthen impoundments, and applying it to agricultural fields as fertilizer.

In February 2013, Plaintiffs commenced the instant lawsuit alleging violations under the Resource Conservation and Recovery Act ("RCRA").[1] According to Plaintiffs, Defendants' manure management practices constitute open dumping of solid waste and cause an imminent and substantial danger to public health and the environment because when the manure is improperly managed and stored, as well as over-applied to agricultural fields, it is discarded and consequently contributes to high levels of nitrates in underground drinking water. ECF No. 1. In March 2013, the U.S. Environmental Protection Agency ("EPA") exercised its regulatory power under the Safe Drinking Water Act and entered an Administrative Order on Consent ("AOC") with Defendants to address the high levels of nitrates found in underground drinking water. ECF No. 38-1.

Presently before the Court are a variety of motions which can be reduced to the following issues: (1) whether Plaintiffs have Article III standing; (2) whether certain evidence, including expert testimony, should be limited or excluded from trial; (3) whether animal waste, when over-applied onto soil and leaked into groundwater, is a "solid waste" under RCRA; (4) whether the Dairy's manure

[1] Plaintiffs filed their Third Amended Complaint on October 6, 2014. ECF No. 180.

management, storage, and application practices constitute "open dumping" under RCRA; (5) whether the Dairy's manure management, storage, and application practices may cause or contribute to an imminent and substantial endangerment to public health and the environment; and (6) whether Cow Palace, LLC, Three D Properties, LLC, and The Dolsen Companies are all responsible parties under RCRA.

FACTS

A. Cow Palace Dairy

Cow Palace Dairy is located in the Lower Yakima Valley, in Granger, Washington. ECF Nos. 211-1 ¶ 2; 181 at 14. The Dairy can be characterized as a "large concentrated animal feeding operation" ("CAFO") as defined in relevant state and federal laws. 40 C.F.R. § 122.23; Wash. Admin. Code 173-224-030. In 2012, Cow Palace reported its herd size to number over 11,000, with 7,372 milking cows, 897 dry cows, 243 springers, 89 breeding bulls, and 3,095 calves predominately housed in open lot containment pens. ECF Nos. 190-1 ¶ 2; 211-1 ¶ 24; 220-1 (COWPAL002097). The Dairy produces milk, meat, crops, and manure, ECF No. 190-1 ¶ 6; however, Plaintiffs assert the manure "produced" at the Dairy is less of a product than the unwanted byproduct of its primary milk operations, ECF No. 286-1 ¶ 6.

Specifically regarding its manure, the Dairy, like other CAFOs, generates massive amounts of manure from its operation. According to estimates, the Dairy creates, on an annual basis, over 100 million gallons of this substance that must be managed: 61,026,000 gallons of manure-contaminated water from washing the cows and 40,383,850 gallons of liquid manure excreted by the herd.[2] ECF No. 226-1 (COWPAL000511). Defendants contend the Dairy's manure is a "valuable product" sold and used in a variety of ways both on the Dairy's property and elsewhere. ECF No. 190-1 ¶ 13. The manure is gifted to third parties, allegedly to foster goodwill and deepen commercial relationships; transformed into compost and sold to third parties; and applied to the Dairy's fields to fertilize crops, such as silage corn and alfalfa, which in turn is fed to the herd. *Id.* ¶¶ 17, 23-25, 27. Plaintiffs, however, question how "valuable" Defendants' manure really is considering it is given away for free to third parties, over-applied to fields, stored in lagoons that leak, and managed on permeable surfaces that allow its constituents to freely leach into the soil. ECF No. 286-1 ¶ 13.

1. Manure and the Nitrogen Cycle

The parties strongly debate whether the Dairy's manure management practices are contributing to the high concentrations of nitrate found in the

[2] These amounts do not include the estimated 4,485,900 gallons of storm water runoff. ECF No. 226-1 (COWPAL000511).

groundwater. Central to this debate is the nitrogen cycle; specifically, the process by which manure constituents convert to nitrates in the soil.

The nitrogen cycle is well-documented and understood; however, it is affected by many environmental factors, which can be roughly predicted and estimated, but not controlled. ECF Nos. 190-1 ¶¶ 36-37; 211-1 ¶ 32; 256-1 ¶ 32. Manure contains organic nitrogen and ammonium. Although influenced by certain conditions—such as soil temperature, moisture-content, and oxygen-content—some of these manure constituents are converted to nitrate.[3] ECF Nos. 190-1 ¶¶ 31-34; 211-1 ¶¶ 33, 38-39; 256-1 ¶ 33. Nitrate, as well as ammonium, is available to plants as fertilizer, providing important and beneficial nutrients. ECF Nos. 190-1 ¶¶ 31-34; 211-1 ¶¶ 33, 38; 256-1 ¶ 33. Although some nutrients are immediately available to plants, a "lag" between the time the manure is applied to the soil and when its nutrients decompose and become available for crop use is expected. ECF No. 256-1 ¶ 39; *see* ECF No. 226-1 (COWPAL000477). Further, at low temperatures, the conversion of manure constituents to nitrate slows or stops. ECF

[3] Some of the nitrogen in manure may be converted to ammonia gas, released into the atmosphere, and redeposited onto nearby fields. ECF No. 211-1 ¶ 40 (citing the testimony of Dr. Melvin, Defendants' expert, who agrees that "probably some of" the ammonia will be redeposited onto nearby fields through this conversion process).

Nos. 256-1 ¶¶ 33, 39; *see* 211-1 ¶¶ 33, 39 (noting that ammonium converts if soil temperatures are above four degrees centigrade and that the mineralization and nitrification process slows when soil temperatures drop below fifty degrees Fahrenheit).

Once converted, nitrate is a highly mobile element to the extent there is sufficient water in the soil to transport it. ECF Nos. 211-1 ¶¶ 32, 39; 256-1 ¶ 32. Accordingly, because of its highly mobile nature, any residual nitrate not consumed by plants is susceptible to leaching deeper into the soil from irrigation, precipitation, snowmelt, and additional manure applications. ECF Nos. 211-1 ¶ 33; 256-1 ¶ 33 (acknowledging that nitrate is highly mobile and can move through soil with sufficient water to transport it). Once nitrate has leached below the root zone of crops, it will, with the presence of water to transport it, continue migrating downward, toward groundwater.[4] ECF Nos. 211-1 ¶ 34; 256-1 ¶ 34; *see* ECF No. 211-1 ¶ 37 (citing the deposition of Defendants' expert, Dr. Melvin, ECF No. 228-1, who agreed that nitrates below root zones will "eventually" reach groundwater and that, with sufficient rainfall, manure applications "will probably leach through

[4] Defendants do not dispute the possibility that nitrates may eventually reach groundwater; however, they question the timeframe for such a process and whether the conditions for such migration are present underneath the Dairy's operations. ECF No. 256-1 ¶ 34.

the system before you ever get the plant to grow into that root zone"). That is, however, in the absence of conditions suitable to denitrification: the process by which nitrate is converted to nitrogen gas. ECF No. 211-1 ¶ 34.

The parties dispute whether the conditions underlying the Dairy are conducive to denitrification. In support of their assertion that denitrification is unlikely to occur, Plaintiffs put forth evidence of the soil types underlying Cow Palace, with the predominant soil type presenting little potential for any loss of nitrate through denitrification. *Id.* ¶ 35. Plaintiffs' expert, Dr. Byron Shaw, stated the following regarding the soils underlying the Dairy:

> The dominant soils in the area of Cow Palace include the Warden soil series, which is characterized as a well-drained soil with silt loam surface texture originating from wind blown loess. The subsoil grades from the loess to alluvial deposits, originating from soil erosion in the nearby Rattle Snake Hills, many of which are highly permeable. The combination of well-drained, moderate to high permeability soils with coarse subsoil layers makes ideal conditions for movement of nitrate and other contaminants to groundwater.

ECF No. 223 ¶ 49. Further, EPA gas analyses similarly showed no evidence of denitrification, and its continued monitoring data shows oxygen to be present in all monitoring wells, signifying little chance of denitrification. ECF No. 211-1 ¶ 35. Finally, one of Defendants' experts, Dr. Melvin, concurred that "probably very little" denitrification occurs in the soils underlying Cow Palace. *Id.* (citing ECF No. 228-1).

In response, Defendants proffer testimony from their soil scientist, Mr. Scott Stephen, who opined soil compacting from large farm machinery used at the Dairy would result in the top one to two feet of soil having the capacity to hold water for long periods of time; in turn, such standing water would create conditions conducive to denitrification. ECF Nos. 256-1 ¶ 35; 256-11. Mr. Stephen concedes that some of the soils underlying Cow Palace are classified as well-drained; however, he maintains that "[w]hile denitrification rates would not be expected to be considerable, the potential does exist." ECF No. 190-10, ex. 9 at 10-11 (opining that that the "choppers and large trucks . . . driven on the fields" results in "compaction layers . . . at depth[s] from 12-18 inches or deeper and can curb water drainage by slowing travel times as it tries to move through the denser zone(s)," which in turn can cause temporary "perched" water where denitrification can occur). Thus, considering all the evidence presented, denitrification is unlikely to occur in the soils underlying the Dairy, and even if the potential exists, the rate of occurrence ranges from "very little" to "not . . . considerable."

2. Dairy Nutrient Management Plan

To help manage Cow Palace's millions of gallons of yearly generated manure, Cow Palace Dairy is required, pursuant to Washington regulations, to obtain a Dairy Nutrient Management Plan ("DNMP").[5] ECF No. 211-1 ¶ 41. The

[5] Previously titled, "Dairy Waste Management Plan." *See* ECF No. 228-3.

Dairy's DNMP was approved in 1998 and subsequently updated in 2008 and 2012 due to increases in herd size and acreage. ECF No. 226-1(COWPAL000459). As stated in the DNMP itself,

> [t]he purpose of [the DNMP] is to provide the dairy manager with Best Management Practices (BMP's) for the production, collection, storage, transfer, treatment, and agronomic utilization of the solid and liquid components of dairy nutrients in such a manner that will prevent the pollution or degradation of state ground waters and surface waters.

Id. (COWPAL000467). Specifically, the DNMP aims to prevent contaminated nutrients from entering nearby surface waters and underlying aquifers and to "agronomically recycle the nutrients produced through soil and crops." *Id.*

The DNMP provides ample guidance on applying manure as a fertilizer in both the body of the plan and its numerous appendices.[6] As an initial matter, the DNMP cautions, in bold, that the "**[a]pplication rates discussed . . . are based on the average values listed previously, and may need to be adjusted according to the actual test results**." *Id.* (COWPAL000476) (emphasis in original). The DNMP further explains that the "[a]pplication rates are established by balancing nitrogen with crop nutrient requirements." *Id.*

[6] Previous versions of the Dairy's DNMP contained the same guidelines. *See* ECF Nos. 228-3; 229-1.

First, the DNMP requires the Dairy to test the nutrient content of the manure generated by its herd. Although the DNMP provides an "estimated nutrient content" of the liquid manure, the DNMP explicitly states that "[i]t is **required** that that the dairy manager test the nutrient residuals in the soil along with nutrient content of the liquid in the storages ponds and solid (dry) manure **before** land application." *Id.* (COWPAL000471, -478) (emphasis in original). Under the "Testing Requirements" section, the DNMP requires the following: "**Nutrient analysis** for all sources of organic and inorganic nutrients including, but not limited to, manure and commercial fertilizer supplied for crop uptake. Manure and other organic sources of nutrients must be analyzed annually for organic nitrogen, ammonia nitrogen, and phosphorus." *Id.* (COWPAL000478) (emphasis in original). Thus, although the DNMP lists an estimated nitrogen content of 1.51 pounds per 1,000 gallons of liquid manure, the DNMP explicitly requires the Dairy test the nutrient content of the liquid in its lagoons to verify its actual concentration.

Second, the DNMP requires the Dairy to test its soils for residual nutrients. Under the "Testing Requirements" subsection, the DNMP states that "[r]egular testing for soil nutrient availability is essential for proper nutrient management" decision making. *Id.* (COWPAL000478). According to the DNMP, "[s]oil tests should be completed as close as possible to the time of seeding for best results"

and are to be "completed on each field or management group for a starting point for nutrient and manure application recommendations." *Id.* The testing requirements include an "annual post-harvest soil nitrate nitrogen analysis," and "[i]f double cropping, a spring and a fall test should [be] completed prior to any manure application." *Id.*

Third, the DNMP instructs the Dairy to consider average crop yields when determining manure application. "When determining agronomic rates for manure application, it is important to choose achievable yield goals. Average yields for the past three to five years for each field should be used." *Id.* (COWPAL000477). The DNMP specifically lists the primary crops grown on Cow Palace's agricultural fields and provides each crop's nitrogen, phosphorus, and potassium "uptake." *Id.* However, it is very clear that the uptake amounts are merely estimates, as the DNMP expressly states, again in bold, "**[t]hese are guidelines only . . . farmers should vary timing and amounts of application depending on particular soil, crop type, [crop] needs, and weather conditions**." *Id.* (emphasis in original).

Finally, the DNMP provides guidance to the Dairy on application rates. Regarding application specifically, the DNMP notes that "[i]t is critical that the land application of the liquids from the storage ponds be scheduled agronomically throughout the growth period," and that "[t]he proper timing of nutrient application is an essential part of management." *Id.* (COWPAL000480). The application rate

depends, in part, on "infiltration characteristics of the soil," with the DNMP advising the Dairy that its fields predominately contain "a very deep, well-drained [type of] soil." *Id.* Although the DNMP recognizes the "lag time" regarding the conversion process, it also states that "some nutrients are available immediately" after a manure application, *id.* (COWPAL000477), and advises that "[c]aution should be taken when applying manure to fields with long histories of manure application," *id.* (COWPAL000480).

The DNMP summarizes the above guidelines in a list of "Do's" (sic). According to the DNMP, the Dairy should engage in the following practices: (1) "[t]ake manure nutrient concentration into account before applying to crops;" (2) "[t]ake soil nutrient levels into account before applying additional nutrients;" (3) "[a]pply nutrients based on realistic yield . . . goals, based on soils, precipitation, climate, available soil moisture, and yield history for the field;" (4) apply manure during periods of low precipitation and when winds are relatively calm; (5) "[a]void applying manure to bare ground," which "may cause nitrogen to leach into the ground water;" (6) "[s]oil test to determine the proper application of manure and any supplemental fertilizers;" and (7) "[m]aintain a record for each field showing the crop sequence, crop, soil test data, . . . kind and amount of nutrients applied, crop yields, and water applied." *Id.* (COWPAL000482).

Further, the DNMP provides several appendices to offer further guidance to the Dairy on Best Management Practices, including guidance on calculating agronomic manure application rates. *See* ECF No. 226-1; *see also* ECF No. 226-2 (COWPAL000577) (providing a bullet-point guidance sheet, titled "To Insure Proper Utilization, Follow These Guidelines," which similarly instructs the Dairy to "[p]erform a nutrient test of animal waste," "[t]est soils for nutrient levels," "[s]et realistic crop yield goals and apply animal waste to fit crop needs," and "[t]ime the application of animal waste so that neither surface or ground water contamination will occur").[7]

[7] Laurie Crowe, an employee of the South Yakima Conservation District, assists dairies in obtaining and implementing DNMPs. ECF No. 190-1 ¶ 4. In her deposition, Ms. Crowe attested that she was "sure" she had given Cow Palace Dairy guidance on how to implement its DNMP, specifically with regards to manure application. ECF No. 211-1 ¶ 64 (citing ECF No. 229-2). However, Defendants highlight that Ms. Crowe also testified that she had never provided advice to Mr. Boivin about how to take into account residual soil nitrate levels in the soil and that she had only "possibly" spoken about determining an agronomic rate of manure application. ECF No. 256-1 ¶ 64 (citing ECF No. 229-2).

Thus, the DNMP provides extensive information and guidance to the Dairy on how to apply its manure in a way that is both most beneficial to its crops and least likely to cause environmental harm.

3. Land Application

One way the Dairy makes use of—or in Plaintiffs view, "gets rid of"—its millions of gallons of manure is by applying it to its agricultural fields as fertilizer. Out of Cow Palace's approximately 800 total acres, 533 acres are used for the application of manure to its crop fields. ECF No. 226-1 (COWPAL000467). After all, if "[p]roperly utilized, the manure generated by Cow Place Dairy has the potential to serve as a fertilizer for its crops. *Id.* (COWPAL000476).

Jeff Boivin, the general manager at Cow Palace Dairy, characterizes the DNMP as the "blueprint" for how he conducts manure management at Cow Palace and acknowledges that the DNMP contains "reference tools and best management practices" that he helps implement at the Dairy. ECF No. 132 ¶¶ 1, 11. Defendants contend Mr. Boivin "engaged in a series of calculations" when applying manure to the Dairy's agricultural fields. ECF No. 190-1 ¶ 49. Plaintiffs, on the other hand, strongly contest that Mr. Boivin engaged in any type of calculation when determining how much manure to apply to the fields. ECF No. 286-1 ¶¶ 48-49.

Considering Mr. Boivin's declaration, as well as his deposition testimony, it is clear that characterizing his practices as "engag[ing] in a series of calculations" is a stretch.

First, rather than calculating agronomic rates based on nutrient sampling, the Dairy used the "estimated" figure in the DNMP to determine application rates. ECF No. 211-1 ¶ 68.a (citing ECF No. 228-1); *see also* ECF Nos. 190-3 ¶ 58; 256-1 ¶ 68.a (admitting that Cow Palace Dairy historically applied manure based on the DNMP's estimate that the manure contained 1.5 pounds of nitrogen per 1,000 gallons, but asserting that it calculated manure applications with reference to manure sampling in 2014 and will continue to do so going forward). However, according to Cow Palace's records,[8] nutrient concentrations in the manure varied widely, with amounts ranging from 1.67 lbs/1000 gallons to 33.7 lbs/1000 gallons. ECF No. 211-1 ¶ 68.a (citing relevant records).

Second, rather than sampling concentrations from the specific impoundment that would be the source of the manure applied, the Dairy would only take sample concentrations from one lagoon. ECF No. 228-1 ("Q: "Just to clarify here, you used the main lagoon nutrient sampling for everything? A: Yes. Q: Regardless of

[8] Although the Dairy took and recorded manure samples, it admittedly did not actually take these samples into account when determining its application rates. ECF No. 286 at 3.

where the application actually came from? A: Yes."). According to recent sampling under the AOC, nutrient concentrations vary widely from lagoon to lagoon. *See* ECF No. 211-1 ¶ 68.a. (citing relevant sampling, ECF No. 228-1 (COWPAL009262-63)). Defendants do not dispute that, historically, the Dairy would only sample from the main lagoon, believing it to be representative of the other lagoons because the manure in the main lagoon was used to fill some of the other impoundments to provide for additional storage or application needs; however, in 2014, the Dairy maintains that it took samples from the specific lagoon sourcing the manure and will continue to do so going forward. ECF Nos. 256-1 ¶ 68.a; 256-16 ¶ 11.

Third, the Dairy failed to calculate applications with regard to actual residual manure constituents already present in the fields and available for crop fertilization. ECF No. 211-1 ¶ 68.b (citing ECF No. 228-1). Rather, as Mr. Boivin stated, the Dairy would consider the amount the crop could uptake, according to the DNMP estimates, and merely apply less than that estimate knowing the soil already contained residual levels. *See e.g.*, ECF No. 228-1 ("Q: Sir, is that an over application of manure . . . A: Not sure. Q: Why aren't you sure? A: Because I applied less than what the triticale would uptake . . . Q: But you didn't take into account what was already there, did you? A: Probably not. Q: Probably not or is it no? A: No."). Furthermore, the Dairy did not take spring soil samples when

double-cropping its fields, although as Mr. Boivin admitted, he understood the importance of these samples "to see what that crop utilized." ECF No. 211-1 ¶ 68.b (citing ECF No. 228-1). Defendants contend that the Dairy *did* take into account residual soil nutrient, as Mr. Boivin explained, by simply applying less manure than the crop was anticipated to need based on the DNMP. ECF No. 256-1 ¶ 68.b.

Plaintiffs cite to several instances in which the Dairy applied considerably more nitrogen than the crop could possible use; for example, in 2012, although soil samples from the top two feet of the soil column showed nitrate levels in excess of what the alfalfa crop could use, the Dairy proceeded to apply *7,680,000 gallons* of manure onto the already sufficiently fertilized field. ECF No. 304 at 3. Plaintiffs' expert Dr. Shaw cited numerous similar examples of non-agronomic applications, which resulted in *tens of millions of gallons* of manure applied to fields requiring no fertilization. *See* ECF No. 237-2 ¶¶ 76-78, 83-84, 101, 107, 109, 133, 144, 145, 149, 155, 157.

Fourth, the Dairy did not calculate application rates with reference to actual yield goals; rather, the Dairy relied upon the basic guidelines for crop removal rates as identified in the DNMP. ECF Nos. 211-1 ¶ 68.c; 228-1.

> Q: And, again, you've got at the top triticale at 250 and corn at 250. How did you come up with those numbers?
>
> A: From the Dairy Nutrient Management Plan.

Q: So did you take into account any of the past yields of crops from Field 2 in coming up with that number?

A: Yes.

Q: And there's no variability whatsoever?

A: Yes, there is variability.

Q: So why didn't the 250 number change?

A: Because I use an average of what our crops – what we get for our crops from our property.

Q: So the average for the last year was such that you didn't need to change the pounds of "N" utilized by the crops?

A: I probably could have changed them.

Q: But you didn't?

A: No.

Q: Tell me about the calculation you would do to figure out how to change that number.

A: Well, I could look at the yields of that field or all our fields and come up with . . . what the yields are expected to get these amount of "N" to be used . . . and then calculate from there.

Q: But you didn't do that here? . . .

A: No, I just used the number that the Dairy Nutrient Management Plan has listed there.

Q: Right the standard –

A: Yes.

Q: - - number.

ECF No. 228-1. Defendants contend they did calculate agronomic rates with reference to yield goals; that is, the yield goals listed in the DNMP. ECF No. 256-1 ¶ 68.c.

Fifth, Mr. Boivin admitted that the Dairy failed to keep track of the amount of irrigation water applied to each field and never produced an annual report, conceding that the only record the Dairy would have is its water bill. ECF No. 211-1 ¶ 68.e (citing ECF No. 228-1). As stated above, irrigation water can cause unused nitrate to migrate through the soil.

Finally, Mr. Boivin testified that on numerous occasions, the Dairy applied manure to "bare ground"—that is, where no crop was planted. *Id.* ¶ 72 (citing ECF No. 228-1). Plaintiffs' expert Dr. Shaw uncovered even more instances in the Dairy's records. *Id.* ¶ 73 (citing ECF No. 223 ¶ 29). Defendants do not dispute this practice but explain that it intentionally applied manure before the crop was planted in order to ensure the manure constituents had sufficient time to convert to plant-available nutrients and to avoid damaging crops with the application. ECF No. 256-1 ¶¶ 72-32. Further, Plaintiffs highlight several instances in the Dairy's logbooks that suggest the Dairy applied manure to the fields until the lagoon was emptied, presumably, given the timing in late fall in an effort, to prepare for winter storage needs. ECF No. 211-1 ¶ 71. Defendants question how dispositive this

evidence is, asserting that the Dairy applied manure according to DNMP guidance and merely noted when the lagoon was emptied. ECF No. 256-1 ¶ 71.

According to Mr. Boivin, the Dairy has followed the same manure management practices, as detailed above, since at least 2003. ECF No. 211-1 ¶ 69 (citing ECF No. 228-1).

In further support of its contention that the Dairy's land application of manure was not agronomic, Plaintiffs provide the following additional evidence. First, post-harvest soil sampling, conducted by both parties, showed consistently high nitrate, phosphorous, and potassium levels. *Id.* ¶ 77 (citing ECF No. 223 ¶¶ 31-40). Specifically, Plaintiffs' samples taken below crop root zones in the 3 to 5 foot range showed very high nitrate and phosphorous levels, which will continue to migrate toward the underlying aquifer.[9] *Id.* ¶ 77.b; *see also* ECF No. 305-4 at 4-5

[9] Although Defendants do not dispute these levels, they reiterate that nitrates will only reach groundwater if water is present to transport it and that, considering the thickness of the vadose zone, it could take decades for water to percolate through this zone, if ever. ECF No. 256-1 ¶ 77. The vadose zone is defined as that area from the surface of the ground to the water table. Defendant's expert Dr. Melvin, although in disagreement about the time it would take for this nitrate to reach groundwater acknowledges that these nitrates below the effective rooting zone are "destined" to reach groundwater. ECF No. 228-1 ("Q: 'Once nitrate leaches below

(discussing recent post-harvest soil samples which demonstrate excess concentrations of nitrate in the Dairy's agricultural fields). Second, testimony by Dr. Melvin shows that even Defendants' expert agrees that the Dairy's applications were not agronomic. ECF Nos. 211-1 ¶ 80; 228-1 ("Q: Sir, do you believe that Cow Palace's applications of manure were agronomic? A: Not really. Q: So it is your opinion that they were not agronomic? A: At that time they weren't . . . .").

It should be noted that both parties agree that applying more manure nutrients to a crop that already has sufficient fertilizer is unnecessary and/or wasteful and will not necessarily result in a better crop yield. ECF Nos. 211-1 ¶ 79; 256-1 ¶ 79.

4. Lagoon Storage

Cow Palace Dairy stores the millions of gallons of liquid manure generated annually from its herd in a series of earthen impoundments, spanning just over 9 acres, which include four storage ponds, two settling basins, a safety debris basin, and several catch basins (collectively, "lagoons" or "impoundments"). ECF No.

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the root zone of the crops it is destined to reach groundwater.' Do you disagree with that statement? A: Yes. Well let me put a time horizon on that. It takes a long time to get down there. Q: So 'destined,' the word, would you agree that its' destined at some point to reach groundwater? A: I suppose it is. Everything's got to be somewhere.").

226-1 (COWPAL000468); *see also* ECF No. 212 ¶ 16 (citing the EPA report, ECF No. 222-1, which estimates the lagoon surface area at 400,000 square feet, or 9.2 acres). In total, the Dairy has the capacity to store only approximately 40 million gallons. ECF No. 226-1 (COWPAL000468). During winter months, "when application may not be possible" due to environmental conditions, the DNMP estimates the Dairy needs at least 30 million gallons of available manure storage. *Id.* (COWPAL000474, -475, -479).

The Natural Resource Conservation Service ("NRCS"), within the United States Department of Agriculture, issues guidance for construction of storage lagoons, such as the Dairy's impoundments. The NRCS standards are merely guidelines, rather than legal requirements governing waste storage facilities. *See* ECF No. 190-11. Generally, NRCS standards recommend that storage lagoons and ponds be lined with any material, including compacted soil, so long as the lagoon meets certain permeability requirements.[10] ECF Nos. 190-1 ¶ 70; 286-1 ¶¶ 69-70. However, when an impoundment is placed above an aquifer—a practice not recommended unless there is no reasonable alternative—the NRCS standards suggest that "additional measures of safety from pond seepage," such as a clay or

[10] Under the AOC, Cow Palace is required to prove that each of its lagoons and storage ponds meet NRCS' permeability requirements. ECF No. 190-1 ¶ 71; *see* ECF No. 38-1 at 12.

synthetic liner, should be considered. ECF Nos. 211-1 ¶ 87; 256-1 ¶ 87. Underlying the Dairy's lagoons is an aquifer used for residential drinking water. ECF Nos. 211-1 ¶ 85; 256-1 ¶ 85 (highlighting that the aquifer is 30 to 190 feet below the ground).

Save for one lagoon, Defendants do not have complete documentation for each lagoon.[11] ECF No. 190-1 ¶ 78. However, Defendants admit that none of the Dairy's lagoons have a synthetic liner. ECF No. 181 ¶ 52. Although Cow Palace asserts that SYCD documentation demonstrates that it had a "*practice* of designing its lagoons and ponds in accordance with guidelines in place at the time," that Laurie Crowe of the SYCD inspected the lagoons and opined that they "*appeared*" to meet NRCS standards, and the DNMP states the lagoons meet NRCS standards, these assertions cannot be affirmatively established. ECF Nos. 190-1 ¶ 78 (emphasis added); 256-1 ¶ 86; 286-1 ¶ 78. For instance, although Lagoon 1 documentation suggests that the lagoon was "designed to have a bentonite clay liner," ECF No. 190-1 ¶ 80, it cannot be established that it was actually built with a clay liner or that the clay liner was reinstalled when this lagoon was deepened in the 1990s, ECF No. 286-1 ¶ 80.

[11] The Dairy has documentation demonstrating conformance with NRCS standards for Lagoon 4 only. ECF No. 228-2 (DAIRIES000910-11).

Conformance with NRCS standards aside, Plaintiffs have also presented evidence that the lagoons are not structurally sound. Although Defendants contend that Cow Palace "actively maintains its lagoons and storage ponds," ECF No. 190-1 ¶ 68, Mr. Boivin testified during his deposition that the lagoons at Cow Palace frequently dry and crack and have been subject to repeated freezing and thawing during the winter months. ECF No. 211-1 ¶ 90 (citing ECF No. 228-1). Further, Plaintiff's expert Mr. Erickson personally observed areas in the Dairy's lagoons that were substantially eroded and impacted by vegetation. *Id.* ¶ 91. Finally, when drilling nearby monitoring wells, personnel observed "bubbling" in one of the lagoons, which Plaintiffs contend signifies very permeable subsurface and discrete vertical flow paths. *Id.* ¶ 100; *see* ECF No. 256-1 ¶ 100 (failing to respond).

Plaintiffs' expert Mr. Erickson provided estimates of leakage for each lagoon. Due to lacking information, Mr. Erickson relied upon the following assumptions when calculating seepage: (1) for liner thickness, a compacted soil liner of one foot, which is the same thickness of the soil liner estimated by Defendants' lagoon expert, Mr. Trainor; (2) for the amount of liquid in each lagoon, a 50% figure; (3) for permeability of the soils compromising the liner, a permeability of 1 x 10-7 cm/s. ECF No. 211-1 ¶ 97 (citing ECF No. 212 ¶¶ 24, 27-

28). Using Darcy's Law,[12] Mr. Erickson made the following, purportedly conservative, leakage estimates from the Dairy's lagoons: (1) Lagoon 1: 3,830 gallons per day or 460,000 gallons per year; (2) Settling Basins: 564 gallons per day, or 200,000 gallons, per year, per basin; (3) Lagoon 2: 1,018 gallons per day, or 185,000 gallons per year; (4) Lagoon 3: 763 gallons per day, or 91,000 gallons

[12] "Darcy's Law is the principle that governs the fluid movement in lagoons and the subsurface." ECF No. 212 ¶ 20. According to Mr. Erickson, "[i]t is the equation that describes how fluid moves through porous media" and the Agricultural Waste Management Field Handbook ("AWMFH") uses a mathematical variation of the principle to determine seepage rates. *Id.* ¶¶ 19, 20. Defendants maintain that Darcy's Law is a tool used to compare lagoon designs rather than actual seepage rates and thus should not be used to estimate actual seepage. ECF No. 256-1 ¶ 93 ("In some cases, the total seepage from a pond may be of interest, particularly for larger ponds in highly environmentally sensitive environments. In those cases, more elaborate three-dimensional seepage computations using sophisticated-element computer programs may be warranted.") (quoting the AWMFH).

per year; (5) Lagoon 4: 416 gallons per day, or 50,600 gallons per year;[13] (6) NW Catch Basin: 831 gallons per day; (7) NE Catch Basin: 193 gallons per day; and (8) Pond: 6,777 gallons per day, or 2.47 million gallons per year. *Id.* ¶ 98 (citing ECF No. 212 ¶¶ 28, 34, 39, 43, 48, 64, 69, 74). Thus, according to Plaintiff's expert, the Dairy's lagoons leak, on an annual basis, millions of gallons of manure. Defendants dispute the reliability of these calculations based on the method used and assumptions made. ECF Nos. 256-1 ¶¶ 93, 94, 98; 256-8, ex. 6 (Rebuttal report of Defendants' expert, Michael Backe, agreeing that Mr. Erickson's calculations are "theoretically correct, but fundamentally flawed").[14] That being said, although the parties dispute the magnitude of leakage, the fact that the lagoons leak is not genuinely in dispute.

Plaintiffs also assert that borings drilled between two of the Dairy's lagoons—borings which found high levels of nitrate at depths as great as 18 feet, as well as ammonium and phosphorus—evidence horizontal seepage between the

[13] Mr. Erickson varied the liner permeability between 5.7 x 10-8 cm/sec and 8.84 x 10-7 cm/sec when calculating Lagoon 4 seepage rates based on actual laboratory testing of the lagoon permeability conducted in 2004. ECF No. 212 ¶¶ 46-48.

[14] In his deposition, Mr. Trainor agreed that, assuming a seepage flux of 1 x10-7 cm/s and a one-foot liner, the lagoons would leak 924 gallons of manure per day, per acre of lagoon. ECF No. 211-1 ¶ 97.d (citing ECF No. 229-2).

lagoons and possible impact on groundwater. ECF No. 212 ¶ 57. Although the manure constituent levels dropped below 18.2 feet, they were still present at depths as great as 47 feet. *Id.* Defendants' expert, Dr. Melvin, acknowledged that this evidence could indicate horizontal seepage from the lagoons and that such seepage could result in "some impact" on groundwater. ECF No. 211-1 ¶ 102 (citing ECF No. 228-1). Defendants dispute the significance of these findings and instead contend that nitrate penetration, although admittedly mobile in nature, is limited to the upper few feet of soil. ECF Nos. 256-1 ¶¶ 101-102; 256-3 (Rebuttal report of Defendants' expert, Dr. Melvin, concluding that there is "little or no nitrate leaching vertically to the groundwater that lies some 100 ft. + below the basins but there had been some horizontal migration between the two basins").

Plaintiffs also presented samples from beneath another dairy's nearby abandoned lagoon to provide further support for evidence of leakage from the lagoons.[15] Plaintiffs advanced two borings, the second one of which was advanced 45 feet, into an abandoned manure storage lagoon, a lagoon of similar design and construction as Cow Palace lagoons and above similar soil. ECF No. 212 ¶¶ 77-78. Sampling from these borings evidenced substantial concentrations of nitrate, phosphorus, and ammonium in the first two feet of underlying soil. *Id.* ¶¶ 82-83.

[15] To prevent any accidental contamination, this Court did not permit Plaintiffs to drill for soil samples beneath the Dairy's lagoons. *See* ECF No. 136.

While Mr. Erickson noted that levels of nitrate and phosphorus decline after the first two feet, he noted their presence, without other sources of such contaminants, indicates that the Haak Lagoon was a source of contamination. *Id.* ¶ 86. In addition, Mr. Erickson noted the presence of perched groundwater, which Plaintiffs interpret as providing direct evidence that preferential pathways of contaminate migration exist below the lagoon. ECF No. 211-1 ¶¶ 104-105. Defendants interpret this evidence as showing declining concentrations of nitrates and thus minimal, if any, contributions of nitrates to groundwater and further question the significance of the perched groundwater. ECF No. 256-1 ¶¶ 104-105.

Although Defendants dispute the rate of seepage and nitrate accumulation around and beneath the lagoons, the parties do not genuinely dispute that both events are occurring. Plaintiffs highlight testimony of Defendants' experts who conceded that the lagoons are "potentially" leaking and contributing "some amount of nitrate" to the environment but refused to admit the leakage was "significantly" contributing to groundwater contamination. ECF No. 211-1 ¶ 106 (citing Trainor deposition, ECF No. 229-2); *see* ECF No. 229-2 (deposition of Mr. Backe conceding, in response to whether the lagoons leak, that "[e]verything that has a hydraulic conductivity [a.k.a. permeability] term to it implies that there is flow through" and that he has never seen a study showing "there is no seepage from a lagoon").

5. Composting & Cow Pen Contamination

Cow Palace composts solid manure on natural, unlined soil. ECF Nos. 190-1 ¶ 91; 211-1 ¶ 108; 212 at ¶ 88. According to the DNMP, Cow Palace generates 35,000 tons of finished compost each year that is used for light orchard application. ECF No. 190-5, ex. 3 at 5. Plaintiffs contend the composting practice allows for manure constituents to seep out of the solid manure into the soil, with the leaching aided by the high moisture content of the manure. ECF No. 211-1 ¶ 109. During his site visit, Plaintiffs' expert Mr. Erickson observed high liquid content of the solid manure being composted. *Id.* ¶ 109. Plaintiffs' 18-foot core sample of the soil beneath the composting area indicated vertical migration of nitrate, ammonium, and phosphorus. *Id.* ¶¶ 110-11.

In response, Defendants contend that Plaintiffs' sample shows "rapid attenuation" of the manure constituents, and at any rate, the boring was merely advanced to 18 feet, not to the depth of the groundwater. ECF No. 256-1 ¶ 110. Moreover, Defendants justify its composting operation by explaining that it is referenced in its DNMP and is inspected by the Washington State Department of Agriculture. *Id.* ¶ 108. The DNMP provides that "[a]ny run-off . . . from the stockpiled manure will be controlled at all times by whatever means the dairy manager deems necessary. . ." ECF No. 190-5, ex. 3 at 5. Defendants have not identified any means used to control the wet manure from leaching nitrates straight

to native ground during the composting process used to generate 35,000 tons of dried manure.

The Dairy's herd lives and is fed in open containment pens on unlined native soil. ECF No. 190 at 18. Plaintiffs contend such operations allow manure constituents to leach into the permeable soil, which statement they support with sampling conducted by both parties demonstrating high levels of nitrate in the soil underlying the cow pens. ECF No. 286 at 19 (citing ECF No. 286-5 ¶¶ 166-69). Although the parties dispute the extent of the contamination in the cow pens, Defendants acknowledge that manure "might seep through the soil surface." ECF No. 190-1 ¶ 90.

6. Evidence of Groundwater Contamination

There is no dispute that the groundwater at or near Cow Palace Dairy is contaminated. Data shows high levels of nitrate contamination, with many of the nitrate concentrations exceeding the maximum contaminant level, 10 mg/L, as established by the EPA. ECF Nos. 211-1 ¶ 113; 213-1, ex. C (summarizing groundwater data). It is Plaintiffs' contention that the nitrate in the manure at the Dairy, when not used by the crops as fertilizer and without conditions conducive to denitrification, migrates deeper into the soil, moving past crop root zones and eventually reaching groundwater. ECF No. 211-1 ¶ 114. As detailed above, Defendants maintain that denitrification is possible in the soils underlying the

Dairy; but even if the nitrate continued to migrate, it could take many decades to move through the vadose zone and finally reach the groundwater, if ever. ECF No. 256-1 ¶ 114.

The Dairy, located at the northern end of the Lower Yakima Valley, is bounded to the north by the basalt ridges of Rattlesnake Hills. ECF No. 211-1 ¶¶ 26, 30. There are two main aquifer types in the area: one deeper basalt aquifer underlying the sedimentary deposits and the other a relatively shallow alluvial aquifer. *Id.* ¶ 28. According to the U.S. Geological Service, the deeper aquifer is believed to be semi-isolated from the shallower aquifer, as well as local stream systems, and eventually discharges to the Columbia River. *Id.* ¶ 28. The shallower aquifer eventually discharges to the Yakima River, *id.* ¶ 28; however, it is contested where the aquifer and river meet, the amount of water the aquifer contributes to the River, and the water quality of the river at this intersection, ECF No. 256-1 ¶ 28.

The Valley's groundwater is influenced by a variety of sources. Precipitation is the primary source of groundwater recharge in the area, with most natural groundwater recharge occurring in the winter and early spring months. ECF No. 211-1 ¶ 29. Irrigation water, both from irrigation canals and application practices, also influences groundwater recharge, *id.*; however, Defendants contest whether the Dairy's activities affect the underlying aquifer, ECF No. 256-1 ¶ 56.

Sediments in the region greatly influence groundwater movement, with grain size affecting groundwater velocities. ECF No. 211 ¶ 30. Plaintiffs contend water movement through the sediments tends to follow preferential flow paths composed of coarse sediments; as a result, one well located along a preferential flow path may draw its water from a particular source, whereas a neighboring well, located along a different preferential flow path, may draw its water from a different source that has differing water chemistry.[16] *Id*.

In support of their contention that Defendants are contaminating the groundwater, Plaintiffs use data generated from the Dairy's AOC. The site model for the project shows nitrate contamination in the groundwater can originate from Cow Palace's unlined manure storage lagoons, manure land applications that exceed agronomic rates, and infiltration from the compost areas and confinement pens. *Id*. ¶ 114; *see* ECF No. 223 ¶ 55 (conceptualization of site model).[17] Because of the steep gradient in the topography in the area, which results in high groundwater flow, Plaintiffs focused on data generated from the monitoring wells. ECF No. 211-1 ¶¶ 120-24. Plaintiffs examined the following evidence to

[16] Defendants dispute the existence, or at least proof thereof, of any preferential pathways underlying the Dairy's operations. ECF No. 256-1 ¶ 30.

[17] Defendants assert that this model cannot be used as proof of any fact. ECF No. 256-1 ¶ 115.

determine whether the nitrates found in the groundwater are actually originating from Cow Palace Dairy: (1) the presence of tracer chemicals associated with cow manure, such as chloride, sodium, phosphorus, sulfate, magnesium, calcium, bicarbonate, and ammonia; (2) the presence of dairy-related pharmaceuticals found in the groundwater, such as monensin; (3) and any potential upgradient sources of nitrate contamination. *Id.* ¶¶ 116-18.

First, Plaintiffs presented evidence showing downgradient monitoring wells with high nitrate levels, with concentrations ranging from 5.8 mg/L to 234 mg/L, as well as tracer chemicals associated with cow manure. *Id.* ¶ 124. Second, EPA testing found that the same dairy-related pharmaceuticals, including monensin, in downgradient wells were also present in the Dairy's lagoons, manure piles, and application fields; monensin was not found in upgradient monitoring wells. *Id.* ¶ 117.[18] Finally, Plaintiffs located no major upgradient sources of nitrate, with the exception of a handful of agricultural fields. *Id.* ¶ 119. Plaintiffs determined these agricultural fields are not a likely major nitrate contributor given the relatively low nitrate concentrations observed in upgradient wells. *Id.* Further, upgradient wells showed small amounts of nitrate, ammonia, dairy pharmaceuticals, and other tracer

[18] According to Plaintiffs' expert, this antibiotic was first used on livestock in the United States in the 1970s. ECF No. 223 ¶ 58.

chemicals associated with cow manure, with the most representative of upgradient wells showing no impact by human-influenced sources. *Id.* ¶ 121. Plaintiffs' expert did recognize that two dairies, not party to the instant suit, may have applied manure to one of their few agricultural fields upgradient to Cow Palace. ECF No. 237, ex. 1 ¶¶ 188, 191(f).

Defendants greatly dispute the significance of the well data. First, Defendants fault Plaintiffs for not considering other sources of nitrate, such as the long history of irrigation in the Yakima Valley, septic systems, and upgradient agricultural sources. ECF No. 256-1 ¶ 116. In Defendants' view, the high nitrate levels, considering the depth of the vadose zone, is from an historical plume moving through rather than a new plume currently being created. *Id.* Second, Defendants contend that the results of pharmaceutical tracers are "mixed at best": some tracers were found in both upgradient and downgradient wells, in some cases the concentrations decreased downgradient of the dairies, and some were found in wells without nitrate. *Id.* ¶ 117.

Third, Defendants dispute that the wells analyzed by Plaintiffs are most representative or that they show any "significant contribution" from the Dairy. *Id.* ¶¶ 121-24. Regarding upgradient monitoring wells, Plaintiffs assert YVD-02 is the most appropriate upgradient well, whereas Defendants contend DC-01, which is immediately upgradient to the Dairy, is more appropriate. ECF Nos. 211-1 ¶ 121;

256-1 ¶ 121; *see* ECF No. 223 ¶ 65 (map depicting well locations). Plaintiffs chose YVD-02 because it has not been impacted by human-influenced sources; DC-01, on the other hand, is not fully hydrologically upgradient from Cow Palace Dairy and other sources of nitrogen loading. ECF Nos. 211-1 ¶¶ 121-122; 223 ¶ 61 (noting that although DC-01 is also identified as an upgradient monitoring well, that well is "approximately 220 feet lower in surface topographical elevation than YVD-02, and is likely influenced by some of the agricultural fields located above and upgradient of it"). Defendants' expert Mr. Trainor maintains that DC-01 is more representative because it provides contaminant inputs to the site from other upgradient sources. ECF No. 256-6.

Regarding downgradient monitoring wells, Plaintiffs provide data from a number of downgradient wells, YVD-09, YVD-10, YVD-14, YVD-15, DC-03, DC-03D, evidencing high nitrate levels from the Dairy's operations, as well as the other cluster dairies not party to this litigation. ECF No. 211-1 ¶ 124. Plaintiffs acknowledge that some downgradient wells show low nitrate levels, such as DC-07, but assert that these wells are influenced and diluted by cleaner water sources, such as excess irrigation water. *See* ECF No. 237-2 ¶¶ 222-23.

Finally, Defendants fault Plaintiffs for not demonstrating preferential pathways and for not establishing the time it would take for nitrate to reach groundwater from the Dairy. ECF No. 256-1 ¶ 126. Plaintiffs concede that the

amount of time it would take for excess nitrate to reach groundwater is "highly variable." ECF No. 211-1 ¶ 125. That being said, they maintain that preferential pathways exist because of the differing densities of subsurface soils, which indicates nitrates may travel to groundwater via a shorter path in one location than it would in another. Thus, considering that conditions underneath Cow Palace are not conducive to denitrification, it is a "virtual certainty" that nitrate observed in the subsurface will reach groundwater. ECF Nos. 211-1 ¶ 125; 223 ¶ 48. Importantly, Defendants' experts do not dispute that nitrates may reach the groundwater, given sufficient water to help transport nitrates through the vadose zone; rather, they harp on the possibility that migration could take decades and that Plaintiffs have failed to establish the timeframe it would take. ECF Nos. 256-1 ¶ 126; 256-3, ex. 1 at 1. It is worth noting that Cow Palace Dairy has operated on this site for about 40 years. ECF No. 223 ¶ 105.

Regarding nitrate movement, Plaintiffs note, and Defendants do not dispute, that nitrate movement is determined by the rate of water movement, which in turn is influenced by the soil texture and amount of water escaping the root zone. As a result, the amount of water moving through the vadose zone of the agricultural fields is largely dependent on irrigation management; thus, Cow Palace's irrigation practices have a strong effect on the rate that water, and with it, nitrates, will move through the soil. ECF No. 211-1 ¶ 126; *see* 256-1 (failing to contest).

According to data obtained by both Defendants and the EPA, groundwater recharge can occur fairly rapidly.[19] First, water table elevation monitoring demonstrates that the water table fluctuates widely, in some instances by upwards of three feet over a ten-day period. ECF Nos. 211-1 ¶ 127; 223 ¶ 102. According to Plaintiffs' expert Dr. Shaw, these types of fluctuations would not be present if groundwater recharge were taking many decades. ECF Nos. 211-1 ¶ 127; 223 ¶ 102. Defendants' experts agreed that such water table variability means a seventy-year recharge estimate is probably not accurate, and that seasonal fluctuations in water table are evidence that seasonal surface activities are influencing groundwater. *See* ECF Nos. 228-1; 229-2.

Second, wide variability in groundwater temperature indicates that groundwater recharge is occurring fairly rapidly. According to Plaintiffs' expert Dr. Shaw, this variability in water temperatures would not be occurring if recharge were taking decades. ECF Nos. 211-1 ¶ 128; 223 ¶ 103. Defendants' expert, Dr.

[19] The EPA report opined that of the "approximately 312 to 367 tons of nitrate . . . at the three-foot depth . . . past the root zone," in the application fields of various dairies, including Cow Palace, "much of this nitrate will eventually end up in groundwater." ECF No. 229-2 (DAIRIES019335-336) (also noting that implementation of the consent order can help mitigate this issue).

Melvin, agrees that these temperature changes indicate that groundwater recharge is "probably" occurring more quickly than seventy years.[20] ECF No. 228-1.

Third, the presence of modern dairy-related pharmaceuticals such as those used at Cow Palace Dairy in downgradient groundwater provides further evidence that groundwater recharge can and is occurring rapidly. ECF Nos. 211-1 ¶ 129; 223 ¶ 104. Defendants' expert, Dr. Melvin, concedes that the presence of pharmaceuticals in groundwater is a "possible" indication that groundwater is younger than seventy years. ECF No. 228-1.

Fourth, EPA's age-dating of wells showed that the average age of groundwater was 31.6 years, age-dating that Dr. Melvin does not dispute. According to Plaintiffs' expert, Mr. Shaw, this is the average age of the water itself, not the date the water became contaminated. ECF Nos. 211-1 ¶ 130; 223 ¶ 105.

In sum, Plaintiffs suggest the contamination found in the groundwater, as evidenced by the well testing, along with evidence of relatively rapid recharging groundwater, demonstrates the Dairy's operations contribute to the current levels of contamination.

[20] Mr. Melvin's opinion that if could take up to seventy years for groundwater recharge is an estimate based on a model from his 1969 dissertation. ECF No. 228-1 (Melvin deposition discussing expert report and dissertation model).

Defendants overarching response to this evidence is that such groundwater recharge cannot quantify the Dairy's contribution to the contamination, so the significance of the Dairy's contribution remains a disputed issue of fact. ECF No. 256-1 ¶¶ 127-30. That being said, Defendants' experts concede that there is a "potential" that Cow Palace Dairy has some impact on groundwater and that it is "certainly possible" that the Dairy's manure applications could be the source of contaminants observed in nearby well water. ECF Nos. 211-1 ¶ 131; 229-2; *see* ECF No. 228-1 ("Q: "[I]s it more likely than not that Cow Palace could be the cause of this contamination? . . . A: Yes.").

7. Evidence of Surface Water Contamination

Plaintiffs also contend that the Dairy's operations are contributing to surface water contamination. In support, Plaintiffs highlight soil and area topography maps which show a strong drainage pattern running from northeast to southwest through the application fields with several intermittent or ephemeral streams present. ECF No. 211-1 ¶ 36. According to Plaintiffs, this creates a significant potential for runoff and pollution of downstream surface waters. *Id*. Further, Plaintiffs point to the interconnectedness of the contaminated shallow groundwater and nearby surface waters and cite to expert reports that agree the groundwater underlying the Dairy will eventually reach the Yakima River. ECF No. 286 (citing ECF No. 286-9). In response, Defendants dispute that there is any evidence of

surface water runoff, but rather contend Cow Palace is specifically designed to prevent such occurrence, with catch basins to prevent any contaminated runoff from leaving the field. ECF Nos. 190-1 ¶¶ 94-100; 256-1 ¶ 36.

8. Adverse Health Effects

Plaintiffs' suit asserts that the Dairy's manure management practices present an imminent and substantial endangerment to public health because of the nitrate contamination in the groundwater. To help prevent adverse health effects, the EPA has set the maximum contaminant level for nitrates in drinking water at 10 mg/L. ECF No. 211-1 ¶¶ 133-34; 213 ¶ 6. Plaintiffs point to a number of health risks associated with exposure to nitrate, including both chronic exposure and exposure below the MCL, such as increased risk of various types of cancer, as well as hyperthyroidism and increased mortality from strokes and heart disease. ECF Nos. 211-1 ¶¶ 134-36; 213 ¶¶ 6-8. Exposure primarily occurs from consuming drinking water, cooking with water, brushing teeth, and ingesting water while bathing, showering, or using pools. ECF No. 211-1 ¶ 137.

The wells of some of Plaintiffs' members who live near the Dairy have levels of nitrate in excess of the EPA's MCL. ECF Nos. 211-1 ¶ 139; 213 ¶ 13 (noting that one standees' well showed nitrate levels as high as 64.6 mg/L). Further, Defendants' samples of 115 residences in the area, pursuant to the AOC,

showed 66 residences exceeding the MCL. ECF Nos. 211-1 ¶ 140; 213 ¶ 15 (noting that two of these residences had nitrate levels which exceeded 50 mg/L).

In response, Defendants contend that Plaintiffs overstate the threat of nitrate exposure, that the MCL is set for the most sensitive members of the population, and that Plaintiffs fail to take into account dosage and sensitivity. ECF No. 256-1 ¶¶ 135-39. Most alarmingly, Defendants seem to suggest that because young infants in the area, the most sensitive population, are not currently suffering from methemoglobinemia, the risk of nitrate contamination in the groundwater is not great. *Id.* ¶¶ 134, 141.

Whether or not Plaintiffs have overstated the risk of nitrate contamination, it is worth noting that Defendants recently installed reverse osmosis units in all Dairy employee housing from which the employees would obtain their drinking water. ECF No. 211-1 ¶ 14 (citing deposition of Vern Carson, safety director for the Dolsen Companies, ECF No. 229-2).

9. Administrative Order on Consent

In response to a series in a local Yakima Valley newspaper, *Yakima Herald Republic*, discussing the issue of groundwater contamination in the region, the EPA sampled drinking water wells and potential sources of excess nitrate contamination in the area. ECF No. 200 at 2. From February through April 2010, the EPA collected samples from three possible sources—dairies, irrigated

croplands, and residential septic systems—to investigate the contribution of various land uses to the high nitrate levels in groundwater. ECF No. 204-2. At the conclusion of its study, the EPA, acknowledging the study's limitations, ultimately determined that the cluster dairies, of which Cow Palace Dairy is a part, are the likely source of excess nitrate levels in the downgradient drinking-water wells, estimating that the dairies account for approximately 65 percent of the contamination. *Id.* (attributing 30 percent of the contamination to the irrigated croplands and 3 percent to the residential septic systems). The EPA published its final, revised report in March 2013. *Id.*

Around this time, Cow Palace Dairy entered into an Administrative Order on Consent ("AOC") with the EPA. ECF No. 190-1 ¶ 83; *see* ECF No. 38-1. The AOC sets forth a series of actions that the Dairy must take, including the following: (1) provide a permanent, safe alternative drinking water supply to residents with wells that exceed maximum contaminant levels within a one-mile radius (MCLs), (2) take specific actions to further control potential sources of nitrogen at the Dairy, (3) establish a network of monitoring wells to measure the effectiveness of the nitrogen source reduction actions, and (4) ensure effective

nutrient management at the Dairy to reduce the introduction of nitrate to an underground source of drinking water. ECF No. 190-1 ¶ 85.[21]

The EPA recently issued an update in December 2014 to its AOC, concluding that data collected under the AOC supports its previous finding that the dairies, including Cow Palace Dairy, are the chief source of nitrate contamination in the area. ECF No. 305-4 at 8 ("Comparison of the nitrate levels in the upgradient monitoring wells with those along the downgradient edge of the Dairies properties indicate that there is heavy nitrate loading of the drinking water aquifer occurring within the Dairies' footprint."). Specifically regarding the level of contribution from the residential septic systems compared to the dairies, the EPA's update includes the following excerpt:

> Based on available information, the contribution from residential septic systems to nitrate contamination in the monitoring and residential drinking water wells downgradient of the Dairies is negligible. Livestock generate significantly more waste than humans. The amount of nitrogen generated by the 224 residential septic systems on and within one mile downgradient of these Dairies is insignificant relative to the amount of nitrogen produced by the Dairies. **A three-person residence generates about 30 pounds of nitrogen per year**. By comparison, the USDA Agricultural Waste Management Field Handbook estimates that **a single lactating cow produces about 1 pound of nitrogen per day or 365 pounds of nitrogen per year**. In 2009, the Dairies reported having more than 24,000 animals, not all of which are lactating cows. The total amount

[21] Plaintiffs contest whether these actions are sufficient to protect human health and the environment. ECF No. 286-1 ¶ 85.

> of nitrogen generated by these 224 residential septic systems is **less than one-tenth of one percent** of the total amount generated by these Dairies.

Id. (emphasis added). Cow Palace Dairy alone has more than 7,000 milking cows. ECF No. 220-1 (COWPAL002097).

B. Parties

Plaintiffs are two non-profit corporations, bringing suit on behalf of their organizations and individual members. Community Association for Restoration of the Environment ("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. In furtherance of its mission, CARE serves as an advocate to protect and restore the economic, social, and environmental resources of the region. ECF No. 52 at 2-23. Center for Food Safety ("CFS") is also a public interest corporation, 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. ECF No. 49 at 3.

Plaintiffs are suing the following seemingly separate, but factually interrelated entities: Cow Palace, LLC, a Washington limited liability company, ECF No. 220 at 24; Three D Properties, LLC, a Washington limited liability

company, ECF No. 220-1; and The Dolsen Companies, a Washington corporation, *id.*

Cow Palace has one member, The Dolsen Companies, and Bill Dolsen serves as the registered agent. ECF Nos. 181 at 4; 220 at 24. The Dairy's DNMP lists The Dolsen Companies as the owner/operator of the Dairy. ECF No. 226-1 (COWPAL000459). Bill Dolsen serves as the President, Chairman, and Director of The Dolsen Companies; Adam Dolsen serves as Vice President and Director. ECF No. 220-1. Three D Properties has one manager: Bill Dolsen. *Id.*

On November 7, 2013, several months after Plaintiffs commenced this action, Dolsen Companies transferred sixteen parcels to Cow Palace, parcels on which the Dairy operates. ECF No. 229-4. Cow Palace did not pay any money for this land, and neither company made any tax payments as a result of the transfer. ECF No. 281-1 ¶ 2. Three D owns approximately 50 percent of the land on which Cow Palace operates, including parcels previously owned by Adam Dolsen but also transferred on November 7, 2013. ECF Nos. 229-2; 229-4.

Upon careful review, it becomes readily apparent that these three entities are interconnected, with the Dolsens serving as the core and common link. Bill Dolsen, as manager of Three D and registered agent for Cow Palace, has primary authority for decisions involving real property acquisitions by Cow Palace and Three D. ECF No. 229-4. Although Mr. Boivin is the manager of the Dairy and

"top person in charge" of operations, he "ultimately reports" to Bill Dolsen. ECF Nos. 281-2, ex.3, ex.6. For instance, shortly after there was a breach in one of the Dairy's lagoons from nearby drilling, Mr. Boivin contacted Bill Dolsen, who instructed Mr. Boivin to stop drilling. ECF No. 281-2, ex.3.[22] Employees at the Dairy understand Mr. Boivin to be one of their supervisors, and Bill Dolsen to be the "boss" of Mr. Boivin. ECF No. 281-2, ex. 7.

Both Dolsens met or spoke with Washington State Department of Agriculture and Secretary of Agriculture representatives on behalf of the Dairy. ECF Nos. 281-1 ¶ 14; 309 ¶ 14. Specifically regarding the Dairy's manure management practices, Adam and Bill Dolsen represented the Dairy in negotiations with the EPA. ECF No. 281-2, ex. 3, ex. 8. In fact, it was the Dolsens, along with Mr. Boivin, who made the final decision to accept the AOC the Dairy entered into with the EPA. ECF No. 281-2, ex. 8 ("Q: Who from Cow Palace was the principal who gave authorization to make settlement proposals to EPA? A: It was between myself and my father and Jeff Boivin. Q: Was it a collaboration among the three of you? A: Yes."). Adam Dolsen testified that he allowed EPA access to the Cow

[22] Similarly, Mr. Boivin contacted Adam Dolsen when there was a breach in one of the lagoons. ECF No. 281-2, ex. 8.

Palace site and worked with other dairies in implementing the AOC's requirements. ECF Nos. 281-1 at 6; 309 at 10.

Adam Dolsen has authority to fire managers of Cow Palace, authority which he shares with his father. ECF No. 281-2, ex. 8. Indeed, in his deposition, Adam Dolsen referred to these employees as "our employees."[23] *Id.* Defendants maintain that any actions that Adam Dolsen has taken with respect to the Dairy have been done in his capacity as President of Cow Palace, a position to which Bill Dolsen, as Manager of Cow Palace, appointed him. ECF Nos. 308 ¶ 4; 309 ¶ 18. However, Adam Dolsen's deposition reveals the following:

Q: What is your title in the Dolsen Companies?

A: Vice president.

Q: As Vice president what are your decision-making powers?

A: Just, I guess, depends on what the decision is.

Q: What types of decisions are you involved in?

A: Mostly employee-related decisions.

Q: Hiring and firing?

A. To some extent.

Q: When you say employee, please define what you mean by that.

[23] Bill Dolsen similarly referred to the dairy employees as "work[ing] for us." ECF Nos. 281-2, ex. 3

A: Employee.

Q: Employee decisions, you said.

A: I make decisions that are relevant to the employees that are employed at Dolsen Companies.

Q: So does that include the Cow Palace?

A: Yes.

Q: Do you hire and fire at the Cow Palace?

A: I have hired people at the Cow Palace.

Q: Are you responsible for determining whether to fire someone at the Cow Palace?

A: Yes, but I guess it depends on who it is.

Q: If it's a management person - -

A: Yes.

Q: -- is that your responsibility?

A: Yes.

Q: Do you share that responsibility with anyone else?

A: Yes.

Q: Who?

A: My father, HR, and depending on if there is a manager above them.

ECF No. 281-2, ex 8.

Dolsen Companies receives and maintains a number of records regarding the Dairy, including manure transfers, offsite manure applications, compost transfers, laboratory analyses of liquid manure samples, annual yields of crops grown on the Dairy's agricultural fields, as well as records of safety meetings, inspections, and incident reports involving injuries at the Dairy. ECF Nos. 229-2; 229-3. Mr. Boivin travels to the Dolsen Companies office once a month for these records. ECF No. 281-2. Further, several Dolsen Companies employees, including Bill and Adam Dolsen, perform numerous functions for the Dairy, including conducting meetings for the Dairy's employees focusing on OSHA compliance, equipment safety, and animal safety; overseeing corporate records, such as annual reports and tax returns; performing annual review and renewal of the Dairy's insurance policy; discussing financial implications of purchases and sales of major assets; reviewing monthly financial statements for the Dairy; making "employee-related decisions" such as hiring and firing Dairy employees; and meeting with management one or two times per month. ECF Nos. 229-2; 229-4. Finally, it was Adam and Bill Dolsen, along with Vern Carson, safety director for the Dolsen Companies, who made the decision to install reverse osmosis units in all Dairy employee housing around 2011 or 2012, from which the employees would obtain their drinking water. ECF No. 211-1 ¶¶ 14-15 (citing Carson deposition, ECF No. 229-2).

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DISCUSSION

I. Standards of Review

A. Rule 12(b)(1) Dismissal

When addressing a motion to dismiss for lack of subject matter jurisdiction, the court is not bound by the plaintiff's factual allegations. Pursuant to Rule 12(b)(1), the Court "may 'hear evidence regarding jurisdiction' and 'resolv[e] factual disputes where necessary.'" *Robinson v. United States*, 586 F.3d 683, 685 (9th Cir. 2009) (quoting *Augustine v. United States*, 704 F.2d 1074, 1077 (9th Cir. 1983)). A Rule 12(b)(1) motion may be either facial, where the court's inquiry is limited to the allegations in the complaint; or factual, where the court may look beyond the complaint to consider extrinsic evidence. *Safe Air for Everyone v. Meyer*, 373 F.3d 1035, 1039 (9th Cir. 2004). "If the moving party converts 'the motion to dismiss into a factual motion by presenting affidavits or other evidence properly brought before the court, the party opposing the motion must furnish affidavits or other evidence necessary to satisfy its burden of establishing subject matter jurisdiction.'" *Wolfe v. Strankman*, 392 F.3d 358, 362 (9th Cir. 2004) (quoting *Safe Air*, 373 F.3d at 1039). Accordingly, in deciding jurisdictional issues, the court is not bound by the factual allegations within the complaint. *Augustine*, 704 F.2d at 1077.

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B. Summary Judgment

Summary judgment may be granted to a moving party who demonstrates "that there is no genuine dispute as to any material fact and that the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). The moving party bears the initial burden of demonstrating the absence of any genuine issues of material fact. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986). The burden then shifts to the non-moving party to identify specific facts showing there is a genuine issue of material fact. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 256 (1986). "The mere existence of a scintilla of evidence in support of the plaintiff's position will be insufficient; there must be evidence on which the [trier-of-fact] could reasonably find for the plaintiff." *Id.* at 252.

For purposes of summary judgment, a fact is "material" if it might affect the outcome of the suit under the governing law. *Id.* at 248. A dispute concerning any such fact is "genuine" only where the evidence is such that the trier-of-fact could find in favor of the non-moving party. *Id.* "[A] party opposing a properly supported motion for summary judgment " 'may not rest upon the mere allegations of denials of his pleading, but . . . must set forth specific facts showing that there is a genuine issue for trial.'" *Id.* at 248 (internal quotation marks and citation omitted); *see also First Nat'l Bank of Ariz. v. Cities Serv. Co.*, 391 U.S. 253, 288-89 (1968) (holding that a party is only entitled to proceed to trial if it presents

sufficient, probative evidence supporting the claimed factual dispute, rather than resting on mere allegations). Moreover, "[c]onclusory, speculative testimony in affidavits and moving papers is insufficient to raise genuine issues of fact and defeat summary judgment. *Soremekun v. Thrify Payless, Inc.*, 509 F.3d 978, 984 (9th Cir. 2007). In ruling upon a summary judgment motion, a court must construe the facts, as well as all rational inferences therefrom, in the light most favorable to the non-moving party, *Scott v. Harris*, 550 U.S. 372, 378 (2007), and only evidence which would be admissible at trial may be considered. *Orr v. Bank of Am., NT & SA*, 285 F.3d 764, 773 (9th Cir. 2002).

II. Motion to Dismiss Pursuant to 12(b)(1)

Defendant Cow Palace moves to dismiss this action, pursuant to Rule 12(b)(1), asserting that Plaintiffs have failed to establish standing. ECF No. 209. Plaintiffs, asserting that there is no genuine dispute as to their standing, move this Court to grant summary judgment as to this issue. ECF No. 211.

To satisfy Article III's standing requirements, the plaintiff must show the following three elements: (1) the "plaintiff must have suffered an injury in fact—an invasion of a legally protected interest which is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical;" (2) there must be a "causal connection between the injury and the conduct complained of—the injury has to be "fairly traceable" to the challenged action of the defendant, and not the

result of the independent action of some third party not before the court;" and (3) "it must be likely, as opposed to speculative, that the injury will be redressed by a favorable decision." *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560–61 (1992) (internal quotation marks and citations omitted). "An association has standing to bring suit on behalf of its members when its members would otherwise have standing to sue in their own right, the interests at stake are germane to the organization's purpose, and neither the claim asserted nor the relief requested requires the participation of individual members on the lawsuit." *Friends of the Earth, Inc. v. Laidlaw Envtl. Servs.*, 528 U.S. 167, 181 (2000).

Here, Defendant Cow Palace does not dispute that the interests at stake are germane to Plaintiffs' organizational interests, nor that personal participation by individual standees is unnecessary. Rather, the core of Defendant Cow Palace's challenge is whether any standee can establish individual standing.

This Court concludes that at least CARE has organizational standing to proceed.[24] First, considering CARE's organizational mission, the interests at stake in the action are germane to its organizational goals. Second, this case does not require the individual participation by each standee. Finally, CARE's individual members have standing to sue. Although Defendant Cow Palace greatly disputes

[24] Because CARE has standing, this Court need not address whether CFS also has Article III standing. *See Sierra Club v. EPA*, 762 F.3d 971, 978 (9th Cir. 2014).

that Plaintiffs have established the causation and redressability requirements of the standing doctrine, this Court is unconvinced.

First, Plaintiffs have sufficiently established that one or more of its members has suffered an injury in fact. Although Defendant Cow Palace states that "CARE fails to establish all three factors of the standing test," it fails to brief why the standees' purported harm does not satisfy the injury-in-fact requirement. ECF No. 209 at 11-12. To demonstrate that its individual members have suffered an injury-in-fact, Plaintiffs highlight the declarations of its members whose recreational and aesthetic interests in the Yakima River watershed are being adversely affected by manure pollution and whose health and property interests are adversely affected by nitrate contamination of their homes' well water. ECF No. 257 at 809; *see* ECF Nos. 50, 52, 53, 216, 218. For example, Helen Reddout, a member of CARE, declares that her recreational, aesthetic, health, and property interests are adversely affected by the Dairy's manure mismanagement. ECF No. 52. Ms. Reddout lives 1.5 miles downgradient from Cow Palace Dairy, obtains her drinking water from groundwater which is contaminated with levels of nitrate that exceed the MCL, has had to purchase bottled water as a result of the contamination, and is concerned about the health impacts from nitrate consumption. *Id.* at 7-8. Further, Ms. Reddout asserts that, because of the Dairy's alleged impact to the water quality of the Yakima River, she no longer swims or wades in the Yakima River, no longer

gathers edible plants near the River, and no longer engages in bird watching. *Id.* at 4-7.

As demonstrated by the numerous statements presented by Plaintiffs, its members' recreational, aesthetic, health, and property interests present cognizable injuries for purposes of standing. Because Plaintiffs have sufficiently demonstrated that its members "use the affected area and are persons 'for whom the aesthetic and recreational values of the area will be lessened' by the challenged activity," *Laidlaw*, 528 U.S. at 183 (quoting *Sierra Club v. Morton*, 405 U.S. 727, 735 (1972)), they have documented injury in fact.

Second, with regards to causation, this Court finds that the standees' injuries are "fairly traceable" to the Dairy's operations. Defendant Cow Palace asserts that Plaintiffs have failed to support a causal connection between Cow Palace's management and handling of manure and the standees' injury. ECF No. 209 at 14-15 (asserting that standees neither state "with any degree of certainty that any of his or her alleged health problems was attributable to Cow Palace's conduct" nor can they trace their aesthetic and recreational injuries to Cow Palace's conduct). To support their contention that their members' injuries are fairly traceable to the Dairy's conduct, Plaintiffs cite to the upgradient, onsite, and downgradient nitrate sampling demonstrating that Cow Palace Dairy's manure application, storage, and management practices have contributed to nitrate contamination in the

groundwater. ECF No. 257 at 11; *see* ECF No. 211-1 ¶¶ 116-124 (noting wells upgradient of Cow Palace Dairy had very little nitrate but wells downgradient showed high levels of nitrate and other tracers associated with cow manure). Plaintiffs contend they are not required to show the "particular manure pollution molecules" that are affecting standees originated from Cow Palace Dairy, a showing that is more demanding than that required to establish liability under RCRA; rather, they assert they have satisfied their burden by merely demonstrating there is manure leaking from the Dairy's operations into the groundwater and such manure pollution is causing or contributing to groundwater contamination and relatedly the standees' injuries. ECF No. 257 at 11.

Defendant Cow Palace's opening brief heavily relied on *Washington Environmental Council v. Bellon*, 732 F.3d 1131(9th Cir. 2013), in which standees were seeking to compel the state to regulate greenhouse gas emissions from several Washington oil refineries. As the Ninth Circuit held, the "chain of causality between Defendants' alleged misconduct and [plaintiff's] injuries is too attenuated" as it merely "consists of a series of links strung together by conclusory, generalized statements of contribution, without any plausible scientific or other evidentiary basis that the refineries' emissions are the source of their injuries." 732 F.3d at 1141-42. However, unlike in *Bellon* where the standees merely provided "vague, conclusory" statements about how the refineries' emissions

would cause them injury, *id.* at 1142, Plaintiffs' standees provide specific statements of current and imminent harm to their recreational, aesthetic, health, and property interests. Further, unlike in *Bellon* where the standees attempted to show localized harm in the global climate change context, *id.* at 1143, Plaintiffs' standees are attributing harm to a confined valley of finite polluters with localized water pollution. Finally, unlike in *Bellon* where the Washington refineries' contributions to greenhouse gases was not meaningful in relation to worldwide emissions, *id.* at 1143-44, Plaintiffs' standees have presented convincing evidence demonstrating that the Dairy is a meaningful, although not sole, contributor to nitrate contamination in the area.

Plaintiffs here are not required to prove that the exact nitrate molecules from Cow Palace Dairy are contributing or causing the standees' injuries. As the Ninth Circuit has stated, "the threshold requirement of traceability does not mean that plaintiffs must show to a scientific certainty that defendant's effluent caused the precise harm suffered by the plaintiffs in order to establish standing." *Nat. Res. Def. Council v. Sw. Marine, Inc.*, 236 F.3d 985, 995 (9th Cir. 2000) (internal quotation marks and citations omitted). "[R]ather than pinpointing the origins of particular molecules, a plaintiff must merely show that a defendant discharges a pollutant that causes or contributes to the kinds of injuries alleged in the specific geographic area of concern." *Id.* (internal quotation marks and citations omitted).

As Plaintiffs aptly note, the underlying cause of action merely requires Plaintiffs to demonstrate that Defendants' practices have or are "contributing" to the pollution; not that Defendants conduct is the only cause or that, as established by a degree of certainty, the standees' injuries stem from Defendants' conduct. ECF No. 257 at 13. Courts cannot "raise the standing hurdle higher than necessary showing for success on the merits in an action." *Laidlaw*, 528 U.S. at 181. Thus, Defendant Cow Palace's contention, suggesting that Plaintiffs must demonstrate causation to a degree of certainty, a showing greater than required to establish liability under RCRA, is a threshold not mandated by the standing doctrine and one this Court declines to impose. Further, as previously stated by this District, the fact that other sources also contribute to pollution offers "no shield" to a defendant polluter; that is, a plaintiff need not sue every polluter but merely must show that the defendant caused a part of the injury. *CARE v. Bosma*, 65 F.Supp.2d 1129, 1141 (E.D. Wash. 1999), *aff'd*, 305 F.3d 943 (9th Cir. 2002).

Finally, with regards to redressability, this Court finds that a favorable ruling by this Court would surely provide at least some "incremental benefit," if not more, in addition to the measures already provided for in the AOC. Defendants assert that the AOC is already addressing any injuries alleged and even if the AOC provides narrower relief, Plaintiffs' have failed to establish how any "incremental benefit" from its additional demands for relief would address its members' injuries.

ECF No. 209 at 17. Plaintiffs assert that the relief they are seeking is broader than the AOC; thus, a ruling in their favor would likely help alleviate the alleged injury. ECF No. 257 at 16-20.

As previously stated in this Court's past Order Denying Defendant Cow Palace's Motion to Dismiss,[25] the relief "sought by CARE . . . differs from the requirements of the Consent Order in multiple areas," including immediately lining the lagoons and providing drinking water to residents within a more expansive, three-mile, down-gradient radius. ECF No. 72 at 18, 23. Thus, if Plaintiffs prevail and Cow Palace Dairy is ordered to line its lagoons, among other measures, contamination will decrease and Plaintiffs' injuries will be, at the very least, incrementally redressed.

This Court finds there is no genuine issue of material dispute as to Plaintiffs' standing; accordingly, Defendant Cow Palace's Motion to Dismiss (ECF No. 209) is **DENIED** and Plaintiffs' Motion for Summary Judgment (ECF No. 211), as to this issue, is **GRANTED**.

[25] This Court notes that Defendant Cow Palace already raised the issue of Plaintiffs' standing, as it relates to redressability, in a previous motion filed over one year ago. ECF No. 38 at 17-20 (contending that because Plaintiffs are seeking relief that has already been granted by the AOC, they fail to state a claim and, for the same reason, lack standing).

III. Evidentiary Issues

A. Daubert Motions

Expert witness testimony is governed by Federal Rule of Evidence 702, which provides:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Evid. 702.

In Daubert v. Merrell Dow Pharmaceuticals, 509 U.S. 579, 597 (1993), the Supreme Court directed trial courts to perform a "gatekeeping" function to ensure that expert testimony conforms to Rule 702's admissibility requirements. The district court has "broad discretion in determining the admissibility of evidence and considerable leeway in determining the reliability of particular expert testimony." *Id.* When considering the admissibility of expert testimony, the court first determines whether the witness is "qualified as an expert by knowledge, skill, experience, training, or education," Fed. R. Evid. 702, and then examines whether the proffered testimony is both relevant and reliable, *Daubert*, 509 U.S. at 583.

Daubert identifies four non-exclusive factors a court may consider in assessing the relevance and reliability of expert testimony: (1) whether a theory or technique has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or potential error rate and the existence and maintenance of standards controlling the theory or technique's operation; and (4) the extent to which a known technique or theory has gained general acceptance within a relevant scientific community. *Id.* at 593-94. These factors are not to be applied as a "definitive checklist or test," but rather as guideposts which "may or may not be pertinent in assessing reliability, depending on the nature of the issue, the expert's particular expertise, and the subject of his testimony." *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 150 (1999). The ultimate objective is to "make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Id.* at 152.

Plaintiffs move this Court to limit or exclude the testimony of Defendant Cow Palace's experts Mr. Stephen, Mr. Maul, and Mr. Backe. ECF Nos. 193, 202, 206. Defendant Cow Palace moves this Court to exclude any expert testimony that relies on the EPA's report, "Relation Between Nitrate in Water Wells in the Lower Yakima Valley, Washington." ECF No. 200.

i. Scott Stephen

Plaintiffs first move to exclude the testimony of Defendant Cow Palace's expert, Scott Stephen, a soil scientist. ECF No. 193.

First, Plaintiffs contest Mr. Stephen's qualification to testify in fields of hydrology, hydrogeology, or toxicology. Plaintiffs contend that Mr. Stephen, who holds only an undergraduate degree in soil science and no education, training, or experience in the fields of hydrology, hydrogeology, of toxicology, should not be permitted to offer opinions in these areas. *Id.* at 4. Specifically, Plaintiffs challenge Mr. Stephen's ability to opine as to "whether higher nitrates in subsoils cause higher nitrates in area water and wells, whether nitrates found below the root zone have the ability to leach further, whether there is water movement in Cow Palace fields below the root zone, the impact of manure on water quality, the extent of groundwater contamination, or the various pathways that nitrate can reach human populations" or to challenge a myriad of Dr. Shaw's conclusions. *Id.* at 5. Rather, according to Plaintiffs, Mr. Stephen's expertise is limited to "understanding the dynamics of soil as a medium for growing crops" and "[a]nything to do with soil and the cropping system." *Id.* at 4 (citing ECF No. 194-2).

Second, Plaintiffs challenge whether Mr. Stephen's opinions in the area of soil science are reliable. *Id.* at 6. Plaintiffs assert that Mr. Stephen's testimony

should be limited to that of a fact witness, regarding the tasks he has been hired to perform for the Dairy, rather than as an expert on soil science. *Id.* at 9. In support, Plaintiffs assert the following:

- Mr. Stephen did not review all relevant records to reach his conclusion that the Dairy's manure should be characterized as a fertilizer, rather than a discarded material, *id.* at 7; *see* ECF No. 195-1 at 2 ("In my opinion, nothing within the Shaw report proves that Cow Palace was applying manure for any other purpose than for use as a fertilizer.");

- Mr. Stephen opined that there is no agreed-upon definition of "agronomic rate" but rather that each Dairy must make its own interpretations as how to implement its DNMP, an opinion Plaintiffs find particularly troubling considering Mr. Stephen was hired to help the Dairy implement its DNMP, ECF No. 193 at 7; *see* ECF No. 195-2 ("I think the guidance is there, but there's a lot of information to go through that can be complicated . . .");

- Although Mr. Stephen was retained to opine as to whether the Dairy's manure applications were agronomic, his knowledge of the manure applications only go back to the beginning of his tenure, which began in 2013, ECF No. 193 at 8;

- Mr. Stephen's opinions as to whether the Dairy agronomically applied manure do not account for residual nitrate in the soil, *id.*;

- Mr. Stephen has minimal experience, which primarily includes sampling-related responsibilities, has never authored any publications, has either never testified or has not testified within the last four years, and bases his opinions on reading materials, rather than experience, training, or education, *id.* at 8-9.

In defense of Mr. Stephen, Defendant Cow Palace maintains that Mr. Stephen is a university-educated and locally-trained soil scientist and thus a qualified expert.

First, Defendants assert that Plaintiffs have not objected to anything in Mr. Stephen's original report; thus, Mr. Stephen should be free to testify about opinions in his original report. ECF No. 244 at 5-6. Second, Defendants maintain that Mr. Stephen's report did not reach an opinion as to whether Cow Palace's past manure applications were agronomic, but when pushed to opine as to past practices in his deposition, he stated, based on his review of data only as far back as 2011, it would be "fair to say" Cow Palace's applications since that time have been agronomic. *Id.* at 6-7. Third, Defendants maintain that Mr. Stephen's opinions are admissible as a rebuttal to the opinions of Plaintiffs' expert, Dr. Shaw, rather than affirmative opinions that are designed to meet any relevant standard of scientific rigor. *Id.* at 7-9. Finally, Defendants contend that Mr. Stephen's education in soil science, soil physics, soil biology, environmental science, soil chemistry, and soil microbiology render him qualified to opine about nitrate migration below the root zone. *Id.* at 9-11.

This Court finds Mr. Stephen sufficiently qualified to testify as a soil expert in order to survive the Court's gatekeeping function pursuant to *Daubert*. As Defendant Cow Palace notes, Rule 702 is "broadly phrased and intended to embrace more than a narrow definition of qualified expert." *Hangarter v. Provident Life & Acc. Ins. Co*, 373 F.3d 998, 1015 (9th Cir. 2004) (quoting *Thomas v. Newton Int'l Enters.*, 42 F.3d 1266, 1269 (9th Cir. 1994)). Mr. Stephen's training and education

is in soil physics, soil biology, environmental science, soil chemistry, and soil microbiology. ECF No. 195-2 at 10-11. Regarding his professional experience, Mr. Stephen has over 18 years of experience working as a Professional Consultant in his role as a soil scientist. ECF No. 194-2 at 2. He has years of practical experience "helping dairies use agronomic principles to achieve nutrient management goals" in the Yakima Valley. *Id.* Accordingly, Mr. Stephen is sufficiently qualified—given his knowledge, skill, and practical experience—to provide expert testimony about the nature of the nitrogen cycle, the use of manure as a fertilizer and soil conditioner, manure applications to soil, crop rotation, and nutrient management in regards to agronomic rate, and the current management of the Dairy under the AOC. *Id.* That being said, although Mr. Stephen is qualified to testify as a soil scientist, his opinions are limited to those that are within his relevant area of expertise; that is, although this Court recognizes that there may be some overlap in the soil science and hydrology/hydrogeologist disciplines, it appears Mr. Stephen is not qualified to testify about water movement through the vadose zone, the impact of manure constituents on water quality, the extent of groundwater contamination, or the various pathways that nitrate can reach human populations. *See* ECF No. 195-2.

This Court also finds Mr. Stephen's opinions sufficiently reliable and relevant that they are admissible in these proceedings. *See* Fed. R. Evid. 702 (allow scientific knowledge by a qualified expert if it will "assist the trier of fact to

understand the evidence or to determine a fact in issue"). Mr. Stephen's opinions regarding agronomic application of manure are relevant to this case and Mr. Stephen's opinions are helpful given his practical training and experience in the Yakima area. Further, Mr. Stephen's opinions on whether the Dairy has agronomically applied manure since 2011, based on his review of relevant records and his personal knowledge of the Dairy's application since his tenure started in 2013, are relevant and will assist the Court. That being said, Plaintiff is free to examine and critique the accuracy of Mr. Stephen's opinions and the bases therefor to aid this Court's determination of what weight to give to his opinions.

ii. James Maul

Plaintiffs also move to exclude the testimony of Defendant Cow Palace's expert, James Maul, a hydrogeoloist and licensed geologist. ECF No. 202.

First, Plaintiffs challenge Mr. Maul's opinions as unreliable regarding his critiques of the EPA Report, Dr. Shaw's report, and Mr. Erickson's report. *Id.* at 3. In support, Plaintiffs assert that Mr. Maul failed to consider all available data before forming his opinions. *Id.* For instance, Mr. Maul admitted that he had only reviewed some of the available data—such as results of groundwater monitoring wells around the Dairy, U.S. Geological Survey information about the depth of the aquifer underlying the Dairy, and the first two phases of the EPA's investigation

upon which its final report was predicated—when determining whether the Dairy was contributing to nitrate contamination. *Id.* at 4-6.

Second, Plaintiffs challenge Mr. Maul's qualification to opine as to certain topics. Specifically, Plaintiffs challenge whether Mr. Maul is qualified to opine as to whether historical agricultural practices are the source of current contamination. *Id.* at 7-8. Further, Plaintiffs challenge Mr. Maul's qualification to opine about the public health impacts of nitrate exposure. *Id.* at 9.

In defense, Defendant Cow Palace maintains that Mr. Maul is a qualified expert whose opinion is based on sufficient facts and data. Given his experience and specialized knowledge, Defendant Cow Palace asserts that Mr. Maul is qualified to examine the reliability of the EPA's report and the expert testimony that relies upon its data and findings. ECF No. 277 at 4-5. Further, Defendant Cow Palace maintains that Mr. Maul's testimony is based on his education and training, extensive experience, and review of relevant documents. *Id.* at 6. Defendant Cow Palace maintains that Mr. Maul's task was merely to determine whether the EPA collected sufficient data to support its conclusions, not to independently review all of the data himself, develop his own site model, and affirmatively disprove each of EPA's conclusions. *Id.* at 6-7. As such, Defendant Cow Palace asserts that Mr. Maul should be permitted to refute the EPA report and, relatedly, the basis for Plaintiffs' conclusions. *Id.* at 8.

This Court finds that Mr. Maul is sufficiently qualified to testify as an expert hydrogeologist in order to pass through the Court's gatekeeping function. Mr. Maul was educated as a geologist, has thirty years of practical experience as a hydrogeologist, and is currently licensed in the state of Washington. ECF No. 278 at 1-2. Throughout this tenure, Mr. Maul has participated and overseen numerous "projects designed to identify sources of particular contaminants." *Id.* at 2. Specifically, he has worked on a number of projects with EPA oversight and is thus familiar with the standard procedures that should be followed and data collected. *Id.* Accordingly, Mr. Maul is sufficiently qualified to opine as to the reliability and sufficiency of the EPA report. ECF No. 203-1 at 1. That being said, Mr. Maul is not a toxicologist and thus is not qualified to assess the accuracy of the EPA report, as it touches on public health impacts of nitrate contamination. Although Mr. Maul may opine that the Report is scientifically unreliable, in general, he is not qualified to assess its reliability in areas outside of his expertise, such as toxicology.

This Court also finds Mr. Maul's opinions sufficiently reliable and relevant to these proceedings. *See* Fed. R. Evid. 702 (permitting scientific knowledge by a qualified expert if it will "assist the trier of fact to understand the evidence or to determine a fact in issue"). Defendant Cow Palace hired Mr. Maul specifically to assess the reliability of the EPA report and determine whether sufficient data

supports its conclusions. Although Plaintiff faults Mr. Maul for not reviewing and independently verifying all the available data underlying EPA's report, Rule 702 does not espouse such a high standard. Moreover, Plaintiffs' objection loses sight of Mr. Maul's limited expert role in critiquing the overall reliability of the Report based on methods used and data supporting its conclusions. This Court recognizes the limited bases for Mr. Maul's opinions, such as the fact that "[d]ata collected after the EPA drafted the Report is not relevant to Mr. Maul's task," ECF No. 277 at 6, and so will consider that limited bases when weighing his testimony with the other available and relevant evidence.

iii. Michael Backe

Plaintiff also seeks to exclude testimony of Defendant Cow Palace's expert, Michael Backe, a hydrogeologist. ECF No. 206. Specifically, Plaintiffs seek to exclude testimony critiquing Mr. Erickson's estimation of the amount of waste leaking from the Dairy's lagoons and reporting results of soil and water testing conducted at the two neighboring properties of Plaintiffs' standees. *Id.* at 2.

First, Plaintiffs challenge Mr. Backe's analysis as lacking rigor and failing to comport with scientific method. *Id.* at 4. Plaintiffs fault Mr. Backe for failing to review all relevant data before offering his rebuttal opinion as to Mr. Erickson's seepage estimates. *Id.* at 4-6. For instance, although Mr. Backe criticized Mr. Erickson's assumptions regarding the thickness of the lagoon liners, he

acknowledged that he did not look at data relevant to determine the liner thickness, data relevant to conductivity for soils in the region, data relevant to determining soil permeability, or information about the impacts of well drilling. ECF No. 282 at 2-3. Further, although Mr. Backe opined that a "water balance method" would be a more reliable way to determine seepage, neither Mr. Backe or any other expert performed any water balancing testing. ECF No. 206 at 7.

Second, Plaintiffs challenge Mr. Backe's "observations" of the standees' properties as irrelevant and unhelpful. *Id.* Specifically, Mr. Backe reported the results of nitrate detected in sampling at the standees' properties but failed to offer any perspective on what the sampling indicates. *Id.* at 8; *see* ECF No. 208 ("I did not make any evaluation as to what they mean other than just reporting what we found.").

In response, Defendant Cow Palace maintains Mr. Backe's opinions are sufficiently reliable and relevant to this matter. Regarding Plaintiffs' argument that Mr. Backe failed to review all available data, as well as gather his own data to support the assertion that a water balance method is more reliable, Defendant Cow Palace asserts that Mr. Backe's role as a rebuttal expert is merely to disprove Plaintiffs' conclusions. ECF No. 236 at 4-6. Regarding the relevance of Mr. Backe's testimony about the results of his inspections of the standees' properties,

Defendant Cow Palace asserts that such testimony is relevant to show the existence of nitrates from sources other than the Dairy. *Id.* at 8-10.

This Court finds Mr. Backe's opinions are sufficiently reliable and relevant to this matter in order to pass through the gatekeeping function this Court must apply. Again, Plaintiffs fault Defendants' expert for not reviewing all available data or coming to conclusions based on their own data, but Rule 702 does not set such a demanding standard. As one of Defendants' experts, Mr. Backe was assigned to rebut the assumptions, data, and findings of Plaintiffs' expert Mr. Erickson. ECF No. 207-1. Although Mr. Backe must be sufficiently qualified to provide this testimony and his testimony must be relevant and helpful to the trier of fact, he need not develop alternative, affirmative opinions in order to adequately rebut the evidence presented by Plaintiffs—that is not Defendants' burden. That being said, this Court recognizes the limited bases for Mr. Backe's rebuttal opinions regarding Mr. Erickson's findings and so considers that limited bases when weighing his testimony with the other available and relevant evidence.

Regarding Mr. Backe's testimony about the results of soil samples taken from the standees' nearby properties, this Court determines Mr. Backe's findings are relevant to whether the Dairy is or has contributed to the nitrate contamination in the groundwater. Although Plaintiffs suggest that Mr. Backe did not opine as to the meaning of these results, his expert rebuttal report explicitly states that "[t]he

presence of [nitrate and other chemicals at the standees' properties] are likely the result of both individual and regional agricultural historical practices throughout the Lower Yakima Valley." *Id.* at 20. As such, although the evidence may have limited value considering RCRA's standard, the testimony helps rebut Plaintiffs assertion that the Dairy is contributing to the nitrate contamination in the area.

Accordingly, this Court declines to categorically exclude the testimony of Messrs. Stephen, Maul, or Backe; however, their testimony may be of limited value, as indicated above.

iv. Expert Testimony Relying on EPA Report

Defendant Cow Palace moves to exclude all expert testimony that relies on the EPA Report, "Relation Between Nitrate in Water Wells in the Lower Yakima Valley, Washington." ECF No. 200. Generally, Defendant Cow Palace challenges the report as not meeting *Daubert's* reliability standards because the techniques and methods used are not scientifically sound, cannot be independently verified, were not subject to meaningful peer review, and have an unknown error rate. *Id.* at 6-15.

In defense, Plaintiffs maintain that the report, upon which Dr. Shaw's, Dr. Lawrence's, and Mr. Erickson's testimony relies, should not be excluded. ECF No. 250. First, Defendant Cow Palace failed to identify the testimony it seeks to exclude; instead, it attacks the reliability of the report in general and asks the Court

to sift through the hundreds of pages of expert report materials to determine which testimony should be excluded. *Id.* at 4. Second, Plaintiffs reassert their previous *Daubert* Motion contending that Mr. Maul's opinions, opinions upon which Defendant Cow Palace's motion primarily relies, are unreliable. *Id.* at 5. Third, Plaintiffs contend that this Court should give the EPA report deference given that it is a scientific determination of a federal agency within its expertise. *Id.* at 8-9. Finally, Plaintiffs contend that the *Daubert* reliability factors are inapplicable to the Report. *Id.* at 10-12.

This Court finds Plaintiffs' experts' testimony, which relies in part on the EPA report, is reliable. As an initial matter, Rule 702 and *Daubert's* flexible checklist of reliability factors provide guidance to the court when assessing whether, in general, the reasoning or methodology underlying the testimony is reliable. Specific to experts Erickson, Lawrence, and Shaw, the Court acknowledges that the EPA report is only one publication and data set upon which these experts rely. *Id.* at 10 (noting that these experts also relied on the well data provided under the AOC). Further, the *Daubert* factors are meant to provide a helpful, not definitive, checklist when determining the reliability of expert testimony. *See Kumho Tire Co.*, 526 U.S. at 151. Even so, the EPA report expressly qualifies its findings based on the assumptions made; like other government reports, the EPA Report's verification process is aided by agency

review and public comment; and finally, considering the report is a compilation of the EPA's technical analysis, judgments, and findings "based on an evaluation of complex scientific data within the agency's technical expertise," *see Envtl. Def. Ctr., Inc. v. EPA*, 344 F.3d 832, 869 (9th Cir. 2003), this Court finds some level of deference to its reliability is warranted. *See Chem. Mfrs. Ass'n v. EPA*, 919 F.2d 158, 167 (D.C. Cir. 1990) ("It is not the role of courts to second-guess the scientific judgments of the EPA, and [courts] give considerable latitude to the EPA in drawing conclusions from scientific and technological research, even where it is imperfect or preliminary.") (internal quotation marks and citations omitted). Accordingly, this Court declines to exclude the expert testimony of Plaintiffs' experts who rely, in part, upon some of the underlying data from the EPA report.

B. EPA Report

Defendant Cow Palace seeks to exclude the EPA report itself, in addition to any expert testimony that relies on it, as unfairly prejudicial under the evidentiary rules. ECF No. 200 at 16. Pursuant to Federal Rule of Evidence 403, a "court may exclude relevant evidence if its probative value is substantially outweighed by a danger of . . . unfair prejudice. . . ." Fed. R. Evid. 403. In support of its motion, Defendant Cow Palace contends that, because the science underlying the report is so flawed, its admission would prejudice an inquiry into whether the Dairy is a likely source of contamination in the groundwater. ECF No. 200 at 16. In

response, Plaintiffs highlight that Rule 403 maintains a limited role in a bench trial, Defendant Cow Palace's criticisms of the Report are unfounded, and Defendant Cow Palace has failed to explain what unfair prejudice it will suffer.

As Plaintiffs aptly note, Rule 403 has a limited role, if any, in a bench trial. *See E.E.O.C. v. Farmer Bros. Co.*, 31 F.3d 891, 898 (9th Cir. 1994) (citing *Gulf States Utils. Co. v. Ecodyne Corp.*, 635 F.2d 517, 519 (5th Cir. 1981) (noting that excluding relevant evidence in a bench trial is an illogical and "useless procedure" because a judge in a bench trial can exclude any improper inferences from certain evidence in reaching a decision). Although this Court acknowledges the possibility of bias that the EPA report might represent, it is only a portion of what Plaintiffs rely on to demonstrate that the Dairy is contributing to the nitrate contamination in the groundwater. Accordingly, this Court does not find that its probative value is substantially outweighed by the danger of unfair prejudice.

C. Motion to Strike Undisclosed Testimony

In the final evidentiary motion before the Court, Defendant Cow Palace moves to strike certain testimony of Dr. Shaw, Mr. Erickson, and Dr. Lawrence, which it asserts were not timely disclosed. ECF No. 237. Pursuant to Federal Rule of Civil Procedure 26(a)(2), an expert's written report must contain "a complete statement of all opinions the witness will express and the basis and reasons for them." Fed. R. Civ. P. 26(a)(2)(B)(i). Further, "[a] party must make these

disclosures at the times and in the sequence that the court orders." *Id.* at 26(a)(2)(D). "If a party fails to provide information or identify a witness as required by Rule 26(a) or (e), the party is not allowed to use that information or witness to supply evidence on a motion, at a hearing, or at a trial, unless the failure was substantially justified or harmless." *Id.* at 37(c)(1).

Defendant Cow Palace faults Plaintiffs for offering new and previously undisclosed expert testimony for the first time in their Motion for Summary Judgment. ECF No. 237 at 4. Although the deadlines to submit expert reports and rebuttal reports was, respectively, September 22, 2014, and October 20, 2014, Plaintiffs filed new declarations from Dr. Shaw, Mr. Erickson, and Dr. Lawrence on November 17 and 18 in support of their Motion for Summary Judgment. *Id.* at 3.

The Court has thoroughly reviewed the submissions by both parties and cannot conclude that Defendant Cow Palace was in any way harmed or prejudiced by these allegedly undisclosed opinions. The opinions expressed in the declarations contain similar, sometimes verbatim, recitations of what was expressed in the original expert reports. *Compare* ECF No. 237-2 ¶ 180 ("These studies indicate that the likely source of high nitrates is most closely tied to recent agricultural activities."), *with* ECF No. 241 ¶ 52 ("These studies indicate that the likely source of high nitrates is most closely tied to recent agricultural activities.").

However, even when the declaration varied the wording of the opinion, there can be no doubt that Defendants were on notice of the experts' opinions and the basis for each. *Compare* ECF No. 237-2 ¶ 20 (Dr. Shaw characterized the Dairy's manure applications as exceeding "agronomic rates"), *with* ECF No. 240 ¶ 19 (Dr. Shaw characterized the Dairy's manure applications as done "without regard to crop fertilization needs"). Although the Court acknowledges there were a few instances in which the material cited in the declarations could not be found in the original expert report, this information either came from Cow Palace's own records or was discussed in the experts' depositions and thus Cow Palace had the opportunity to question the witnesses on these issues. Because Defendant Cow Palace has failed to show how it has suffered any harm or prejudice because of the purportedly new opinions presented in Plaintiff's experts' declarations, Fed. R. Civ. P. 37(c)(1), this Court declines to strike any of this testimony.

IV. Cross Motions for Summary Judgment

Defendants move for summary judgment on all Plaintiffs' claims as against all Defendants. ECF Nos. 190, 191. Plaintiffs move for summary judgment on the following RCRA issues: (1) animal waste that is over-applied onto soil and that leaks into groundwater is a "solid waste" under RCRA; (2) conditions at Cow Palace Dairy exist that may cause or contribute to an imminent and substantial endangerment; (3) conditions at Cow Palace Dairy exist that violate RCRA's ban

on open dumping; and (4) all named Defendants are responsible parties under RCRA. ECF No. 211 at 3.

A. Resource Conservation and Recovery Act

"[The Resource Conservation and Recovery Act] is a comprehensive statute that governs the treatment, storage, and disposal of solid and hazardous waste… so as to minimize the present and future threat to human health and the environment." *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 483 (1996) (internal quotation marks and citation omitted). Congress enacted RCRA to, in part, ensure that waste that is unavoidably generated is "treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment." 42 U.S.C. § 6902(b). Although the EPA maintains primary responsibility for enforcing the provisions of RCRA, the statute provides for "citizen suits" against persons who allegedly violate its requirements. *Id.* § 6972.

Plaintiffs are seeking to hold Defendants liable under two of RCRA's provisions.[26] First, RCRA outlaws the disposal of solid waste in a manner that constitutes "open dumping." *Id.* § 6945(a). Second, RCRA prohibits any person

[26] The parties do not contest that Plaintiffs have satisfied RCRA's pre-suit requirements under 42 U.S.C. § 6972(b)(2)(A), and that there is no state or federal RCRA proceedings that would preclude Plaintiffs' action under 42 U.S.C. § 6972(b)(1)(B), (b)(2)(B), (b)(2)(C).

from causing or contributing to the creation of an imminent and substantial endangerment to human health or the environment. *Id.* § 6972(a)(1)(B). Plaintiffs contend that Defendants' handling, storage, and disposal of manure has contributed to an imminent and substantial endangerment to human health and the environment and violated RCRA's ban on "open dumping."

1. Imminent and Substantial Endangerment

The imminent and substantial endangerment provision of RCRA provides that a civil action may be commenced against "any person . . . who has contributed or who is contributing 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." *Id.* § 6972(a)(1)(B). To establish liability, Plaintiffs must demonstrate the following: (1) a "person," as defined under RCRA, has "contributed" or "is contributing" to, (2) the "past or present handling, storage, treatment, transportation, or disposal of" any "solid or hazardous waste," and (3) the waste in question "may present an imminent and substantial endangerment to health or the environment." *See Ecol. Rights Found. v. Pac. Gas & Elec. Co.*, 713 F.3d 502, 514 (9th Cir. 2013) (citation omitted).

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2. Open Dumping

A civil action may also be brought against "any person . . . who is alleged to be in violation of any permit, standard, regulation, condition, requirement, prohibition, or order which has become effective" under RCRA. 42 U.S.C. § 6972(a)(1)(A). RCRA prohibits "any solid waste management practice or disposal of solid waste . . . which constitutes the open dumping of solid waste." *Id.* § 6945(a). In turn, RCRA defines "open dump" as "any facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 6944 of this title and which is not a facility for disposal of hazardous waste." *Id.* § 6903(14). Further, "disposal" is defined as "the 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 any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters." *Id.* § 6903(3).

The EPA promulgated criteria to clarify what practices may violate RCRA's open dumping prohibition. 40 C.F.R. pt. 257. The regulations state that a facility cannot "contaminate an underground drinking water source beyond the solid waste boundary." *Id.* § 257.3-4(a). In turn, EPA defines "contaminate" to mean introducing a substance that would cause a substance in the groundwater to exceed the maximum contaminant level ("MCL") or increase existing MCL exceedance.

Id. § 257.3-4(c)(2)(i)-(ii). The EPA has set the MCL for nitrates at 10 mg/L. *Id.* § 141.62.

The parties do not dispute that the Dairy is neither a qualified landfill nor a facility for the disposal of hazardous waste. Thus, to prevail on their open dumping claim, Plaintiffs must establish the following: (1) a solid waste is managed or disposed at the Dairy (2) that "contaminates" an "underground drinking water source"[27] (3) beyond the solid waste boundary. *See S. Road Assocs. v. Int'l Bus. Machines Corp.*, 216 F.3d 251, 257 (2d. Cir. 2000); *see also Parker v. Scrap Metal Processors, Inc.*, 386 F.3d 993, 1012 (11th Cir. 2004).

Accordingly, because of the substantial overlap in these two claims, this Court's analysis will proceed as follows: (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

[27] There is no dispute that groundwater is an "underground drinking water source." 40 C.F.R. § 257.3-4(c)(4), nor that the MCL for nitrate is 10 mg/L, *id.* § 141.62. Plaintiffs' brief does not address whether the Dairy's practices also contaminate surface water, as defined under EPA regulations, *see* ECF No. 211 at 11-13, 27-28; therefore, this Court's analysis of their open dumping claim is limited to an analysis of the Dairy's alleged contamination of groundwater.

"contaminates" the groundwater or surface water, and relatedly whether this water is "beyond the solid waste boundary;" (3) whether, if the nitrates are reaching water, this contamination is posing an "imminent and substantial endangerment" to human health or the environment; and (4) whether the Defendants are all responsible parties under RCRA.

3. Whether Defendants' Manure Can be Characterized as a "Solid Waste" Under RCRA

Under RCRA, the definition of "solid waste" includes "any garbage, refuse, . . . and other *discarded material*, including solid, liquid, semisolid or contained gaseous material resulting from … agricultural operations…." 42 U.S.C. § 6903(27) (emphasis added). Although RCRA does not define "discarded material," the Ninth Circuit has interpreted the term according to its ordinary meaning, as "to cast aside; reject; abandon; give up." *Safe Air*, 373 F.3d at 1041.[28]

[28] Further, the court in *Safe Air* found the reasoning of several extra-circuit cases persuasive in identifying whether a material qualifies as "solid waste," particularly "(1) whether the material is 'destined for beneficial reuse or recycling in a continuous process by the generating industry itself;' (2) whether the materials are being actively reused, or whether they merely have the potential of being reused; (3) whether the materials are reused by its original owner, as opposed to use by a salvager or reclaimer." *Id*. at 1043 (internal citations omitted).

As the Ninth Circuit has recently articulated, in reference to RCRA's legislative history, "[t]he key to whether a manufactured product is a 'solid waste,' then, is whether that product 'has served its intended purpose and is no longer wanted by the consumer.'" *Ecological Rights*, 713 F.3d at 515 (*citing* H.R. Rep. No. 94-1491(I) at 2 (1976)). Specifically with regards to manure, both RCRA's legislative history and EPA's supporting regulations explicitly state that RCRA's provisions do not apply to agricultural wastes, but only to the extent the wastes are "returned to the soil as fertilizers or soil conditions." 40 C.F.R. § 257.1(c)(1) (EPA regulations stating that RCRA provisions "do not apply to agricultural wastes, including manure and crop residues, returned to the soil as fertilizers or soil conditions"); *see Safe Air*, 373 F.3d at 1045-46 (noting that RCRA's legislative history explicitly states that "[a]gricultural wastes which are returned to the soil as fertilizers or soil conditioners are not considered discarded materials") (citing H.R. Rep. No. 94-1491(I) at 2 (1976), reprinted in 1976 U.S.C.C.A.N. 6238, 6240).

In its July 2013 Order Denying Defendants' Motion to Dismiss, this Court found that manure could plausibly be considered "solid waste"—as a legal matter—when it is over-applied to fields and managed and stored in ways that allow it to leak into the soil because at that point, the manure is no longer "useful" or "beneficial" as a fertilizer. ECF No. 72 at 11. In so finding, this Court declined to adopt Defendants' blanket interpretation that manure, used as a fertilizer, can

never be considered a "solid waste" under RCRA. Rather, this Court determined that the issue of whether manure can be considered a solid waste hinges, factually, on whether the manure is handled and used in such a manner that its usefulness as a fertilizer is eliminated. In so deciding, this Court acknowledged the practical ramifications of determining when manure becomes "discarded" or ceases to be "useful or beneficial," *see Safe Air*, 373 F.3d at 1042; *Ecological Rights*, 713 F.3d at 515, as well as the express declarations of Congress and the EPA that RCRA does not apply to agricultural wastes "returned to the soil as fertilizers," *see Safe Air*, 373 F.3d at 1045-46.

At that early stage in the proceedings, considering Plaintiffs' allegations that Defendants applied manure in amounts well beyond what the crop would use as a fertilizer, this Court could envision circumstances that manure, although generally a useful fertilizer, could be used or handled in a way that its otherwise useful purpose as a fertilizer was eliminated or disregarded and thus transformed into a discarded material. As aptly stated by the court in *Water Keeper Alliance, Inc. v. Smithfield Foods, Inc.*, "no blanket animal waste exception excludes animal waste from the 'solid waste' definition. Instead, the determination of whether defendants 'return' animal waste to the soil as [fertilizer] is a functional inquiry focusing on defendants' use of the animal waste products rather than the agricultural waste definition." 2001 WL 1715730, at *4-5 (E.D.N.C. Sept. 20, 2001) ("The question

of whether defendants return animal waste to the soil for fertilization purposes or instead apply waste in such large quantities that its usefulness as organic fertilizer is eliminated is a question of fact."). ECF No. 72 at 11-13. After all, if Congress intended to exclude *all* agricultural wastes from RCRA's provisions, it would not have qualified its exception with the phrase, "which are *returned to the soils as fertilizers* or soil conditioners," *see Safe Air*, 373 F.3d at 1045-46, nor allowed for the possibility that "solid waste" originate from "agricultural operations," *see* 42 U.S.C. § 6903 (27).

Plaintiffs acknowledge that manure can generally be a useful product when stored and subsequently used as fertilizer and sold to third parties; rather, they assert that the facts here demonstrate Defendants 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 it on unlined, native soils. ECF No. 211 at 15-25.

In response to the contentious issue of whether manure can ever be characterized as a solid waste, Defendants' again cite to sundry precedent, previously identified in their Motion to Dismiss, to establish the following principles: (1) using a material is not waste under RCRA even if some portion escapes into the environment; (2) in determining whether a material is waste, courts do not engage in a "rigorous, point-by-point determination of whether every

portion of the material actually serves its intended purpose on every occasion it is used, and then declare one portion waste and the other not;" (3) RCRA does not require that fertilizer be used at some "theoretical minimum effective rate" or "perfect rate" in order to guarantee no escapement or over-application; and (4) RCRA was not intended to regulate farmers' storage or use of fertilizer. ECF Nos. 190 at 7-10; 191 at 8. On the contrary, Defendants maintain that the manure generated, stored, and used at the Dairy is a useful product, sold and gifted to third parties, and eventually applied to agricultural fields to fertilize crops. ECF No. 190 at 11-19.

This Court now turns to the evidence submitted regarding Defendants' land application, storage, and composting of manure.[29]

i. Land Application

Plaintiffs assert excess manure applied onto agricultural fields constitutes "discarded material" because such waste cannot effectively be used by crops as fertilizer and therefore has no beneficial use nor is it used as it was intended to be used. ECF No. 211 at 16. Defendants maintain, *inter alia*, that manure was applied with reference to the DNMP with the purpose to fertilize crops and any

[29] This Court finds insufficient briefing on the issue of whether the manure excreted from the cows in the confinement pens is a solid waste. As such, this issue is reserved for trial.

failure in interpreting the DNMP's requirements does not establish that the Dairy's applications constituted discard. ECF No. 256 at 11-13.

This Court finds there is no triable issue that when Defendants excessively over-apply manure to their agricultural fields—application that is untethered to the DNMP and made without regard to the fertilization needs of their crops—they are discarding the manure and thus transforming it to a solid waste under RCRA. Because the excess manure is not "returned to the soil as fertilizers," it is not exempt from RCRA's provisions. *See Safe Air*, 373 F.3d at 1045-46. Although Defendants' failure to adhere to the DNMP and implement its Best Management Practices is not actionable under RCRA, it provides strong evidence that the Dairy's application of manure was not "useful" or "beneficial" but rather constituted discard. *Id.* at 1042; *Ecological Rights*, 713 F.3d at 515

First, the evidence presented demonstrates Defendants failed to use manure nutrient analyses or consider average crop yields when determining manure applications. Although they may have taken samples of the manure, samples from the main lagoon only, the analyses obtained were not actually taken into account when determining application rates. Rather, Mr. Boivin admitted that the Dairy merely referenced the estimates as listed in the DNMP when determining how much manure to apply. ECF No. 211-1 ¶ 68.a (citing ECF No. 228-1); *see also* ECF Nos. 190-3 ¶ 58; 256-1 ¶ 68.a. For instance, when determining how much

manure to apply based on nitrate concentration, Mr. Boivin admitted to merely referencing the DNMP's *estimated* concentration of 1.5 lbs/1000 gallons, as opposed to *actual* concentrations of the Dairy's manure, which ranged from 1.67 lbs/1000 gallons to 33.7 lbs/gallons. ECF No. 211-1 ¶ 68.a.

Second, the uncontroverted evidence presented demonstrates that Defendants failed to account for residual manure already present in the soil when determining how much manure to apply. As Mr. Boivin admitted in his deposition, Defendants applied manure, millions of gallons of manure, to fields that were already sufficiently saturated with nitrates from previous applications. *Id.* ¶ 68.d (citing Boivin deposition, ECF No. 228-1). As such, any additional applications could not be used as fertilizer by the crops.[30] For instance, Mr. Boivin

[30] Although Plaintiffs highlight Defendants' application of manure to bare ground where no crop was planted, ECF No. 211-1 ¶ 72 (citing ECF No. 228-1), this Court recognizes that the DNMP, although it suggests avoiding applications to bare ground, also notes that there is a lag time between when the manure is applied and when the constituents break down into beneficial fertilization nutrients. ECF No. 226-1 (COWPAL000477). Plaintiffs also highlight that Defendants applied manure on numerous occasions until the lagoons were empty, ECF No. 211-1 ¶ 71; however, this Court questions how dispositive this particular evidence is,

acknowledged that on one particular occasion, although samples from the top two feet of the soil column showed nitrate levels in excess of what the alfalfa crop could use as fertilizer, the Dairy proceeded to apply *7,680,000* gallons of manure onto the already sufficiently fertilized field. ECF No. 304 at 3. Plaintiffs' expert Dr. Shaw cited numerous similar examples of non-agronomic applications, which alone resulted in tens of millions of gallons of manure applied to fields requiring no fertilization. *See* ECF No. 237-2 ¶¶ 76-78, 83-84, 101, 107, 109, 133, 144, 145, 149, 155, 157. This provides further uncontroverted evidence that Defendants' manure was not "returned to the soil as fertilizer," considering the crop could not possibly use the manure constituents as fertilizer.

Defendants do not rebut this compelling evidence with anything more than a conclusory allegation that Cow Palace calculated its manure applications with reference to the DNMP. ECF No. 256-1, ¶ 55. The uncontroverted evidence shows otherwise— that none of the parameters for that application algorithm were calculated or followed in practice.

Finally, the excessively high levels of manure constituents in the Dairy's agricultural fields, based on post-harvest soil sampling by both parties, indicate that Defendants had applied manure at rates in excess of what the crop actually

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considering, in theory, the lagoons could have been pumped empty before the fields were completely fertilized.

could or did use. Specifically, samples taken below crop root zones—that is, the soil depth where no crop roots are present to use manure constituents as fertilizer—showed very high nitrate and phosphorous levels.[31] ECF No. 211-1 ¶ 77.

Accordingly, because Defendants manure applications were not only untethered to DNMP's Best Management Practices but done without regard to crop fertilization needs, presumably in an effort to discard their excess supply, the otherwise beneficial purpose of manure as fertilizer was eliminated and the manure discarded.

ii. Lagoons

Plaintiffs also assert that the otherwise beneficial manure stored in the Dairy's several lagoons is transformed into "solid waste" under RCRA when it leaks into the soil and accumulates in the environment, losing all beneficial fertilization and commodity purposes. ECF No. 211 at 21. Defendants maintain

[31] The EPA's most recent update to its AOC—which directs the dairies, including Cow Palace, to maintain soil nitrate in to the top two feet of soil below 45 parts per million—found three of Cow Palace Dairy's fields in excess of this concentration based on 2013 post-harvest soil sampling. ECF No. 305-4 at 4-5. Spring 2014 sampling showed similar results. *Id.* at 5; *see also id.* at 6 (noting that the hundreds of tons of nitrate found in the third foot of soil, which cannot be effectively used by most crops, "has effectively been lost to the environment.").

that the lagoons are constructed, maintained, and operated to NRCS standards, which allow for permeability, and merely serve as temporary storage until the manure can be applied as useful fertilizer. ECF No. 256 at 7-8, 14-15.

The Ninth Circuit recently addressed a similar problem of whether a non-hazardous material was transformed into a solid waste when it escapes into the environment as an expected consequence of its intended use. In *Ecological Rights*, an environmental group asserted that PCP-based wood preservative that leaked, spilled, and dripped from utility poles constituted a solid waste under RCRA. 713 F.3d at 514. In concluding that is it not, the Ninth Circuit held that the "PCP-based wood preservative that is released into the environment as a natural, expected consequence of its intended use—as a preservative for wooden utility poles—is not *automatically* 'solid waste' under RCRA's definition of that term.'" *Id.* at 518 (emphasis added).

That being said, the Ninth Circuit expressly emphasized that it was *not* deciding "whether or under what circumstances PCP, wood preservative, *or another material* becomes a RCRA 'solid waste' when it accumulates in the environment as a natural, expected consequence of the material's intended use." *Id.* (emphasis added). Referencing persuasive authority, the Ninth Circuit indicated that there could be circumstances in which a material that accumulates in the environment, long after it had served its intended purpose, could meet RCRA's

statutory definition of "solid waste." *Id.* (citing, among other precedent, *Conn. Coastal Fishermen's Ass'n*, 989 F.2d 1305, 1316 (2d. Cir. 1993)) (holding that "materials left to accumulate long after they had served their intended purpose"—specifically, five million pounds of lead bullets and 11 million pounds of clay target debris accumulated for nearly 70 years at a firing range—met RCRA's statutory definition of solid waste") (internal quotation marks omitted). Thus, the Ninth Circuit left open the possibility that such accumulated material could properly be characterized as a solid waste.

Here, the manure leaking from Defendants' lagoons is not a natural, expected consequence of the manure's use or intended use but rather a consequence of the poorly designed temporary storage features of the lagoons. The consequence of such permeable storage techniques, thus, converts what would otherwise be a beneficial product (the stored manure) into a solid waste (the discarded, leaching constituents of manure) under RCRA because the manure is knowingly abandoned to the underlying soil. *Ecological Rights*, 713 F.3d at 515 (noting the plain meaning of "discarded" includes "abandon"). Save for one lagoon, Defendants possess limited documentation to evidence that lagoons were actually constructed to meet NRCS standards. However, even assuming the lagoons were constructed pursuant to NRCS standards, these standards specifically allow for permeability and, thus, the lagoons are designed to leak. ECF Nos. 190-1

¶ 70; 286-1 ¶¶ 69-70.

Moreover, considering the specific circumstances regarding Defendants' lagoons, which allow manure to leak and accumulate into the soil, potentially at the rate of millions of gallons annually, this Court also finds such dangerous accumulations to be the type contemplated by the Ninth Circuit in *Ecological Rights*; thus, this manure is discarded and properly characterized as a solid waste under RCRA. Plaintiffs have presented indisputable evidence that such leaking is leading to dangerous accumulations of nitrates in the deep soil between the lagoons that eventually will reach the underlying aquifer. Although there is a genuine dispute as to the magnitude of the leaking, there can be no dispute that the lagoons are leaking and thus allowing nitrate to accumulate in the soil at rates possibly higher than three million gallons per year. ECF No. 212 ¶¶ 28, 34, 39, 43, 48, 64, 69, 74. As evidenced by sampling between impoundments, nitrates were found at depths as great as 47 feet, evidencing horizontal seepage between the lagoons. *Id.* ¶ 57. Further, although Plaintiffs were not permitted to take samples beneath the Dairy's lagoons, samples beneath a nearby abandoned lagoon—a lagoon of similar design and construction and overlying similar soil type—evidence concentrations of nitrate, phosphorus, and ammonium. *Id.* ¶¶ 77- 78, 82-83. Because the soils underlying the Dairy are not conducive to denitrification, the nitrate that accumulates as a result of the leaking lagoons will continue to leach into the soil

and migrate toward the underlying aquifer. Accordingly, because the manure stored in the Dairy's lagoons is accumulating in the environment—possibly at accumulation rates of millions of gallons per year—as a consequence of the lagoons' storage design, it is properly characterized as a discarded material and thus a "solid waste" under RCRA.

iii. Composting

Finally, Plaintiffs assert that Defendants knowingly discard manure when they compost manure on unlined, native soils, which allow for leaching and accumulation of nitrate below the surface. ECF No. 211 at 24-25. Plaintiffs' sampling showed manure nutrients had leached deep into the soil underlying the composting operation, and once leached, Defendants could no longer put the substance to its beneficial use. *Id.* at 25. Defendants maintain that they do not discard manure simply by composting it on the bare ground. ECF No. 256 at 9-10.

Here, this Court finds that the manure in the unlined composting area is both knowingly abandoned and accumulating in dangerous quantities and thus a solid waste. As with the lagoons, this Court finds that leaching into the soil is a natural and intended consequence of preparing (on unlined soil) the manure for later use as compost, not while *actually using* it for its beneficial purpose as a fertilizer. The 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. *Ecological Rights*, 713 F.3d at 515 (noting the plain meaning of "discarded" includes "abandon"). Moreover, sampling of the soil beneath the composting area indicates that manure constituents are accumulating in the underlying soils without the possibility of denitrification or crop uptake to help mitigate these accumulations. As such, these dangerous accumulations of nitrate will continue to migrate toward the underlying aquifer. By purposefully composting wet manure on open, native soil which causes manure constituents to leach into and accumulate in the soil, Defendants have discarded those constituents as a solid waste under RCRA.

Accordingly, because Plaintiffs have demonstrated that no reasonable trier of fact, upon reviewing the record here, could dispute that Defendants' excessive application of manure onto agricultural fields, untethered to the DNMP or the fertilization needs of the crops; and storage and composting of manure in ways that result in dangerous accumulations of nitrate in the environment, transformed its manure, an otherwise beneficial and useful product, into a discarded material and thus a RCRA solid waste.

This Court now turns to the issue of whether Defendants' handling, storage, and disposal of the manure contaminated the environment.

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4. Whether the Dairy's Operations May be Contaminating the Environment

i. Groundwater

Plaintiffs assert that nitrate from the manure, over-applied and leaking from the impoundments and compost area, is reaching groundwater. ECF No. 211 at 26. Defendants fault Plaintiffs for failing to provide any opinion regarding the time it would take for nitrates to migrate through the relatively thick vadose zone and reach the aquifer, as well as failing to quantify the Dairy's contribution. ECF No. 256 at 15-16. Defendants maintain that the groundwater testing is merely detecting an historic nitrate plume, considering the agricultural history of the Yakima Valley, or otherwise affected by other sources, such as septic systems and irrigated croplands. *Id.* at 15-17.

There is no triable issue as to whether the Dairy's operations are contributing to the high nitrate levels in the groundwater. Although the parties dispute the significance of the Dairy's contribution and the time it will take for the nitrates in soils underlying Cow Palace to reach the groundwater, there can be no genuine dispute that the nitrates beneath the crop root zones at the Dairy will continue to migrate through the vadose zone to the underlying aquifer. *See* ECF Nos. 211-1 ¶ 131; 229-2; *see also* ECF No. 228-1 ("Q: "[I]s it more likely than not that Cow Palace could be the cause of this contamination? . . . A: Yes.").

First, sampling by Plaintiffs, the EPA, and Defendants all demonstrate excess levels of nitrate in the groundwater, with concentrations as high as 234 mg/L in one monitoring well. *See* ECF Nos. 213-1, ex. C; 223 ¶¶ 67-94. Although Defendants fault Plaintiffs for "cherry-picking" the well data, AOC monitoring wells downgradient of the Dairy evidence high nitrate levels frequently in excess of the MCL. On the other hand, upgradient well data that has not been impacted by human-influenced nitrogen sources, evidences small amounts of nitrates. ECF No. 223 ¶ 121. Further, the presence of tracer chemicals and dairy pharmaceuticals, the same pharmaceuticals detected at the Dairy, in downgradient wells also indicates that the Dairy's operations are contributing to the high nitrate levels in the groundwater. ECF No. 211-1 ¶ 117.

Second, besides the purely hypothetical musings of Defendants' soil expert, Scott Stephen, the soils underlying the Dairy are not conducive to denitrification considering the predominant soils present little potential for any loss of nitrate through denitrification. ECF Nos. 211-1 ¶ 35; 223 ¶ 49. As such, given the highly mobile nitrates found below the crop root zones as well as the highly permeable soils underlying the Dairy, the nitrates will migrate to the aquifer with water, be it from rainfall, snowmelt, irrigation practices, or more liquid manure to help transport it. Even Defendants' expert Dr. Melvin has conceded this eventuality. ECF No. 228-1.

Finally, Plaintiffs have presented ample evidence that groundwater recharge is occurring relatively rapidly. Frequent temperature and water table level fluctuations, along with EPA's age-dating of wells and the presence of modern-day dairy pharmaceuticals, corroborate the assertion that surface activities are rapidly impacting groundwater activities and that groundwater recharge is most likely nowhere near the 70-year timeline previously opined by Dr. Melvin.[32] ECF No. 211-1 ¶ 127-28. Even if Defendants contend such contamination could take "decades," Cow Palace Dairy has operated at its site for approximately 40 years. ECF No. 223 ¶ 105. Accordingly, Defendants activities are contributing to the contamination of the groundwater.

Although Defendants attempt to minimize their contribution by pointing to other nitrogen-loading sources, such as residential septic systems, the EPA's most recent data set under the AOC demonstrates just how significant the Dairy's contribution is. "Whereas a three-person residence generates about 30 pounds of nitrogen per year . . . a single lactating cow produces about 1 pound of nitrogen per day or 365 pounds of nitrogen per year." ECF No. 305-4 at 8. While there are 224 residential septic systems within one mile downgradient of the cluster Dairies,

[32] It is worth noting that Dr. Melvin, upon being presented evidence of the fairly rapid rate of groundwater recharge, conceded that his 70-year recharge timeline was probably not accurate. ECF No. 228-1.

Cow Palace Dairy has more than 7,000 milking cows alone. *Id.* Its entire herd produces over 100 million gallons of manure per year, with millions of those gallons leaking from its lagoons and compost area, and being applied to fields that cannot possibly use the substance as fertilizer. Given these numbers, any attempt to diminish the Dairy's contribution to the nitrate contamination is disingenuous, at best.

That being said, the statutory standard does not require that Plaintiffs quantify Defendants' contribution or demonstrate that Defendants are the sole cause of the contamination; rather, Plaintiffs need only show that the Dairy's operations "contributed" or are "contributing" to disposal of solid waste which "may" be posing a serious threat to public health. *See* 42 U.S.C. §§ 6903(3), 6972(a)(1)(B); *see also* 40 C.F.R. § 257.3-4(a) (defining contaminating to mean causing that groundwater to exceed the MCL *or cause a further increase* in groundwater that already exceeds the MCL).

Accordingly, a reasonable trier-of-fact, given the evidence presented, could come to no other conclusion than that the Dairy's operations are contributing to the high levels of nitrate that are currently contaminating—and will continue to contaminate as nitrate present below the root zone continues to migrate—the underlying groundwater.

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ii. *Surface Water*

Plaintiffs also assert that Defendants' activities are contaminating surface water, both through the interconnectedness of contaminated shallow groundwater and nearby surface waters, and directly from surface runoff. ECF No. 286 at 20. Defendants question what evidence Plaintiffs have produced to demonstrate any surface water discharge and whether surface waters have been affected by the Dairy's operations. ECF No. 190 at 19.

Because of disputed issues of material fact regarding whether the Dairy's operations are affecting surface water in the area, this Court reserves this issue for determination at trial.

iii. Contamination "Beyond the Solid Waste Boundary"

Plaintiffs assert that contamination from the Dairy extends beyond the "solid waste boundary," which is defined as the "outermost perimeter" of where waste is disposed. ECF No. 211 at 28 (citing 40 C.F.R. § 257.3-4(c)(5)). Because it is undisputed that groundwater beneath the Dairy generally flows to the south and southwest, any nitrates that migrate into the underlying aquifer will either be extracted from a well or eventually discharged to surface water. *Id.* As discussed above, well data downgradient of the Dairy evidences high nitrate concentrations, concentrations to which the Dairy's operations may be contributing. Accordingly,

nitrate contamination extends beyond the "outermost perimeter" of where the Dairy discards its manure and thus, there is no genuine dispute that the Dairy's activities are contaminating an area "beyond the solid waste boundary."

5. Whether Contamination Poses a Substantial and Imminent Endangerment to Health or the Environment

Plaintiffs assert that the excess nitrate levels found in the groundwater, a result of contamination from the Dairy's operations, may present an imminent and substantial endangerment to health or the environment.[33] First, "courts have emphasized the preeminence of the word 'may' in defining the degree of risk needed to support" liability under RCRA. *Me. People's Alliance v. Mallinckrodt, Inc.*, 471 F.3d 277, 288 (1st Cir. 2006). Second, the term imminent "does not require a showing that actual harm will occur immediately so long as the risk of threatened harm is present." *Price v. U.S. Navy*, 39 F.3d 1011, 1019 (9th Cir. 1994). Third, an endangerment is "substantial" when it is "serious." *Burlington N. & Santa Fe Ry. Co. v. Grant*, 505 F.3d 1013, 1021 (10th Cir. 2007). Finally, a substantial endangerment does not require proof of actual harm but rather "a threatened or potential harm." *Price*, 39 F.3d at 1019. "[I]f an error is to be made

[33] Plaintiffs also assert that Dairy's operations are creating a risk of harm to the environment—that is, the groundwater and surface water—although the full extent of contamination and migration is unknown. ECF No. 211 at 31-32.

in applying the endangerment standard, the error must be made in favor of protecting public health, welfare, and the environment." *Burlington N.*, 505 F.3d at 1021 (internal quotation marks and citation omitted).

The EPA set the nitrate MCL at 10 mg/L because of the serious health risks, such as various types of cancer, that arise when water is consumed at or above this level. *See* 56 Fed. Reg. 3526 (Jan. 30, 1991). Plaintiffs contend that there is evidence that exposure even below this level may present a risk to public health. ECF No. 211 at 29. As evidenced by Defendants' own testing pursuant to the AOC of residences within one-mile of the Dairy, 66 of the 115 residences tested exceeded the MCL for nitrates, with some residences exceeding 50 mg/L. ECF No. 213 ¶ 14. Further, Dolsen Companies' independent testing of dairy employee housing confirmed the presence of high concentrations of nitrates in the drinking water in the area; seven of the eight residences exceeded the MCL, the highest having nitrate concentrations at 72.8 mg/L, and the one non-exceeding residence having nitrate concentrations at 9.18 mg/L. *Id.* ¶ 15.

Alarmingly, Defendant Cow Palace's briefing seems to suggest that this Court wait to act until a young infant in the area is first diagnosed with methemoglobinemia, a health effect that occurs at the lowest dose of nitrate consumption. ECF No. 256 at 17 (asserting that because "effects on the most sensitive endpoint in the most sensitive population is not occurring in the Yakima

Valley," whether nitrates in the groundwater present an imminent and substantial endangerment is in dispute). Or alternatively, the steps the Dairy has already taken "reduce" any threat that nitrate contamination may pose because of the reverse osmosis filter systems the Dairy has offered to provide or maintain for nearby residents. *Id.* at 17-18.

Defendants again misstate the requirements of RCRA. Congress provided that a party violates RCRA when its actions "may" be endangering public health, welfare, or the environment. *Me. People's Alliance*, 471 F.3d at 288. Further, proof of actual or immediate harm is not necessary; rather, Plaintiffs need only present evidence that the contamination currently poses "threatened or potential harm." *Price*, 39 F.3d at 1019. The undisputed facts are that residential wells downgradient of the Dairy exceed the maximum contaminant level, as established by the EPA, and even if the Dairy's AOC obligations are helping to "reduce" the risk of the adverse health effects of the nitrate-contaminated water to nearby residents, the risk still remains to these residents, as well as to those beyond this limited one-mile downgradient zone. Considering their installation of reverse osmosis units in all Dairy employee housing, this Court questions whether Defendants truly believe the risk of nitrate contamination to be overstated. ECF No. 211-1 ¶¶ 14-15 14. Accordingly, there can be no dispute that the Dairy's

operations may present an imminent and substantial endangerment to the public who is consuming the contaminated water.[34]

6. Defendants' Liability

A private party may bring suit under RCRA "against any person . . . including any past or present generator, past or present transporter, or past or present owner or operator of a treatment, storage, or disposal facility, who has *contributed or who is contributing* to the past or present handling, storage, treatment, transportation, or disposal of any solid or hazardous waste which may present any imminent and substantial endangerment to health or the environment."[35] 42 U.S.C. § 6972(a)(1)(B) (emphasis added). The Ninth Circuit has defined "contribute" to mean "lend assistance or aid to a common purpose," "have a share in any act or effect," "be an important factor in," or "help to cause."

[34] Because the Court finds the Dairy's manure presents a risk of harm to human health, it may also necessarily present a risk of harm to the environment.

[35] RCRA defines the term "person" as "an individual, trust, firm, joint stock company, corporation (including a government corporation), partnership, association, State, municipality, commission, political subdivision of a State, or any interstate body and shall include each department, agency, and instrumentality of the United States." 42 U.S.C. § 6903(15). The parties do not dispute that each Defendant meets the definition of "person" under RCRA.

Hinds Invs., L.P. v. Angioli, 654 F.3d 846, 850 (9th Cir. 2011). "[T]o state a claim predicated on RCRA liability for 'contributing to' the disposal of hazardous waste, a plaintiff must allege that the defendant had a measure of control over the waste at the time of its disposal or was otherwise actively involved in the waste disposal process." *Id.* at 852. Congress intended that the term "contribution" be "liberally construed," and such term includes "a share in any act or effect" giving rise to disposal of the wastes that may present an endangerment. *United States v. Aceto Agric. Chems. Corp.*, 872 F.2d 1373, 1383-84 (2d Cir. 1989).

As an initial matter, Cow Palace, Dolsen Companies, and Three D Properties are all past or present owners of the land on which the Dairy operates. Dolsen Companies previously owned 425 acres of land on which the Dairy operates but transferred those parcels—which included cow pens, milking barns, composting area, the majority of the lagoons, and almost half of the agricultural fields—to Cow Palace after this litigation commenced. Three D and Cow Palace are current owners, with Three D owning approximately fifty percent of the land used by the Dairy, some of which Adam Dolsen transferred to Three D after this litigation commenced. Thus, all three Defendants are "past or present owners" of the land under RCRA. *See* 42 U.S.C. § 6972(a)(1)(B).

Although Three D and Dolsen Companies hold themselves out as mere "passive landowners," with no involvement in or control of the Dairy's operational

practices, ECF No. 191 at 12-13, there is no genuine issue surrounding whether all three entities had some "measure of control" over the Dairy's manure management. Most telling, Mr. Boivin testified that although he is "the top person in charge at Cow Palace Diary" he "*ultimately reports*" to Bill Dolsen. Such evidence strongly indicates that Bill Dolsen—as President, Chairman, and Director of The Dolsen Companies, sole manager of Three D Properties, and registered agent for Cow Palace—exercises "some measure of control" of the Dairy on behalf of all three entities. Further uncontroverted evidence showing the interconnected relationship of these three entities, with the Dolsens at the core, includes the following:

- The Dolsen Companies is listed as the owner/operator of the Dairy on its DNMP;
- Bill Dolsen, has primary authority for decisions involving real property acquisitions by Cow Palace and Three D;
- Both Dolsens used their authority to accept the AOC affecting Dairy's operations and either met or spoke with other state and federal regulatory representatives;
- Both Dolsens were contacted when there was a breach in one of the lagoons;
- Adam Dolsen, as Vice President of Dolsen Companies, had the authority to fire and hire management at the Dairy and met with management one or two times per month;
- The Dolsen Companies receives and maintains numerous records regarding the Dairy, including manure transfers, offsite manure

applications, compost transfers, laboratory analyses of liquid manure samples, annual yields of crops, and various safety and inspection records.

- Adam and Bill Dolsen, along with Vern Carson, safety director for the Dolsen Companies, made the decision to install reverse osmosis units in all Dairy employee housing around 2011 or 2012, from which the employees would obtain their drinking water.

Taken as a whole, there can be no doubt that each of these entities, although legally separate, maintain or maintained some "measure of control" over the Dairy's operations or "share[d] in any act or effect" of the Dairy's management practices. *Hinds*, 654 F.3d at 850; *Aceto*, 872 F.2d at 1383-84. Although Defendants seek to hide behind the legally separate entities, Defendants' abject failure to respect the corporate divisions when managing the Dairy's operations necessarily results in all three forms being held responsible. Accordingly, Defendants The Dolsen Companies, Three D, and Cow Palace are all responsible parties under RCRA.[36]

[36] As this stage in the proceedings, this Court need not determine, generally, what remedies are available under RCRA to Plaintiffs here and, specifically, for which actions each Defendant, as past and current owners of the site, are responsible. 42 U.S.C. § 6972(a) (empowering courts to "restrain any person who has contributed or who is contributing to the past or present handling, storage, treatment, transportation, or disposal of any solid or hazardous waste . . ., to order such

7. Conclusion

In conclusion, this Court finds no genuine issue of material fact that Defendants' application, storage, and management of manure at Cow Palace Dairy violated RCRA's substantial and imminent endangerment and open dumping provisions and that all Defendants are responsible parties under RCRA. This Court reserves remedial issues, as well as the other remaining issues as discussed above, for trial.

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person to take such other action as may be necessary, or both . . ., and to apply any appropriate civil penalties" available under RCRA); *see Meghrig*, 516 U.S. at 483 (holding that "RCRA is not principally designed to effectuate the cleanup of toxic waste sites or to compensate those who have attended to the remediation of environmental hazards"); *but see Express Car Wash Corp. v. Irinago Bros., Inc.*, 967 F.Supp. 1188, 1192 (D. Or. 1997) ("The Supreme Court's decision in *Meghrig* thus defines the two endpoints of the RCRA citizen suit continuum: a plaintiff facing an imminent threat from hazardous waste, when no remediation has yet taken place, clearly can sue RCRA for an injunction to force appropriate parties to clean up the contamination."); *see also Tanglewood E. Homeowners v. Charles-Thomas, Inc.*, 849 F.2d 1568, 1574 (5th Cir. 1988) ("The remedies package of [RCRA] includes civil penalties, injunctive relief, and attorney's fees.").

ACCORDINGLY, IT IS HEREBY ORDERED:

1. Defendant Cow Palace, LLC's Motion for Summary Judgment (ECF No. 190) is **DENIED**.

2. Defendants The Dolsen Companies' and Three D Properties' Motion for Summary Judgment (ECF No. 191) is **DENIED**.

3. Plaintiffs' Motion to Exclude Expert Testimony of Scott Stephen (ECF No. 193) is **DENIED**.

4. Defendant Cow Palace, LLC's *Daubert* Motion to Exclude Testimony in Reliance on the EPA Report and to Exclude EPA Report Under Rule 403 (ECF No. 200) is **DENIED**.

5. Plaintiffs' Motion to Exclude Expert Testimony of James Maul (ECF No. 202) is **DENIED**.

6. Plaintiffs' Motion to Exclude Expert Testimony of Michael Backe (ECF No. 206) is **DENIED**.

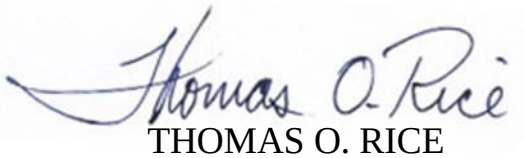
7. Defendant Cow Palace LLC's Motion to Dismiss (ECF No. 209) is **DENIED**.

8. Plaintiffs' Motion for, and Memorandum in Support of, Summary Judgment (ECF No. 211; *see* ECF No. 234-1 (praecipe)) is **GRANTED in part**.

9. Cow Palace, LLC'S Motion to Strike Undisclosed Expert Testimony (ECF No. 237) is **DENIED**.

The District Court Executive is hereby directed to enter this Order and provide copies to counsel.

DATED January 14, 2015.



THOMAS O. RICE
United States District Judge

Mandatory GMO Labeling Laws: Overview and Status of Current Legal Issues

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Enacted GMO Labeling Laws

- **Connecticut Public Act 13-183 (2013)**

On June 25, 2013, Connecticut's governor signed legislation that mandates labeling of "food intended for human consumption" as well as "seed or seed stock that is intended to produce food for human consumption" when that food, seed, or seed stock is genetically modified or contains ingredients that were produced using genetic modification. For such products, the required labeling must contain the words "Produced with Genetic Engineering." Exceptions to labeling are provided for alcoholic beverages, food intended for immediate consumption, most products sold by a farmer directly to a consumer, and non-genetically engineered animals that had been supplied with genetically engineered feed or drugs. This law will be enforced by the Commissioner of Consumer Protection. Civil penalties of up to one thousand dollars per day per marketed product are authorized against each person who knowingly violates the statute.

The statute included conditions that must be satisfied before the law will become effective. It will not become effective until similar labeling requirements are enacted in neighboring states. Specifically, two triggers must be satisfied before the law will become effective. First, four additional states, including one that borders Connecticut, must enact mandatory labeling laws. Second, the aggregate population within eight defined Northeastern states that have mandatory labeling must exceed twenty million according to the 2010 census.

- **Maine Legislative Document 718 (2014)**

The Maine legislature joined Connecticut by passing mandatory labeling legislation in June 2013. This legislation, known as An Act to Protect Maine Consumers' Right to Know About Genetically Engineered Food, was enacted on January 12, 2014 without the governor's signature. The provisions of this law bear significant similarity to the Connecticut statute by requiring that "any food offered for retail sale that is genetically engineered must be accompanied by a conspicuous disclosure that states, 'Produced with Genetic Engineering.'" It contains exemptions for alcoholic beverages, restaurants, non-genetically engineered animals that have been fed genetically engineered feed, and medical foods. It also provides for a *de minimus* exception where the total weight of genetically engineered food ingredients are less than 0.9 percent of the total weight of a "packaged processed food." As with the Connecticut law, this statute does not authorize private enforcement. The Commissioner of Agriculture, Conservation, and Forestry is charged with enforcement responsibilities. This law will become effective after five contiguous states, including Maine, enact mandatory labeling laws. If this condition is not satisfied by January 1, 2018, the law will be automatically repealed at that time.

- **Vermont House Bill 112 (2014)**

After the enactment of conditional legislation in Connecticut and Maine, Vermont became the first state to initiate mandatory GMO labeling with a so-called "no strings attached" law. Pursuant to the Vermont statute, all food that is offered for sale in Vermont after July 1, 2016 must bear an appropriate label if that food is "entirely or partially produced with genetic engineering." Exemptions, similar in nature to those provided in the Connecticut and Maine legislation, have been provided. Labeling is not required for the following products: (1) food derived from non-genetically modified animals even where they have been fed or injected with genetically modified products; (2) food that has been "grown, raised, or produced" without the "knowing or intentional" use of genetically modified food or seed; (3) food that utilizes genetically engineered enzymes; (4) alcoholic beverages; (5) processed food products containing a *de minimus* amount of genetically modified food ingredients; (6) food that has been verified by an independent organization as not having "been knowingly or intentionally produced from or commingled with food or seed produced with genetic engineering; (7) food prepared for immediate consumption; and (8) medical food.

The Vermont Attorney General is charged with enforcement of this law and has been granted authority to engage in rulemaking for the implementation of the law. Recognizing that a legal challenge to this law was possible, the statute creates a Genetically Engineered Food Labeling Special Fund to be used in any potential litigation arising from the enactment of the statute. House Bill 112 provided for an appropriation from the state of up to $1.5 million into this fund, and immediately upon signing the legislation, Governor Peter Shumlin requested that interested individuals contribute to this fund through the Food Fight Fund Vermont website.

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Endangered Species Act Overview and Resource Update

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&

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I. Background

In 1972, President Nixon called on Congress to develop comprehensive endangered species legislation because he believed that the current conservation efforts in the United States were inadequate at preventing the extinction of our nation's species. Congress answered in 1973 with the Endangered Species Act (ESA)[1]. The policy of the ESA was concerned with the vitality and sustainability of many of our nation's plants and animals. The goal of the ESA is to protect and recover species and their ecosystems which have been otherwise destroyed and prevent the extinction of species who have seen drastic reduction in population[2]. This has been accomplished through preservation of ecosystems and removal of manmade threats to these populations.

One of the major differences between the ESA and other environmental laws are the administrative agencies involved. The ESA is administered by the U.S. Fish and Wildlife Service (FWS) within the Department of Interior and the Commerce Department's National Marine Fisheries Service (NMFS) under the National Oceanic and Atmospheric Administration (NOAA).[3] The FWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife. This can create difficulties for those who may be familiar with dealing with the Environmental Protection Agency on other environmental issues.

The ESA is a powerful statute and the impact on agricultural operations throughout the United States will continue to expand. This impact requires landowners and attorneys to be aware of possible implications and have a general understanding of how the statute works.

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[1] 93 P.L. 205 (1973).
[2] U.S. Fish and Wildlife Services, Endangered Species Act, available at, http://www.fws.gov/endangered/laws-policies/index.html.
[3] National Oceanic and Atmospheric Administration, Endangered and Threatened Marine Species, available at, http://www.nmfs.noaa.gov/pr/species/esa/.

II. Process for Reaching ESA Goals

Under the ESA, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future. For the purposes of the ESA, Congress defined species to include subspecies, varieties, and, for vertebrates, distinct population segments. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened. A petition for listing is required in order to begin the process of endangerment determination. A petition may be submitted by a concerned citizen or organization, or the FWS can create their own petition for listing. Within 90 days the FWS must make a determination as to whether the petition has enough "substantial scientific or commercial information indicating that the petitioned action may be warranted."[4] After determining that the petition contained substantial evidence warranting determination of listing status, the FWS has 12 months to publish its findings.[5] All determinations are to follow administrative rulemaking procedures and be published for public comment.

Section 4 of the ESA requires species to be listed as endangered or threatened solely on the basis of their biological status and threats to their existence, economic impact cannot be taken into consideration.[6] When evaluating a species for listing, the FWS considers five factors: 1) current or threatened damage, destruction or reduction of a species habitat or habitat range; 2) overutilization of the species for commercial, recreational, scientific, or educational purposes; 3) disease or predation; 4) inadequacy of existing protection; and 5) other natural or manmade factors that affect the continued existence of the species.[7] When one or more of these factors imperils the survival of a species, the FWS takes action to protect it. The Fish and Wildlife Service is required to base its listing decisions on the best scientific and commercial information available at the time of review.

The FWS also maintains a list of "candidate" species. These are species for which the FWS has enough information to warrant proposing them for listing but is precluded from doing so by higher listing priorities. While listing actions of higher priority go forward, the FWS works with States, Tribes, private landowners, private partners, and other Federal agencies to carry out conservation actions for these species to prevent further decline and possibly eliminate the need for listing.

The law's ultimate goal is to "recover" species so they no longer need protection under the ESA. Recovery plans describe the steps needed to restore a species to ecological health. FWS biologists write and implement these plans with the assistance of species experts; other Federal,

[4] 16 USCS § 1533.
[5] 16 USCS § 1533. Listed endangered, threatened and candidate species available at, http://www.fws.gov/endangered/species/index.html.
Proposed listing available at, http://ecos.fws.gov/tess_public/pub/SpeciesReport.do?listingType=P.
Candidate species listing available at, http://ecos.fws.gov/tess_public/reports/candidate-species-report.
[6] 16 USCS § 1533.
[7] 16 USCS § 1533.

State, and local agencies; Tribes; nongovernmental organizations; academia; and other stakeholders.

III. Critical Habitat Determinations

The ESA also requires the designation of "critical habitat" for listed species when "prudent and determinable."[8] Critical habitat includes geographic areas that contain the physical or biological features that are essential to the conservation of the species and that may need special management or protection. Critical habitat designations affect only Federal agency actions or federally funded or permitted activities, but with many agricultural activities there is some nexus of federal activity. Federal agencies are required to avoid "destruction" or "adverse modification" of designated critical habitat. However, a critical habitat designation does not halt activity on the land if it is merely a "reminder to federal agencies that they must make special efforts to protect the important characteristics of these areas."[9]

Critical habitat may include areas that are not occupied by the species at the time of listing but are essential to species conservation or recovery. Designations are to be based on the best scientific data available but economic impacts, impacts on national security, and any other relevant impacts are to be taken into consideration as well.[10] Some of the factors considered for determination of a critical habitat include 1) space for individual and population growth and for normal behavior; 2) cover or shelter; 3) food, water, air, light, minerals, or other nutritional or physiological requirements; 4) sites for breeding and rearing offspring; and 5) habitats that are protected from disturbances or are representative of the historical geographical and ecological distributions of a species.[11] An area can be excluded from critical habitat designation if an economic analysis determines that the benefits of excluding it outweigh the benefits of including it, unless failure to designate the area as critical habitat may lead to extinction of the listed species.[12] Following determination of designation by the FWS, a critical habitat designation is proposed, published it in the Federal Register and public comments are requested. Following the closure of public comments the FWS will take into consideration the comments and make any necessary modifications and then publish a final designation in the Federal Register with boundaries of the habitat area.

IV. Protection for Listed Species

a. Taking

The ESA protects endangered and threatened species and their habitats by prohibiting the "take" of listed animals and the interstate or international trade in listed plants and animals, including

[8] U.S. Fish and Wildlife Services, ESA Basics 40 Years of Conserving Endangered Species, available at, www.fws.gov/endangered/esa-library/pdf/ESA_basics.pdf.
[9] U.S. Fish and Wildlife Services, Listing and Critical Habitat, available at, http://www.fws.gov/endangered/what-we-do/critical-habitats.html.
[10] 16 USCS § 1533(b)(3).
[11] U.S. Fish and Wildlife Services, Listing and Critical Habitat, http://www.fws.gov/endangered/what-we-do/critical-habitats-faq.html.
[12] 16 USC 1533.

their parts and products, except under Federal permit.[13] Such permits generally are available for conservation and scientific purposes and are discussed in more detail below.

The ESA makes it unlawful for a person to take a listed animal without a permit. The Supreme Court has determined that "Congress intended 'take' to apply broadly to cover indirect as well as purposeful actions."[14] Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct."[15] Through regulation, and applied by courts, the term "harm" is defined as "an act which actually kills or injures wildlife.[16] Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."[17] There are mechanisms for incidental "takings" of endangered species which are discussed later in the article.

Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on Federal land. Protection from commercial trade and the effects of Federal actions do apply for plants. In addition, States may have their own laws restricting activity involving listed species.

b. Interagency Cooperation

One of the purposes of the ESA was to enable Federal agency cooperation. Section 7 of the ESA requires Federal agencies to promote the conservation purposes of the ESA and to consult with the FWS and NMFS to ensure that effects of actions they authorize, fund, or carry out are not likely to jeopardize the future of listed species.[18] To jeopardize has been defined through regulation as "to engage in an action that reasonably may be expected, directly or indirectly, to reduce the reproduction, numbers, or distribution of the species."[19]

During consultation the action receives a "biological opinion" or concurrence letter addressing the proposed action. In the relatively few cases in which the FWS or NMFS makes a jeopardy determination, the agency offers "reasonable and prudent alternatives" about how the proposed action could be modified to avoid jeopardy. It is extremely rare that a project ends up being withdrawn or terminated because of jeopardy to a listed species.[20]

There is a legal question as to what standard federal agencies must abide by in considering their actions and the effect on endangered or threatened species. The United States district court in Missouri adopted a "good faith compliance" test, holding that the Corps of Engineers had made

[13] U.S. Fish and Wildlife Services, ESA Basics 40 Years of Conserving Endangered Species, available at, www.fws.gov/endangered/esa-library/pdf/ESA_basics.pdf. See also, 16 USCS § 1538.
[14] Aransas Project v. Shaw, 756 F.3d 801, 807 (5th Cir. 2014) quoting Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or., 515 U.S. 687, 704.
[15] 16 USCS §1532(19).
[16] 50 C.F.R. § 17.3, see also Palila v. Haw. Dep't of Land & Natural Res., 852 F.2d 1106 (9th Cir. 1988).
[17] Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or., 515 U.S. 687 (1995).
[18] 16 USCS § 1536.
[19] 50 C.F.R. § 402.02.
[20] While injunctive relief as originally granted in order to cease construction, several years later Congress exempted certain actions including the TVA dam construction project. Tenn. Valley Auth. v. Hill, 437 U.S. 153(1978).

reasonable efforts to consider the Indiana Bats while creating the Meramec Reservoir.[21] The defendants in *National Wildlife Federation v. Coleman* advocated a "reasonable efforts" standard of compliance, asserting that the court should "weigh and balance" the interests of the endangered crane species against the national policy to build highway.[22] However, the language and history of § 7 requires a standard of "strict compliance" rather than a test of "good faith effort" for all federal departments which must enforce § 7.[23]

Additionally, the ESA provides a process for exempting development projects from the restrictions if a Cabinet-level "Endangered Species Committee" decides the benefits of the project clearly outweigh the benefits of conserving a species.[24] Since its creation in 1978, the Committee has only been convened three times to make this decision.

c. Permits

Permits may be granted by the FWS to allow for otherwise prohibited actions against endangered and threatened species.[25] The permits may authorize a single "take" or action or it may authorize a number of actions over a period of time. Endangered species permits may be granted for "scientific purposes or to enhance the propagation or survival of the affected species," this includes establishment of experimental populations.[26] Incidental taking permits are also available for endangered species so long as the taking incidental to another lawful actions.[27]

Permits are also available for threatened species. These permits are available for "[s]cientific purposes, or the enhancement of propagation or survival, or economic hardship, or zoological exhibition, or educational purposes, or incidental taking, or special purposes consistent with the purposes of the Act."[28]

During the permit application process applicants must provide a "wildlife conservation plan" which outlines the landowners plan for protecting and preventing loss of the protected species.[29] The No Surprises Rule is meant to protect landowner who have applied for and received incidental take permits. It provides protection to landowners if "unforeseen circumstances" occur which make landowner's efforts to prevent or mitigate harm through wildlife conservation plans fail.[30] If this situation occurs, the landowner will not be required to set aside additional land or pay more in conservation money; instead, the fed government pays for additional protection

[21] Sierra Club v. Froehlke, 392 F. Supp. 130 (E.D. Mo. 1975).
[22] Nat'l Wildlife Fed'n v. Coleman, 529 F.2d 359 (5th Cir. 1976).
[23] Section 7 of the Endangered Species Act of 1973: A Significant Restriction for All Federal Activities, 5 ELR 50189, 50199.
[24] 16 USCS § 1536.
[25] U.S. Fish and Wildlife Service Endangered Species, Permits, http://www.fws.gov/Endangered/permits/index.html.
[26] 16 USCS § 1539(a)(1)(A); see Forest Guardians v. United States Fish & Wildlife Serv., 611 F.3d 692 (10th Cir. 2010).
[27] 16 USCS § 1539(a)(1)(B).
[28] 50 CFR 17.32
[29] 16 USCS § 1539(a)(2).
[30] 50 C.F.R. § 17.32(b)(5).

measures. However, additional protection can be required at the consent of the permittee.[31] Additional protective measures may be imposed only if necessary to respond to unforeseen circumstances however several requirements must be shown.[32]

Any person claiming an exemption or permit as a defense against a violation of section 9 of the ESA has the burden of proving that such exemption or permit is applicable, was granted and valid at the time of the alleged violation.[33]

d. Safe harbor rule

Safe Harbor Agreements (SHAs) are agreements between private property owners and the FWS.[34] The landowner agrees to voluntarily alter the property to by maintaining or improving land for the benefit of a listed or candidate species. In exchange, the FWS agrees to permit future species "takes" below a certain level.[35] This policy is derived from the "enhancement of survival" provision provided in the exceptions to ESA rules.[36] Private landowners can have an incidental take permit, a safe harbor agreement or both. As the ESA becomes more prominent in environmental litigation many landowners and attorneys may choose to focus more on permits and safe harbor agreements.

e. Enforcement and Jurisdiction

The ESA confers automatic standing on any person claiming violation of the ESA.[37] The FWS maintains jurisdiction over § 9 of the ESA under Congress's power to regulate channels of interstate commerce. This is a valid use of the Commerce clause because "the prohibition against takings of an endangered species is necessary to enable the government to control the transport of the endangered species in interstate commerce…[and] the prohibition on takings of endangered animals falls under Congress' authority " 'to keep the channels of interstate commerce free from immoral and injurious uses.' "[38] The ESA provides opportunity for hearings with an administrative law judge. [39] District Courts also have jurisdiction over actions arising from the ESA.[40]

[31] 50 C.F.R. § 17.32(b)(5)(ii).
[32] 50 C.F.R. §17.32(b)(5)(iii)(B); see Bear Valley Mut. Water Co. v. Salazar, 2012 U.S. Dist. LEXIS 160048, 1 (C.D. Cal. Oct. 17, 2012).
[33] 16 USCS § 1539(g).
[34] U.S. Fish and Wildlife Services, ESA Basics 40 Years of Conserving Endangered Species. See also, http://www.fws.gov/endangered/landowners/safe-harbor-agreements.html.
[35] 16 USCS § 1539(a)(2),
[36] 16 USCS § 1539(a)(1)(A).
[37] 16 USCS § 1540(g); National Wildlife Federation v Coleman (1975, SD Miss) 400 F Supp 705, 5 ELR 20566, revd on other grounds.
[38] Nat'l Ass'n of Home Builders v. Babbitt, 130 F.3d 1041, 1046 (D.C. Cir. 1997); see *United States v. Lopez,* 514 U.S. 549, 558(1995), quoting Heart of Atlanta Motel Inc. v. United States, 379 U.S. 241, 256(1964).
[39] 16 USCS § 1540(c).
[40] 16 USCS § 1540(c).

f. Penalties

Any person who knowingly violates any provision of the ESA or who acts as an importer or exporter of listed species is subject to a civil penalty of no more than $25,000.[41] Any person who knowingly violates any provision of the ESA, once convicted is subject to a criminal penalty of no more than $50,000 or imprisoned for no more than one year or both.[42] While Courts have construed based on legislative history that there is only a limited strict liability component of the ESA; commercial operators have been held to a stricter standard of "knowingly" violating the ESA.[43] There are defenses to a violation of Section 9 of the ESA. Self-defense of one's self, a family member or other individual from bodily harm caused by any endangered or threatened species is a defense against prosecution under the ESA, so long as the defendant was acting with a good faith belief that such protection was needed.[44] Defense of one's property is not considered a valid defense.[45]

V. Conclusion

Attorneys and landowners should be aware of the potential scope and impact of the ESA on agricultural operations throughout the United States. Several factors such as a strongly worded statute, a robust citizen suit provision, funding limitations, and the absence of the typical federal environmental administrators makes this statute unique.

ESA Cases from 2013 to January of 2015

- Ctr. for Biological Diversity v. BLM, 2014 U.S. Dist. LEXIS 46994, 2014 WL 1347467 (N.D. Cal. Apr. 3, 2014).
- Humane Soc'y of the United States v. Jewell, 2014 U.S. Dist. LEXIS 175846 (D.D.C. Dec. 19, 2014).
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- Aransas Project v. Shaw, 930 F. Supp. 2d 716 (S.D. Tex. 2013). Reversed by Aransas Project v. Shaw, 756 F.3d 801 (5th Cir. 2014).
- Sierra Club v. Salazar, 961 F. Supp. 2d 1172 (W.D. Wash. 2013).
- Ctr. for Biological Diversity v. Nat'l Marine Fisheries Serv., 977 F. Supp. 2d 55 (D.P.R. 2013).
- San Luis & Delta-Mendota Water Auth. v. Jewell, 747 F.3d 581 (9th Cir. 2014).

[41] 16 USCS § 1540(a).
[42] 16 USCS § 1540(b).
[43] Newell v. Baldridge, 548 F. Supp. 39, 42-43 (W.D. Wash. 1982); Underwater Exotics v. Secretary of the Interior, 1994 U.S. Dist. LEXIS 2262, 1994 WL 80878 (D.D.C. Feb. 28, 1994).
[44] 16 USCS§ 1540(a)(3), § 1540(b)(3); See, Shuler v Babbitt (1998, DC Mont) 49 F Supp 2d 1165.
[45] Christy v. Hodel, 857 F.2d 1324 (9th Cir. 1988).

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- Alaska Oil & Gas Ass'n v. Salazar, 916 F. Supp. 2d 974 (D. Alaska 2013).
- Alliance for the Wild Rockies v. United States Dep't of Agric., 772 F.3d 592 (9th Cir. 2014).
- Salix v. United States Forest Serv., 944 F. Supp. 2d 984 (D. Mont. 2013).
- W. Watersheds Project v. Ashe, 948 F. Supp. 2d 1166 (D. Idaho 2013).
- Defenders of Wildlife v. Jewell, 2015 U.S. Dist. LEXIS 9483 (E.D. Tenn. 2015).
- Markle Interests, LLC v. United States Fish & Wildlife Serv., 2014 U.S. Dist. LEXIS 117333 (E.D. La. 2014).
- Safari Club Int'l v. Salazar (In re Endangered Species Act Section 4 Deadline Litig.), 704 F.3d 972 (D.C. Cir. 2013).
- Pepin v. Div. of Fisheries & Wildlife, 4 N.E.3d 875 (Mass. 2014).
- Conservation Force, Inc. v. Jewell, 733 F.3d 1200 (D.C. Cir. 2013).
- Alaska Oil & Gas Ass'n v. Pritzker, 2014 U.S. Dist. LEXIS 101446, 2014 WL 3726121 (D. Alaska July 25, 2014).
- Friends of Animals v. Ashe, 2014 U.S. Dist. LEXIS 84834, 2014 WL 2812313 (D.D.C. June 23, 2014).
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- Defenders of Wildlife v. Jewell, 2014 U.S. Dist. LEXIS 133271 (D.D.C. Sept. 23, 2014).
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- Alliance for the Wild Rockies v. Weber, 979 F. Supp. 2d 1118 (D. Mont. 2013).
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- Cascadia Wildlands v. Thrailkill, 2014 U.S. Dist. LEXIS 133384 (D. Or. Sept. 23, 2014).
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UAVs and the Law

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Staff Attorney

Interest in Unmanned Aerial Vehicles (UAVs) or Unmanned Aerial Systems (UAS) has increased dramatically over the past couple of years. The Federal Aviation Administration (FAA) has guidelines in place for using recreational model aircraft; however, advances in technology allowing for data gathering and other potential applications such as aerial spraying have presented issues that the federal agencies are working to address.

Currently there are three classifications of UAS users. The guidelines for UAS use depends largely on the classification of the user. Recreational model aircraft have very relaxed standards as compared to the public and civil UAS use. Generally model aircraft operators must stay under 400 feet in altitude, fly at least three miles from an airport, avoid populated locations and yield the right of way to manned aircraft.[1] Because of the relaxed standards for model aircraft, the FAA has clarified that the model aircraft rules do not apply when an individual or entity operates a UAS for a purpose other than recreation. For the other two categories, civil and public use, the topic of UAS use becomes more complicated, especially when coupled with the rise of state laws and other legal concerns on the use of UAS.

The Federal Approach

The FAA policy for UAS operations is that no person may operate a UAS in the National Airspace System without specific authorization and the authorization criteria depends on the use of the UAS. Tethering a UAS to the ground does not remove the need for FAA approval.[2] For UAS operating as public aircraft the authority is the Certificate of Authorization (COA), for UAS operating as civil aircraft the authority is special airworthiness certificates, and for model aircraft the authority is AC 91-57.[3]

By FAA definition, a "public aircraft is one that is only for the United States government or owned and operated by the government of a state, the District of Columbia, or a territory or possession of the U. S. or a political

[1] Advisory Circular 91-57. Available at http://www.faa.gov/documentLibrary/media/Advisory_Circular/91-57.pdf
[2] Email from Elizabeth Forro, Program Support Specialist with the FAA Aviation Safety UAS Integration Program Office (July 25, 2014)(on file with the author).
[3] http://www.faa.gov/about/initiatives/uas/reg/media/frnotice_uas.pdf

subdivision…include[ing] DOD, DOJ, DHS, NASA, NOAA, state/local agencies and qualifying universities."[4] Operators requesting approval of public aircraft operations by UAS must use the COA application process. The FAA has provided a sample COA application to assist public bodies to comply with the current policy.[5] Currently, operators of public UAS must be a certified and current pilot with a medical certificate, the crew operating the UAS must be certified, and the UAS must be airworthy.[6]

Operators requesting approval for civil operations (those that are not public or recreational) must use the Special Airworthiness Certificate process, provided the aircraft has been issued a type certificate from Aircraft Certification Process in accordance with 14 CFR part 21. Part 91, § 91.319(a)(2)."[7] Because of the increased interest in UAS use, the FAA and other federal agencies involved in the process have been given a timeline of September 30, 2015 to implement a plan to integrate civil UAS into the national airspace.[8]

A recent case, *Texas Equusearch v. FAA*, challenged FAA's authority to issue "cease and desist" emails about UAS use due to the lack of regulations.[9] The D.C. Circuit held on July 18th, 2014 that the letter was not a result of the agency's decision-making process because no legal consequences were mentioned in the email and as a result the case was dismissed. The FAA is currently working on the regulations alluded to in the *Texas Equusearch* case for UAS lighter than fifty-five pounds.

The State Approach and Other Concerns with use of UAS

It is important to note that the FAA's role in UAS deployment is ensuring that U.S. airspace will remain safe for both manned and unmanned flight; however, there are also serious issues surrounding privacy and use of UAS by law enforcement. According to the National Conference of State Legislatures "[i]n 2013, 43 states introduced 130 bills and resolutions addressing UAS issues. At the end of the year, 13 states had enacted 16 new laws and 11 states had adopted 16 resolutions."[10] Arkansas had two bills HB 1904[11] (addressing UAS use by law enforcement) and SB 1109[12] (restricting the use video recording from UAS unless properly authorized) proposed during the 2013 legislative session. Neither bill was passed into law.

Many other states have proposed, and occasionally passed, similar legislation. Texas (Tex. Gov't Code Ann. § 423[13]) and Idaho (Idaho Code Ann. § 21-213[14]) have recently enacted laws regulating the use of unmanned aircraft in the state and Illinois has prohibited the use of a drone to interfere with hunters and fisherman.[15] States will continue to address issues surrounding privacy while the FAA is developing regulations regarding their commercial operation. Changes to this area of law promise to be numerous and rapid over the next several years.

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[4] Available at http://www.faa.gov/uas/faq/#qn5.
[5] http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/aaim/organizations/uas/media/COA%20Sample%20Application%20v%201-1.pdf
[6] http://www.faa.gov/documentLibrary/media/Notice/N_8900.227.pdf
[7] http://www.faa.gov/documentLibrary/media/Notice/N_8900.227.pdf
[8] http://www.gpo.gov/fdsys/pkg/CRPT-112hrpt381/pdf/CRPT-112hrpt381.pdf
[9] TX Equusearch Mounted Search, et al v. FAA, Docket No. 14-01061 (D.C. Cir. July 18, 2014)
[10] http://www.ncsl.org/research/civil-and-criminal-justice/unmanned-aerial-vehicles.aspx
[11] Available at http://www.arkleg.state.ar.us/assembly/2013/2013R/Bills/HB1904.pdf.
[12] Available at http://www.arkleg.state.ar.us/assembly/2013/2013R/Bills/SB1109.pdf.
[13] Available at http://www.capitol.state.tx.us/BillLookup/History.aspx?LegSess=83R&Bill=HB912.
[14] Available at http://legislature.idaho.gov/legislation/2013/S1134PrinterFriendly.htm.
[15] Illinois HB 1652. Available at http://www.ilga.gov/legislation/BillStatus.asp?DocNum=1652&GAID=12&DocTypeID=HB&SessionID=85&GA=98

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Law Bulletin

OSU EXTENSION AGRICULTURAL & RESOURCE LAW PROGRAM

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FAA Proposes Regulations for Small Unmanned Aerial Systems

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After much anticipation, the Federal Aviation Administration (FAA) has published proposed regulations that would govern the operation of drones used for agricultural and other activities. The proposal would allow farmers and ranchers to operate drones, referred to in the rule as "unmanned aircraft" and "unmanned aircraft systems" (UAS), subject to requirements intended to address public safety and national security concerns.

Under the proposed small UAS rule, operators must comply with a certification process, register and maintain aircraft, and follow limitations on aircraft operation. Of the proposed limitations, agricultural operators might have concerns about a "visual line-of-sight" rule requiring that operators have visual contact with aircraft, a flight ceiling of 500 feet above ground level and prohibitions against night flights. Additionally, the proposal fails to address privacy issues and the potential use of drones for surveillance activities on another person's property.

The following provisions are the major components of the proposed rule, which would apply to unmanned aircraft weighing less than 55 pounds that are used for non-hobby and non-recreational purposes:

Operator Certification and Reporting

Certification. An operator of a UAS must have an "unmanned aircraft operator certificate with a small UAS rating," which requires:

- Meeting eligibility requirements: the applicant is at least 17 years old, speaks English, has no state or federal drug offenses, has no physical or mental condition to prevent safe UAS operation, and the applicant's identity is verified by the FAA.
- Passing an initial aeronautical knowledge test at an FAA-approved knowledge testing center, which covers: (1) applicable regulations relating to small UAS rating privileges, limitations, and flight operation; (2) airspace classification and operating requirements, obstacle clearance requirements, and flight restrictions affecting small UAS operation; (3) official sources of weather and effects of weather on small UAS performance; (4) small UAS loading and performance; (5) emergency procedures; (6) crew resource management; (7) radio communication procedures; (8) determining the performance of small UAS; (9) physiological effects of drugs and alcohol; (10) aeronautical decision-making and judgment; and (11) airport operations.
- Passing a recurrent aeronautical knowledge test every 24 months.

Reporting. An operator must report an accident to the FAA within 10 days of any operation that results in injury or property damage.

Aircraft Requirements

- *Aircraft registration*. A small unmanned aircraft must be registered with the FAA.
- *Markings*. A small unmanned aircraft must display nationality and registration markings.
- *Aircraft condition*. An operator must maintain a small unmanned aircraft in a condition for safe operation.

Operation Requirements

Pre-flight requirements. Before a flight, an operator must conduct a pre-flight inspection and assessment that includes:

- Inspection of the links between the unmanned aircraft and its control station.
- Verification of sufficient power to operate the aircraft at least 5 minutes beyond the intended operational time period.
- Assessment of the operating environment, including local weather conditions, local airspace and flight restrictions, locations of persons and property on the ground and other ground hazards.
- A briefing to all persons involved in the aircraft operation that addresses operating conditions, emergency procedures, contingency procedures, roles and responsibilities and potential hazards.

Visual line of sight requirement. An operator must maintain a "visual line-of-sight" with the unmanned aircraft, using only human vision that is unaided by any device other than glasses or contact lenses.

Use of visual observer. An operator may use "visual observers" to assist with the visual line-of-sight requirement.

- An operator and visual observer must maintain constant communication, which may be made through communication-assisted devices.
- The aircraft must still remain close enough to the operator for the operator to be capable of maintaining the visual line-of-sight.

Operating limitations. An operator must not operate an unmanned aircraft:

- More than 500 feet above ground level.
- More than 100 mph.
- After daylight, which is the time between official sunrise and sunset.
- When there is not minimum weather visibility of 3 miles from the aircraft's control station.
- No closer than 500 feet below and 2,000 feet horizontally away from any clouds.
- Over any persons not directly involved in the operation and not under a covered structure that would protect them from a falling UAS.
- From a moving aircraft or vehicle, unless the moving vehicle is on water.
- Within Class A airspace; or within Class B, C, or D airspace or certain Class E airspace designated for an airport, without prior authorization from the appropriate Air Traffic Control facility.
- Carelessly or recklessly, including by allowing an object to be dropped from the aircraft in a way that would endanger life or property.

"Micro" UAS

In the proposed rule, the FAA also presents the possibility of including regulations in the final rule for "micro-UAS," or unmanned aircraft weighing no more than 4.4 pounds that are composed of "frangible" materials that yield on impact and present minimal safety

hazards. The micro-UAS category would require operators to self-certify their familiarity with the aeronautical knowledge testing areas; would limit operation to: 1,500 feet within the visual line-of-sight of the operator, no more than 400 feet above ground, only in Class G (uncontrolled) airspace and at least 5 miles from an airport; and would allow flight over people not involved in the operation. The agency invites comments on whether to include a micro-UAS category in the final rule.

What's not in the Proposed Rule?

Privacy concerns. Many in the agricultural community worry about the potential use of drones for surveillance activities that violate a property owner's privacy. The FAA states that privacy concerns about unmanned aircraft operations are beyond the scope of this rulemaking and that "state law and other legal protections for individual privacy may provide recourse for a person whose privacy may be affected through another person's use of a UAS."

The agency also notes the recent Presidential Memorandum issued by President Obama, *Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems* (February 15, 2015), which requires the FAA to participate in a multi-stakeholder engagement process led by the National Telecommunications and Information Administration to develop a framework for privacy, accountability, and transparency issues concerning the commercial and private use of UAS in the NAS. The memorandum also requires agencies to "ensure that policies are in place to prohibit the collection, use, retention, or dissemination of data in any manner that would violate the First Amendment or in any manner that would discriminate against persons based upon their ethnicity, race, gender, national origin, religion, sexual orientation, or gender identity, in violation of law."

External loads and towing operations. The FAA declined to propose new regulations for small unmanned aircraft with towing and external load capabilities. Instead, the agency invites comments, with supporting documentation, on whether external load and towing UAS operations should be permitted and whether their use should require airworthiness certification, higher levels of airman certification or additional operational limitations.

What's Next?

The FAA will accept public comments on the proposed small UAS rule until April 24, 2015. Issuing a final rule could take at least another year after the comment period closes. In the interim, FAA encourages operators to visit http://knowbeforeyoufly.org/ to understand current regulations for the use of small UAS, which remain in place until the FAA issues its final rule.

The proposed small UAS rule is available in the Federal Register online at http://www.gpo.gov/fdsys/pkg/FR-2015-02-23/pdf/2015-03544.pdf. To submit comments for the rule, Docket No. FAA–2015–0150, visit www.regulations.gov.

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State Regulation of Grain Sales & Storage

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In order to protect growers and prevent failure of entities, many states regulate grain warehouses and grain dealers. In most states, a "grain dealer" is a person or entity involved in buying, receiving or exchanging grain from the grower. Generally speaking, an interaction with a grain dealer involves a transfer of ownership (title) to that dealer.

On the other hand, warehouses are normally involved in the storage of grain. Under most states' definitions, ownership is maintained by the grower, rather than being transferred to the warehouse. Depending on the entity with whom the warehouse is licensed, a warehouse can be regulated by either state or federal governments. Federally, this would fall under the United States Warehouse Act, which is enforced by the Farm Service Agency.[1]

[1] For more information on federal licensing of grain warehouses, visit the FSA website: http://www.fsa.usda.gov/FSA/webapp?area=home&subject=coop&topic=was-ua

In order for grain dealers and grain warehouses to operate within their boundaries, many states have enacted various requirements. The requirements vary greatly from state to state and include requirements and penalties such as licensing, bonding, auditing, statutory liens and civil or criminal sanctions. As of December 31, 2014, thirty-four states have some form of regulations addressing the operation of grain dealers, while thirty states have similar regulations for warehouses.

Licensing

This is one of the most common forms of state regulation. For states with this statutory requirement, the warehouse or grain dealer must obtain a license from the state before beginning operations. In order to obtain this license, many states also mandate an auditing process, fees, financial statements or other requirements.

Statutory Licensing Requirements
Grain Dealers = 31 States
Warehouses = 29 States

Bonding

Various states require that a warehouse file some amount of a bond with the state that can be drawn upon in case of a default. The amount of the bond varies among the states and is typically either a per bushel rate or a set amount.

Statutory Bonding Requirements
Grain Dealers = 30 States
Warehouses = 26 States

Auditing

This provision allows representatives of the state government to examine records, warehouses, reports, inventory, financial statements and other various areas of the entity to ensure that the grain dealer or warehouse is operating properly.

Statutory Auditing Requirements
Grain Dealers = 31 States
Warehouses = 28 States

Prompt Payment

These provisions, in place in about twenty percent of the country, help ensures that growers will be paid within a certain period of time after delivery of the grain.

Prompt Payment Requirements
Grain Dealers = 13 States
Warehouses = 10 States

Indemnity Fund

In this statutory scheme, money is paid into an indemnity/general fund. Depending on the state, the entity charged with paying the fee may be the producer, the warehouse, the grain dealer or some combination of the three. Eligibility to claim funds varies among states, but typically occurs when payment is not made for delivered grain, or if the grain dealer or warehouse becomes insolvent.

Statutory Indemnity Fund Requirements
Grain Dealers = 11 States
Warehouses = 13 States

Failure/Liquidation

In some states, when an entity is discovered to be insolvent the state will take charge of the property, liquate, and collect grain assets. These

Requirements for Failure or Liquidation
Grain Dealers = 11 States
Warehouses = 19 States

assets are then typically deposited into a trust from which growers may file claims to collect losses.

Penalties

Many states have penalties- civil, criminal, or both- that may be levied against grain dealers or warehouses violating provisions of the state code. These penalties can range from a small fine up to and including imprisonment.

Civil or Criminal Penalty Provisions
Grain Dealers = 31 States
Warehouses = 29 States

No Requirements

As described in the pages above, many states have chosen to pass laws regulating grain dealers and grain warehouses. However, many others have not. In these remaining states, warehouses may be licensed on the federal level, or they may not be licensed at all. As there are no federal requirements for grain dealers, unless the state chooses to regulate, no requirements are in place.

No State Regulatory Authority
Grain Dealers = 16 States
Warehouses = 20 States

For more information about statutory requirements relevant to grain dealers and warehouses, the National Agricultural Law Center has compiled a guide listing specific citations for each of the requirements listed above. That guide is freely available at http://nationalaglawcenter.org/state-compilations/grainsalesstorage/.

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Hemp as an Agricultural Commodity

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CRS REPORT
Prepared for Members and
Committees of Congress

Summary

Industrial hemp is an agricultural commodity that is cultivated for use in the production of a wide range of products, including foods and beverages, cosmetics and personal care products, and nutritional supplements, as well as fabrics and textiles, yarns and spun fibers, paper, construction and insulation materials, and other manufactured goods. Hemp can be grown as a fiber, seed, or other dual-purpose crop. Some estimate that the global market for hemp consists of more than 25,000 products. Precise data are not available on the size of the U.S. market for hemp-based products, but current industry estimates report annual sales at more than $580 million annually.

Hemp is a variety of *Cannabis sativa* and is of the same plant species as marijuana. Although industrial hemp is genetically different and distinguished by its use and chemical makeup, and has long been cultivated for non-drug use in the production of industrial and other goods, in the United States, hemp is subject to U.S. drug laws and growing industrial hemp is restricted. Under current U.S. drug policy all cannabis varieties, including industrial hemp, are considered Schedule I controlled substances under the Controlled Substances Act (CSA, 21 U.S.C. §§801 *et seq.*; Title 21 C.F.R. Part 1308.11). Despite these legitimate industrial uses, hemp production and usage are controlled and regulated by the U.S. Drug Enforcement Administration (DEA). Strictly speaking, the CSA does not make growing hemp illegal; rather, it places strict controls on its production and enforces standards governing the security conditions under which the crop must be grown, making it illegal to grow without a DEA permit. In other words, a grower needs to get permission from the DEA to grow hemp or faces the possibility of federal charges or property confiscation, regardless of whether the grower has a state-issued permit. Currently, cannabis varieties may be legitimately grown for research purposes only. No known active federal licenses allow for hemp cultivation at this time. There is no large-scale commercial hemp production in the United States, and the U.S. market is largely dependent on imports, both as finished hemp-containing products and as ingredients for use in further processing. More than 30 nations grow industrial hemp as an agricultural commodity, which is sold on the world market.

In the early 1990s a sustained resurgence of interest in allowing commercial cultivation of industrial hemp began in the United States. Several states have conducted economic or market studies, and have initiated or passed legislation to expand state-level resources and production.

The 113th Congress made significant changes to U.S. policies regarding industrial hemp during the omnibus farm bill debate. The Agricultural Act of 2014 ("farm bill," P.L. 113-79) provided that certain research institutions and state departments of agriculture may grow industrial hemp, as part of an agricultural pilot program, if allowed under state laws where the institution or state department of agriculture is located. The farm bill also established a statutory definition of "industrial hemp" as the plant *Cannabis sativa* L. and any part of such plant with a delta-9 tetrahydrocannabinol (THC) concentration of not more than 0.3% on a dry weight basis. The enacted FY2015 appropriations (P.L. 113-235) further blocked federal law enforcement authorities from interfering with state agencies, hemp growers, and agricultural research.

The Industrial Hemp Farming Act of 2015 (H.R. 525; S. 134) would amend the CSA to specify that the term "marijuana" does not include industrial hemp, thus excluding hemp from the CSA as a controlled substance subject to DEA regulation. This bill was reintroduced from bills introduced in previous Congresses dating back to the 109th Congress. The Charlotte's Web Medical Hemp Act of 2014 (H.R. 5226, 113th Congress) would have excluded hemp and also cannabidiol from the definition of marijuana, making them not subject to CSA and DEA regulation.

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Introduction

For centuries, industrial hemp (plant species *Cannabis sativa*) has been a source of fiber and oilseed used worldwide to produce a variety of industrial and consumer products. Currently, more than 30 nations grow industrial hemp as an agricultural commodity, which is sold on the world market. In the United States, however, production is strictly controlled under existing drug enforcement laws. Currently there is no large-scale commercial production in the United States and the U.S. market depends on imports.

The 113th Congress made significant changes to U.S. policies regarding industrial hemp during the omnibus farm bill debate. The Agricultural Act of 2014 (P.L. 113-79) provided that certain research institutions and state departments of agriculture may grow industrial hemp, as part of an agricultural pilot program, if allowed under state laws where the institution or state department of agriculture is located. The FY2015 appropriations (P.L. 113-235) further blocked federal law enforcement authorities from interfering with state agencies, growers, and agricultural research.

The 114th Congress has re-introduced the Industrial Hemp Farming Act of 2015 (H.R. 525 and S. 134), which would exclude industrial hemp from being regulated as a controlled substance and subject to certain federal law enforcement authorities.

Overview of *Cannabis* Varieties

Although marijuana is also a variety of cannabis, it is genetically distinct from industrial hemp and is further distinguished by its use and chemical makeup.

In this report, "hemp" refers to industrial hemp, "marijuana" (or "marihuana" as it is spelled in the older statutes) refers to the psychotropic drug (whether used for medicinal or recreational purposes), and "cannabis" refers to the plant species that has industrial, medicinal, and recreational varieties.[1]

Comparison of Hemp and Marijuana

There are many different varieties of cannabis plants. Marijuana and hemp come from the same species of plant, *Cannabis sativa*, but from different varieties or cultivars. However, hemp is genetically different and is distinguished by its use and chemical makeup, as well as by differing cultivation practices in its production.[2]

Hemp, also called "industrial hemp,"[3] refers to cannabis varieties that are primarily grown as an agricultural crop (such as seeds and fiber, and by-products such as oil, seed cake, hurds) and is

[1] This report does not cover issues pertaining to medical or recreational marijuana. For other information, see CRS Report R43034, *State Legalization of Recreational Marijuana: Selected Legal Issues* and CRS Report R43435, *Marijuana: Medical and Retail—Selected Legal Issues,* among other related CRS reports.

[2] See, for example, S. L. Datwyler and G. D. Weiblen, "Genetic variation in hemp and marijuana (Cannabis sativa L.) according to amplified fragment length polymorphisms," *Journal of Forensic Sciences*, Vol. 51, No. 2 (2006).

[3] Use of this term dates back to the 1960s; see L. Grlic, "A combined spectrophotometric differentiation of samples of cannabis," United Nations Office on Drugs and Crime (UNODC), January 1968, http://www.unodc.org/unodc.

characterized by plants that are low in THC (delta-9 tetrahydrocannabinol, marijuana's primary psychoactive chemical). THC levels for hemp are generally less than 1%.

Marijuana refers to the flowering tops and leaves of psychoactive cannabis varieties, which are grown for their high content of THC. Marijuana's high THC content is primarily in the flowering tops and to a lesser extent in the leaves. THC levels for marijuana are much higher than for hemp, and are reported to average about 10%; some sample tests indicate THC levels reaching 20%-30%, or greater.[4]

A level of about 1% THC is considered the threshold for cannabis to have a psychotropic effect or an intoxicating potential.[5] Current laws regulating hemp cultivation in the European Union (EU) and Canada use 0.3% THC as the dividing line between industrial and potentially drug-producing cannabis. Cultivars having less than 0.3% THC can be cultivated under license, while cultivars having more than that amount are considered to have too high a drug potential.[6]

Some also claim that industrial hemp has higher levels of cannabidiol (CBD), the non-psychoactive part of marijuana, which might mitigate some of the effects of THC.[7] A high ratio of CBD to THC might also classify hemp as a fiber-type plant rather than a drug-type plant. Opinions remain mixed about how CBD levels might influence the psychoactive effects of THC.

Production Differences

Production differences depend on whether the cannabis plant is grown for fiber/oilseed or for medicinal/recreational uses. These differences involve the varieties being grown, the methods used to grow them, and the timing of their harvest (see discussion in "Hemp" and "Marijuana," below). Concerns about cross-pollination among the different varieties are critical. All cannabis plants are open, wind and/or insect pollinated, and thus cross-pollination is possible.

Because of the compositional differences between the drug and fiber varieties of cannabis, farmers growing either crop would necessarily want to separate production of the different varieties or cultivars. This is particularly true for growers of medicinal or recreational marijuana in an effort to avoid cross-pollination with industrial hemp, which would significantly lower the THC content and thus degrade the value of the marijuana crop. Likewise, growers of industrial hemp would seek to avoid cross-pollination with marijuana plants, especially given the illegal

[4] National Institute of Drug Abuse, "Quarterly Report, Potency Monitoring Project," Report 100, University of Mississippi, 2008. Based on sample tests of illegal cannabis seizures (December 16, 2007, through March 15, 2008).

[5] E. Small and D. Marcus, "Hemp: A New Crop with New Uses for North America," in *Trends in New Crops and New Uses*, ed. J. Janick and A. Whipkey (American Society for Horticultural Science [ASHS] Press, 2002).

[6] E. Small and D. Marcus, "Tetrahydrocannabinol levels in hemp (Cannabis sativa) germplasm resources," *Economic Botany*, vol. 57, no. 4 (October 2003); and G. Leson, "Evaluating Interference of THC Levels in Hemp Food Products with Employee Drug Testing" (prepared for the Province of Manitoba, Canada), July, 2000.

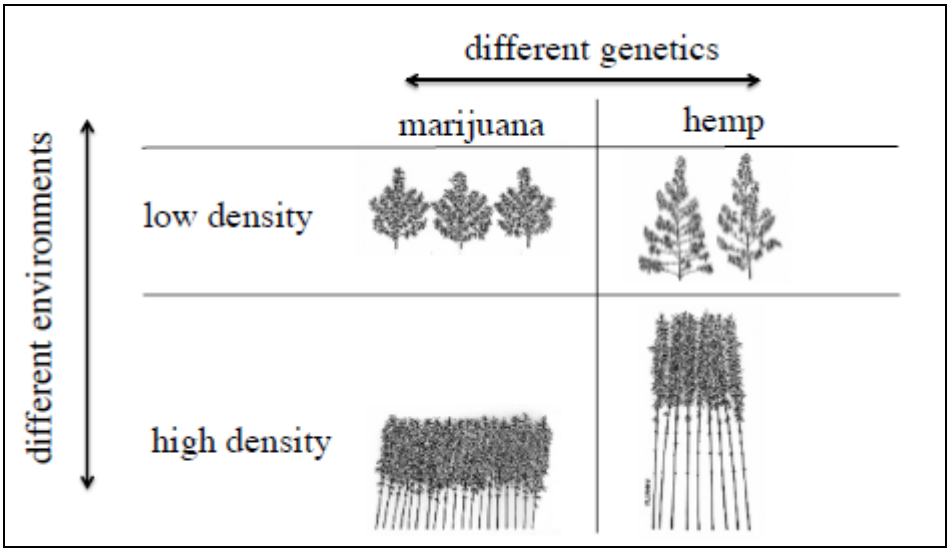
[7] U. R. Avico, R. Pacifici, and P. Zuccaro, "Variations of tetrahydrocannabinol content in cannabis plants to distinguish the fibre-type from drug-type plants," *UNODC Bulletin on Narcotics*, January 1985; C. W. Waller, "Chemistry Of Marihuana," *Pharmacological Reviews*, vol. 23 (December 1971); K. W. Hillig and P. G. Mahlberg, "A chemotaxonomic analysis of cannabinoid variation in Cannabis (Cannabaceae)," *American Journal of Botany*, vol. 91, no. 6 (June 2004); and A. W. Zuardi et al., "Cannabidiol, a Cannabis sativa constituent, as an antipsychotic drug," *Brazilian Journal of Medical and Biological Research*, vol. 39 (2006).

status of marijuana. Plants grown of oilseed are also marketed according to the purity of the product, and the mixing of off-type genotypes would degrade the value of the crop.[8]

The different cannabis varieties are also harvested at different times (depending on the growing area), increasing the chance of detection of illegal marijuana, if production is commingled. Because of these differences, many claim that drug varieties of cannabis cannot easily be grown with oilseed or fiber varieties without being easily detected.[9] As discussed below (and illustrated in **Figure 1**), among the visual plant differences are **plant height** (hemp is encouraged to grow tall, whereas marijuana is selected to grow short and tightly clustered); **cultivation** (hemp is grown as a single main stalk with few leaves and branches, whereas marijuana is encouraged to become bushy with many leaves and branches to promote flowers and buds); and **planting density** (hemp is densely planted to discourage branching and flowering, whereas marijuana plants are well-spaced).

Figure 1. Trait Variation in Cannabis Phenotype

(marijuana and industrial hemp)



Source: George Weiblen, University of Minnesota, presentation at the 2013 Annual HIA Conference, Washington, DC, November 17, 2013.

Notes: Photographs contrasting marijuana and industrial hemp are available at Vote Hemp's website ("Different Varieties of *Cannibis*," http://www.votehemp.com/different_varieties.html).

Hemp

To maximize production of hemp fiber and/or seed, plants are encouraged to grow taller in height. Cultivated plants become a tall stalky crop that usually reaches between 6 and 15 feet, and generally consist of a single main stalk with few leaves and branches. Hemp plants grown for

[8] CRS communication with Anndrea Hermann, Hemp Oil Canada Inc., December 2009. Pollen is present at a very early plant development stage.

[9] D. P. West, "Hemp and Marijuana: Myths & Realities," February 1998, http://www.gametec.com/hemp/hempandmj.html. Also see information posted by Vote Hemp Inc., "Different Varieties of Cannabis" (no date), http://www.votehemp.com/different_varieties.html.

fiber or oilseed are planted densely (about 35-50 plants per square foot)[10] to discourage branching and flowering. The period of seeding to harvest ranges from 70 to 140 days, depending on the purpose, cultivar or variety, and climatic conditions. The stalk and seed is the harvested product. The stalk of the plant provides two types of fibers: the outer portion of the stem contains the bast fibers, and the interior or core fiber (or hurds).

Industrial hemp production statistics for Canada indicate that one acre of hemp yields an average of about 700 pounds of grain, which can be pressed into about 50 gallons of oil and 530 pounds of meal.[11] That same acre will also produce an average of 5,300 pounds of straw, which can be transformed into about 1,300 pounds of fiber.

Marijuana

When cannabis is grown to produce marijuana, it is cultivated from varieties where the female flowers of dioecious drug strains are selected to prevent the return of separate male and female plants.[12] The female flowers are short and tightly clustered. In marijuana cultivation, growers remove all the male plants to prevent pollination and seed set. Some growers will hand-pollinate a female plant to get seed; this is done in isolation of the rest of the female plants. The incorporation and stabilization of monoecism in cannabis cultivation requires the skill of a competent plant breeder, and rarely occurs under non-cultivated conditions.

If marijuana is grown in or around industrial hemp varieties, the hemp would pollinate the female marijuana plant. Marijuana growers would not want to plant near a hemp field, since this would result in a harvest that is seedy and lower in THC, and degrade the value of their marijuana crop.

Marijuana is cultivated to encourage the plant to become bushy with many leaves, with wide branching to promote flowers and buds. This requires that plants be well-spaced, by as much as about 1-2 plants per square yard.[13] The flower and leaves are the harvested products.

Hemp Production and Use

Commercial Uses of Hemp

Industrial hemp can be grown as a fiber, seed, or dual-purpose crop.[14] The interior of the stalk has short woody fibers called hurds; the outer portion has long bast fibers. Hemp seed/grains are smooth and about one-eighth to one-fourth of an inch long.[15]

[10] Innvista, "Hemp Biology," September 25, 2012, http://www.innvista.com/health/foods/hemp/hemp-biology/.

[11] Agriculture and Agri-Food Canada, "Industrial Hemp" (no date), http://www4.agr.gc.ca/.

[12] H. van Bakel et al., "The Draft Genome and Transcriptome of *Cannabis sativa*," *Genome Biology,* Vol. 12, Issue 10, 2011. In botany, dioecious is a term describing plant varieties that possess male and female flowers or other reproductive organs on separate, individual plants.

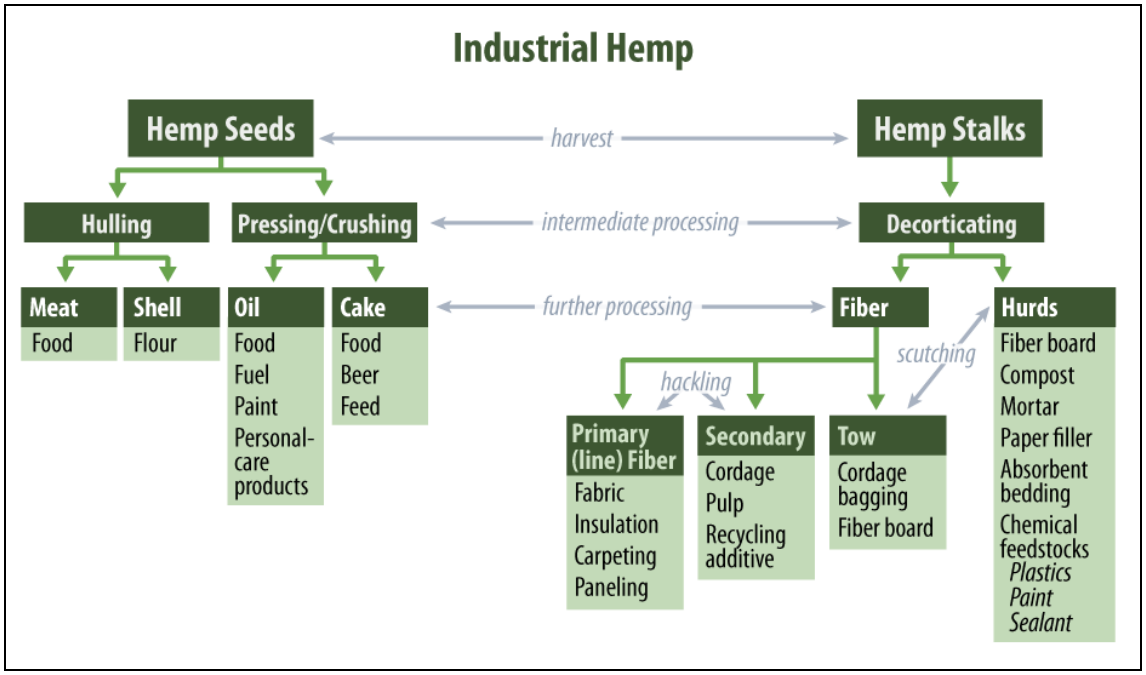
[13] Innvista, "Hemp Biology," September 25, 2012, http://www.innvista.com/health/foods/hemp/hemp-biology/.

[14] Different varieties have been developed may be better suited for one use or the other. Cultivation practices also differ depending upon the variety planted.

[15] For additional information, see U.S. Department of Agriculture, Economic Research Service, *Industrial Hemp in the United States: Status and Market Potential*, ERS Report AGES001E, January 2000.

Although hemp is not grown in the United States, both finished hemp products and raw material inputs are imported and sold for use in manufacturing for a wide range of product categories (**Figure 2**). Hemp fibers are used in a wide range of products, including fabrics and textiles, yarns and spun fibers, paper, carpeting, home furnishings, construction and insulation materials, auto parts, and composites. Hurds are used in various applications such as animal bedding, material inputs, papermaking, and composites. Hemp seed and oilcake are used in a range of foods and beverages, and can be an alternative food protein source. Oil from the crushed hemp seed is used as an ingredient in a range of body-care products and nutritional supplements.[16] Hemp seed is also used for industrial oils, cosmetics and personal care products, and pharmaceuticals, among other composites.

Figure 2. Flowchart of Potential Hemp Products



Source: CRS, adapted from D. G. Kraenzel et al., "Industrial Hemp as an Alternative Crop in North Dakota," AER-402, North Dakota State University, July 23, 1998.

Some estimate that the global market for hemp consists of more than 25,000 products in nine submarkets: agriculture; textiles; recycling; automotive; furniture; food/nutrition/beverages; paper; construction materials; and personal care. For construction materials, such as hempcrete (a mixture of hemp hurds and lime products), hemp is used as a lightweight insulating material.[17] Hemp has also been promoted as a potential biodiesel feedstock,[18] although some analysts

[16] Some have suggested similarities between hempseed oil and hash oil. However, there is evidence suggesting differences regarding initial feedstock or input ingredients (hash oil requires high-THC marijuana, whereas hempseed oil uses low THC industrial hemp); how they are produced (hash oil is extracted often using a flammable solvent, whereas hempseed oil is expeller-pressed or extracted mechanically, generally without chemicals or additives); and how they are used (hash oil is used as a psychoactive drug, whereas hempseed oil is used as an ingredient in hemp-based foods, supplements, and body care products). For more background information, contact the author of this report.

[17] "Hemp Homes Are Cutting Edge of Green Building," *USA Today*, September 12, 2010; and "Construction Plant," *Financial Times*, January 22, 2010.

[18] Manitoba Agriculture, *National Industrial Hemp Strategy*, March 2008, p. 293; J. Lane, "Hemp Makes Comeback as (continued...)

suggest that competing demands for other products might make it too costly to use as a feedstock.[19]

These types of commercial uses are widely documented in a range of feasibility and marketing studies conducted by researchers at the U.S. Department of Agriculture (USDA) and various land grant universities and state agencies. (A listing of these studies is in the **Appendix**.)

Estimated Retail Market

There is no official estimate of the value of U.S. sales of hemp-based products. The Hemp Industries Association (HIA) estimates that the total U.S. retail value of hemp products in 2013 was $581 million, which includes food and body products, clothing, auto parts, building materials and other products.[20] Of this, HIA reports that the value of hemp-based food, supplements, and body care sales in the United States totaled $184 million. Previous reports about the size of the U.S. market for hemp clothing and textiles are estimated at about $100 million annually.[21]

The reported retail value of the U.S. hemp market is an estimate and is difficult to verify. Underlying data for this estimate are from SPINS survey data;[22] however, because the data reportedly do not track retail sales for The Body Shop and Whole Foods Market—two major markets for hemp-based products—as well as for restaurants, hemp industry analysts have adjusted these upward to account for this gap in the reported survey data.[23]

Available industry information indicates that sales of some hemp-based products, such as foods and body care products, is growing.[24] Growth in hemp specialty food products is driven, in part, by sales of hemp milk and related dairy alternatives, among other hemp-based foods.[25]

Information is not available on other potential U.S. hemp-based sectors, such as for use in construction materials or biofuels, paper, and other manufacturing uses. Data are not available on existing businesses or processing facilities that may presently be engaged in such activities within the United States.

(...continued)

Biofuels Feedstock in 43-acre California Trial," *Biofuels Digest*, August 24, 2009; and H. Jessen, "Hemp Biodiesel: When the Smoke Clears," *Biodiesel Magazine*, February 2007.

[19] North Dakota State University (NSDU), "Biofuel Economics: Biocomposites—New Uses for North Dakota Agricultural Fibers and Oils" (no date).

[20] HIA, "2013 Annual Retail Sales for Hemp Products Exceeds $581 Million," February 28, 2014.

[21] HIA, "Hemp Fabric goes High Fashion," February 11, 2008. Estimate reflects best available current information based on personal communication between CRS and HIA.

[22] SPINS tracks data and market trends on the Natural Product Industry sales (http://www.spins.com/).

[23] CRS communication with representatives of Vote Hemp, Inc., May 2010. See also HIA's press release, "Growing Hemp Food and Body Care Sales is Good News for Canadian Hemp Seed and Oil Producers," April 29, 2009.

[24] H. Fastre, CEO of Living Harvest Foods, based on his comments and presentation, "The Future of Hemp," HIA Convention, Washington DC, October 2009; and HIA, "Growing Hemp Food and Body Care Sales is Good News for Canadian Hemp Seed and Oil Producers," April 29, 2009.

[25] HIA, "Hemp Milk Products Boosted Growth of Hemp Food Market in 2007," March 14, 2008.

U.S. Hemp Imports

The import value of hemp-based products imported and sold in the United States is difficult to estimate accurately. For some traded products, available statistics have only limited breakouts or have been expanded only recently to capture hemp subcategories within the broader trade categories for oilseeds and fibers. Reporting errors are evident in some of the trade data, since reported export data for hemp from Canada do not consistently match reported U.S. import data for the same products (especially for hemp seeds).

Given these data limitations, available trade statistics indicate that the value of U.S. imports under categories actually labeled "hemp," such as hemp seeds and fibers, which are more often used as inputs for use in further manufacturing, was nearly $36.9 million in 2013. Compared to available data for 2005, the value of imported hemp products for use as inputs and ingredients has increased more than sixfold. However, import volumes for other products such as hemp oil and fabrics are lower (**Table 1**). Trade data are not available for finished products, such as hemp-based clothing or other products including construction materials, carpets, or hemp-based paper products.

The single largest supplier of U.S. imports of raw and processed hemp fiber is China. Other leading country suppliers include Romania, Hungary, India, and other European countries. The single largest source of U.S. imports of hemp seed and oilcake is Canada. The total value of Canada's exports of hemp seed to the United States has grown significantly in recent years following resolution of a long-standing legal dispute over U.S. imports of hemp foods in late 2004 (see "Dispute over Hemp Food Imports (1999-2004)"). European countries such as the United Kingdom and Switzerland also have supplied hemp seed and oilcake to the United States.

U.S. Market Potential

In the past two decades, several feasibility and marketing studies have been conducted by researchers at the USDA and various land grant universities and state agencies (for example, Arkansas, Kentucky, Maine, Minnesota, North Dakota, Oregon, and Vermont; see **Appendix**).

Studies by researchers in Canada and various state agencies provide a mostly positive market outlook for growing hemp, citing rising consumer demand and the potential range of product uses for hemp. Some state reports claim that if current restrictions on growing hemp in the United States were removed, agricultural producers in their states could benefit. A 2008 study reported that acreage under cultivation in Canada, "while still showing significant annual fluctuations, is now regarded as being on a strong upward trend." Most studies generally note that "hemp ... has such a diversity of possible uses, [and] is being promoted by extremely enthusiastic market developers." Other studies highlight certain production advantages associated with hemp or acknowledge hemp's benefits as a rotational crop or further claim that hemp may be less environmentally degrading than other agricultural crops. Some studies also claim certain production advantages to hemp growers, such as relatively low input and management requirements for the crop.

Other studies focused on the total U.S. market differ from the various state reports and provide a less favorable aggregate view of the potential market for hemp growers in the United States. Two studies, conducted by researchers at USDA and University of Wisconsin-Madison (UW-M), highlight some of the continued challenges facing U.S. hemp producers.

Table 1. Value and Quantity of U.S. Imports of Selected Hemp Products, Selected Years, 1996-2013

	units	1996	2000	2005	2009	2010	2011	2012	2013
Hemp Seeds (HS 1207990220)[a]	$1000	—	—	271	3,320	5,154	6,054	13,057	26,710
Hemp Oil and Fractions (HS 1515908010)	$1000	—	—	3,027	1,042	1,833	1,146	1,098	2,264
Hemp Seed Oilcake and Other Solids (HS 2306900130)	$1000	—	—	—	1,811	2,369	2,947	4,388	6,279
True Hemp, raw/processed not spun (HS 5302)	$1000	100	577	228	114	94	181	157	78
True Hemp Yarn (HS 5308200000)	$1000	25	640	904	568	296	580	496	478
True Hemp Woven Fabrics (HS 5311004010)	$1000	1,291	2,258	1,232	894	1,180	1,363	1,363	1,057
	Total	**1,416**	**3,475**	**5,662**	**7,749**	**10,926**	**12,271**	**20,559**	**36,866**
Hemp Seeds (HS 1207990220)[a]	metric ton	—	—	92	602	711	623	1,237	2,272
Hemp Oil and Fractions (HS 1515908010)	metric ton	—	—	287	128	215	157	208	450
Hemp Seed Oilcake and Other Solids (HS 2306900130)	metric ton	—	—	—	201	240	298	441	601
True Hemp, raw/processed not spun (HS 5302)	metric ton	53	678	181	83	42	89	66	72
True Hemp Yarn (HS 5308200000)	metric ton	6	89	113	76	42	86	88	70
	Subtotal	**59**	**767**	**673**	**1,090**	**1,250**	**1,253**	**2,040**	**3,465**
True Hemp Woven Fabrics (HS 5311004010)	m2 (1000)	435	920	478	263	284	270	319	224

Source: Compiled by CRS using data from the U.S. International Trade Commission (USITC), http://dataweb.usitc.gov. Data are by Harmonized System (HS) code. Data shown as "—" indicate data are not available as breakout categories for some product subcategories were established only recently.

a. Data for 2007-2011 were supplemented by reported Canadian export data for hemp seeds (HS 12079910, Hemp seeds, whether or not broken) as reported by Global Trade Atlas, http://www.gtis.com/gta/. Official U.S. trade data reported no imports during these years for these HS subcategories. The Canadian export data as reported by Global Trade Atlas also differ for hemp seed oilcake (15159020, Hemp oil and its fractions, whether or not refined but not chemically modified) but were not similarly substituted since other countries exported product to the United States.

For example, USDA's study projected that U.S. hemp markets "are, and will likely remain, small, thin markets" and also cited "uncertainty about long-run demand for hemp products and the potential for oversupply" among possible downsides of potential future hemp production.

Similarly, the UW-M study concluded that hemp production "is not likely to generate sizeable profits" and although hemp may be "slightly more profitable than traditional row crops" it is likely "less profitable than other specialty crops" due to the "current state of harvesting and processing technologies, which are quite labor intensive, and result in relatively high per unit costs."[26] The study highlights that U.S. hemp growers could be affected by competition from other world producers as well as by certain production limitations in the United States, including yield variability and lack of harvesting innovations and processing facilities in the United States, as well as difficulty transporting bulk hemp. The study further claims that most estimates of profitability from hemp production are highly speculative, and often do not include additional costs of growing hemp in a regulated market, such as the cost associated with "licensing, monitoring, and verification of commercial hemp."[27]

A 2013 study by researchers at the University of Kentucky highlights some of the issues and challenges for that state's growers, processors, and industry. The study predicts that in Kentucky, despite "showing some positive returns, under current market conditions, it does not appear that anticipated hemp returns will be large enough to entice Kentucky grain growers to shift out of grain production," under most circumstances; also, "short run employment opportunities evolving from a new Kentucky hemp industry appear limited (perhaps dozens of new jobs, not 100s)," because of continued uncertainty in the industry.[28] Overall, the study concludes there are many remaining unknowns and further analysis and production research is needed.

Given the absence since the 1950s of any commercial and unrestricted hemp production in the United States, it is not possible to predict the potential market and employment effects of relaxing current restrictions on U.S. hemp production. While expanded market opportunities might exist in some states or localities if current restrictions on production are lifted, it is not possible to predict the potential for future retail sales or employment gains in the United States, either nationally or within certain states or regions. Limited information is available from previous market analyses that have been conducted by researchers at USDA and land grant universities and state agencies.[29]

Global Production

International Production

Approximately 30 countries in Europe, Asia, and North and South America currently permit farmers to grow hemp. Some of these countries never outlawed production, while some countries

[26] T. R. Fortenbery and M. Bennett, "Opportunities for Commercial Hemp Production," *Review of Agricultural Economics*, 26(1): 97-117, 2004.

[27] Ibid.

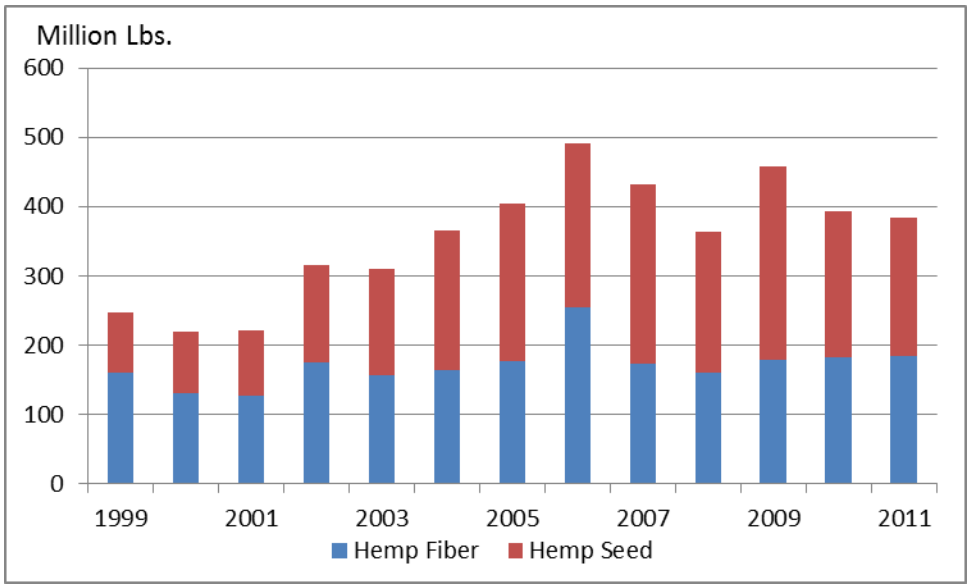
[28] University of Kentucky, Department of Agricultural Economics, *Economic Considerations for Growing Industrial Hemp: Implications for Kentucky's Farmers and Agricultural Economy*, July 2013.

[29] For more information, see CRS Congressional Distribution Memorandum, "Potential U.S. Market Effects of Removing Restrictions on Growing Industrial Hemp," March 4, 2013), available from Renée Johnson (7-9588).

banned production for certain periods in the past. China is among the largest producing and exporting countries of hemp textiles and related products, as well as a major supplier of these products to the United States. The European Union (EU) has an active hemp market, with production in most member nations. Production is centered in France, the United Kingdom, Romania, and Hungary.[30]

Acreage in hemp cultivation worldwide has been mostly flat to decreasing, reported at about 200,000 acres globally in 2011.[31] Although variable year-to-year, global production has increased overall from about 250 million pounds in 1999 to more than 380 million pounds in 2011, mostly due to increasing production of hemp seed (**Figure 3**). Upward trends in global hemp seed production roughly track similar upward trends in U.S. imports of hemp seed and oil, mostly for use in hemp-based foods, supplements, and body care products (**Table 1**).

Figure 3. Hemp Fiber and Seed, Global Production (1999-2011)



Source: FAOSTAT, http://faostat.fao.org/site/567/default.aspx#ancor.

Many EU countries lifted their bans on hemp production in the 1990s and, until recently, also subsidized the production of "flax and hemp" under the EU's Common Agricultural Policy.[32] EU hemp acreage was reported at about 26,000 acres in 2010, which was below previous years, when more than 50,000 acres of hemp were under production.[33] Most EU production is of hurds, seeds, and fibers. Other non-EU European countries with reported hemp production include Russia, Ukraine, and Switzerland. Other countries with active hemp grower and/or consumer markets are Australia, New Zealand, India, Japan, Korea, Turkey, Egypt, Chile, and Thailand.

[30] Other EU producing countries include Austria, Denmark, Finland, Germany, Italy, Netherlands, Poland, Portugal, Slovenia, and Spain.

[31] Food and Agriculture Organization (FAO) of the United Nations, FAOSTAT crop data, http://faostat.fao.org/.

[32] For information on the EU's prior agricultural support for industrial hemp, see the EU's notification to the World Trade Organization regarding its domestic support for agricultural producers (G/AG/N/EEC/68; January 24, 2011).

[33] M. Carus et al., "The European Hemp Industry," May 2013. Also see European Industrial Hemp Association, "European Commission: Hemp and Flax, AGRI C5, 2009," February 2009.

Canada is another major supplier of U.S. imports, particularly of hemp-based foods and related imported products. Canada's commercial hemp industry is fairly new: Canada began to issue licenses for research crops in 1994, followed by commercial licenses starting in 1998.

The development of Canada's hemp market followed a 60-year prohibition and is strictly regulated.[34] Its program is administered by the Office of Controlled Substances of Health Canada, which issues licenses for all activities involving hemp. Under the regulation, all industrial hemp grown, processed, and sold in Canada may contain THC levels no more than 0.3% of the weight of leaves and flowering parts. Canada also has set a maximum level of 10 parts per million (ppm) for THC residues in products derived from hemp grain, such as flour and oil.[35] To obtain a license to grow hemp, Canadian farmers must submit extensive documentation, including background criminal record checks, the Global Positioning System (GPS) coordinates of their fields, and supporting documents (from the Canadian Seed Growers' Association or the Canadian Food Inspection Agency) regarding their use of low-THC hemp seeds and approved cultivars; and they must allow government testing of their crop for THC levels.[36] Since hemp cultivation was legalized in Canada, production has been variable year-to-year (**Figure 4**), ranging from a high of 48,000 acres planted in 2006, to about 4,000 acres in 2001-2002, to a reported nearly 39,000 acres in 2011. Canada's hemp cultivation still accounts for less than 1% of the country's available farmland. The number of cultivation licenses has also varied from year to year, reaching a high of 560 licenses in 2006, followed by a low of 77 licenses in 2008 (with 340 licenses in 2011).[37]

Historical U.S. Production

Hemp was widely grown in the United States from the colonial period into the mid-1800s; fine and coarse fabrics, twine, and paper from hemp were in common use. By the 1890s, labor-saving machinery for harvesting cotton made the latter more competitive as a source of fabric for clothing, and the demand for coarse natural fibers was met increasingly by imports. Industrial hemp was handled in the same way as any other farm commodity, in that USDA compiled statistics and published crop reports,[38] and provided assistance to farmers promoting production and distribution.[39] In the early 1900s, hemp continued to be grown and researchers at USDA continued to publish information related to hemp production and also reported on hemp's potential for use in textiles and in paper manufacturing.[40] Several hemp advocacy groups, including the Hemp Industries Association (HIA) and Vote Hemp Inc., have compiled other historical information and have copies of original source documents.[41]

[34] Industrial Hemp Regulations (SOR/98-156), as part of the Controlled Drugs and Substances Act.

[35] Agriculture Canada, "Canada's Industrial Hemp Industry," March 2007, http://www4.agr.gc.ca.

[36] See Health Canada's FAQs on its hemp regulations and its application for obtaining permits (http://www.hc-sc.gc.ca/). Other information is at the Canadian Food Inspection Agency website (http://www.inspection.gc.ca/).

[37] Health Canada, Industrial Hemp Section, "Cultivation Licenses," October 25, 2011.

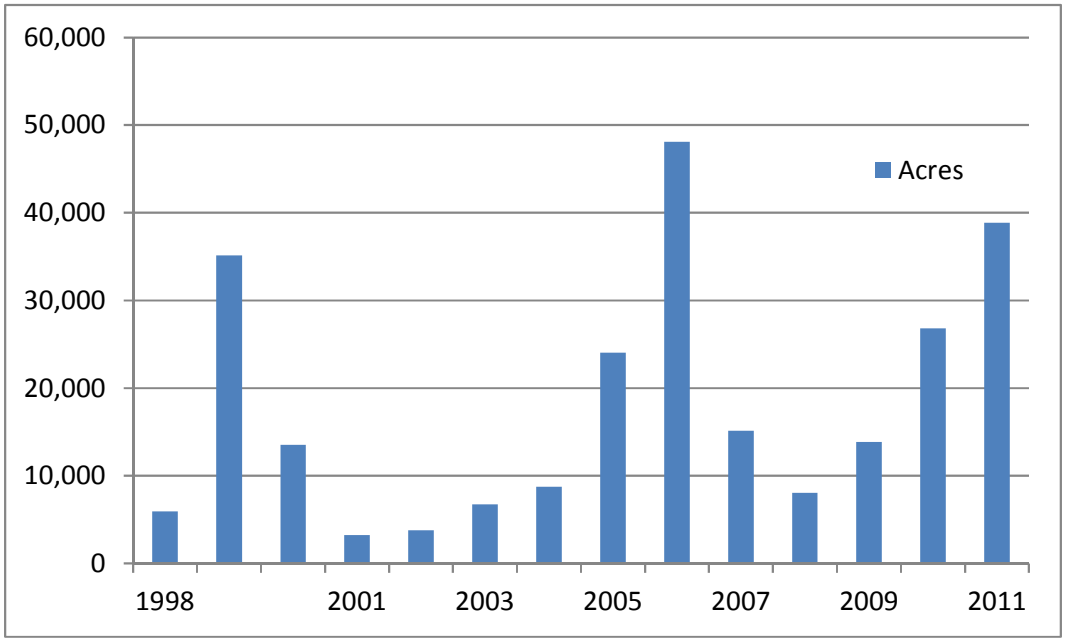
[38] See, for example, editions of USDA *Agricultural Statistics*. A compilation of U.S. government publications is available from the Hemp Industries Association (HIA) at http://www.hempology.org/ALLARTICLES.html.

[39] See, for example, USDA's 1942 short film "Hemp for Victory," and University of Wisconsin's Extension Service Special Circular, "What about Growing Hemp," November 1942.

[40] Regarding papermaking, see L. H. Dewey and J. L. Merrill, "Hemp Hurds as Paper-Making Material," USDA Bulletin No. 404, October 14, 1916. A copy of this document is available, as posted by Vote Hemp Inc., at http://www.votehemp.com/17855-h/17855-h.htm. Other USDA and state documents from this period are available at http://www.hempology.org/ALLARTICLES.html.

[41] See links at http://www.thehia.org/history.html and http://www.hemphistoryweek.com/timeline.html.

Figure 4. Canadian Hemp Acreage, 1998-2011



Source: Agriculture and Agri-Food Canada, "Industrial Hemp Statistics," http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1174420265572&lang=eng.

Note: The downturn in 2007 is viewed as a correction of overproduction in 2006, following the "success of the court case against the DEA in 2004, and continued improvements in breeding, production, and processing," which resulted in part in a "dramatic reduction in hemp acreage planted" in 2007. The 2007 downturn is also attributed to "increasingly positive economics of growing other crops" (Manitoba Agriculture, National Industrial Hemp Strategy, March 2008, prepared for Food and Rural Initiative Agriculture and Agri-Food Canada).

Between 1914 and 1933, in an effort to stem the use of *Cannabis* flowers and leaves for their psychotropic effects, 33 states passed laws restricting legal production to medicinal and industrial purposes only.[42] The 1937 Marihuana Tax Act defined hemp as a narcotic drug, requiring that farmers growing hemp hold a federal registration and special tax stamp, effectively limiting further production expansion.

In 1943, U.S. hemp production reached more than 150 million pounds (140.7 million pounds hemp fiber; 10.7 million pound hemp seed) on 146,200 harvested acres. This compared to pre-war production levels of about 1 million pounds. After reaching a peak in 1943, production started to decline. By 1948, production had dropped back to 3 million pounds on 2,800 harvested acres, with no recorded production after the late 1950s.[43]

Currently, industrial hemp is not grown commercially in the United States. No active federal licenses allow U.S. commercial cultivation at this time.

[42] R. J. Bonnie and C. H. Whitebread, *The Marihuana Conviction: A History of Marihuana Prohibition in the United States* (Charlottesville: University Press of Virginia, 1974), p. 51.

[43] USDA *Agricultural Statistics*, various years through 1949. A summary of data spanning 1931-1945 is available in the 1946 edition. See "Table 391—Hemp Fiber and hempseed: Acreage, Yield, and Production, United States."

Legal Status in the United States

Federal Drug Law

Controlled Substances Act of 1970

In 1937, Congress passed the first federal law to discourage Cannabis production for marijuana while still permitting industrial uses of the crop (the Marihuana Tax Act; 50 Stat. 551). Under this statute, the government actively encouraged farmers to grow hemp for fiber and oil during World War II. After the war, competition from synthetic fibers, the Marihuana Tax Act, and increasing public anti-drug sentiment resulted in fewer and fewer acres of hemp being planted, and none at all after 1958.

Strictly speaking, the Controlled Substances Act of 1970 (CSA, 21 U.S.C. §801 *et. seq*.) does not make growing hemp illegal; rather, it places strict controls on the production of hemp, making it illegal to grow the crop without a DEA permit.

The CSA adopted the same definition of *Cannabis sativa* that appeared in the 1937 Marihuana Tax Act. The definition of "marihuana" (21 U.S.C. §802(16)) reads:

> The term marihuana means all parts of the plant Cannabis sativa L., whether growing or not; the seeds thereof; the resin extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture, or preparation of such plant, its seeds or resin. Such term does not include the mature stalks of such plant, fiber produced from such stalks, oil or cake made from the seeds of such plant, any other compound ... or preparation of such mature stalks (except the resin extracted therefrom), fiber, oil, or cake, or the sterilized seed of such plant which is incapable of germination.

The statute thus retains control over all varieties of the cannabis plant by virtue of including them under the term "marijuana" and does not distinguish between low- and high-THC varieties. The language exempts from control the parts of mature plants—stalks, fiber, oil, cake, etc.—intended for industrial uses. Some have argued that the CSA definition exempts industrial hemp under its term exclusions for stalks, fiber, oil and cake, and seeds.[44] DEA refutes this interpretation.[45]

DEA Permit Requirements

Federal law prohibits cultivation without a permit, DEA determines whether any industrial hemp production authorized under a state statute is permitted, and it enforces standards governing the security conditions under which the crop must be grown. In other words, a grower needs to get permission from the DEA to grow hemp or faces the possibility of federal charges or property confiscation, regardless of whether the grower has a state-issued permit.[46]

[44] See, for example, *Hemp Industries Association v. Drug Enforcement Administration*, 357 F.2d (9th Circuit 2004).

[45] 66 *Federal Register* 51530, October 9, 2001.

[46] Registration requirements are at 21 C.F.R. 823. See also DEA's registration procedures and applications at http://www.deadiversion.usdoj.gov/drugreg/process.htm.

Although many states have established programs under which a farmer may be able to grow industrial hemp under certain circumstances, a grower would still need to obtain a DEA permit and abide by the DEA's strict production controls. This relationship has resulted in some high-profile cases, wherein growers have applied for a permit but DEA has not approved (or denied) a permit to grow hemp, even in states that authorize cultivation under state laws. Ongoing cases involve attempts to grow hemp under state law in North Dakota, Montana, Vermont, and other states. DEA issued a permit for an experimental quarter-acre plot at the Hawaii Industrial Hemp Research Program during the period from 1999 to 2003 (now expired).[47]

Most reports indicate that the DEA has not granted any current licenses to grow hemp, even for research purposes.[48] To date, all commercial hemp products sold in the United States are imported or manufactured from imported hemp materials. In May 2013, it was reported that hemp was being cultivated in Colorado, following changes to that state's laws in November 2012. Similarly, Montana passed its state law authorizing hemp production in 2001. In October 2009, Montana's Agriculture Department issued its first state license for an industrial hemp-growing operation in the state. Media reports indicate that the grower does not intend to request a federal permit. Some argue that this case could pose a potential challenge to DEA of whether it is willing to override the state's authority to allow for hemp production in the state, as well as a test of state's rights.[49]

In the past there has been ongoing tension between federal and state authorities over state hemp policies. After passing its own state law authorizing industrial hemp production in 1999,[50] researchers in North Dakota repeatedly applied for, but did not receive, a DEA permit to cultivate hemp for research purposes in the state.[51] Also in 2007, two North Dakota farmers were granted state hemp farming licenses and, in June 2007, filed a lawsuit in U.S. District Court (North Dakota) seeking "a declaratory judgment" that the CSA "does not prohibit their cultivation of industrial hemp pursuant to their state licenses."[52] The case was dismissed in November 2007.[53] The case was appealed to the U.S. Court of Appeals (8th Circuit), but was again dismissed in December 2009.[54] They filed an appeal in May 2010.[55]

Even if DEA were to approve a permit, it could be argued that production might be limited or discouraged because of the perceived difficulties of working through DEA licensing requirements and installing the types of structures necessary to obtain a permit. Obtaining a DEA permit to produce hemp requires that the applicant demonstrate that an effective security protocol will be in place at the production site, such as security fencing around the planting area, a 24-hour

[47] DEA, "Statement from the Drug Enforcement Administration on the Industrial Use of Hemp," March 12, 1998.

[48] S. Raabe, "First Major Hemp Crop in 60 Years Is Planted in Southeast Colorado," *Denverpost.com*, May 13, 2013.

[49] M. Brown, "First License Issued to Montana Hemp Grower," *Missoulian*, October 27, 2009.

[50] The North Dakota Department of Agriculture issued final regulations in 2007 on licensing hemp production. For information on the state's requirements, see http://www.agdepartment.com/Programs/Plant/HempFarming.htm.

[51] See, for example, letter from North Dakota State University to the DEA, July 27, 2007.

[52] *David Monson and Wayne Hauge v. Drug Enforcement Administration and United States Department of Justice*, Complaint for Declaratory Judgment, U.S. District Court for the District of North Dakota, June 18, 2007. For an overview, see Vote Hemp Inc. website: http://www.votehemp.com/legal_cases_ND.html#overview.

[53] *Monson v. DEA*, 522 F. Supp. 2d 1188 (D.N.D. 2007).

[54] *Monson v. DEA*, 589 F.3d 952 (8th Cir. 2009).

[55] S. Roesler, "ND Farmers File Another Industrial Hemp Appeal in District Court," *Farm & Ranch Guide*, June 4, 2010.

monitoring system, controlled access, and possibly armed guard(s) to prevent public access.[56] DEA application requirements also include a nonrefundable fee, FBI background checks, and extensive documentation. It could also be argued that, because of the necessary time-consuming steps involved in obtaining and operating under a DEA permit, the additional management and production costs from installing structures, as well as other business and regulatory requirements, could ultimately limit the operation's profitability.

DEA's 2003 Rules Regarding Hemp

In March 2003, DEA issued two final rules addressing the legal status of hemp products derived from the cannabis plant. The DEA found that hemp products "often contain the hallucinogenic substance tetrahydrocannabinols (THC) ... the primary psychoactive chemical found in the cannabis (marijuana) plant."[57] Although the DEA acknowledged that "in some cases, a Schedule I controlled substance may have a legitimate industrial use," such use would only be allowed under highly controlled circumstances. These rules set forth what products may contain "hemp" and also prohibit "cannabis products containing THC that are intended or used for human consumption (foods and beverages)."[58] Development of the 2003 rule sparked a fierce battle over the permissibility of imported hemp-based food products that lasted from 1999 until 2004.

Dispute over Hemp Food Imports (1999-2004)

In late 1999, during the development of the 2003 rules (described in the previous section), the DEA acted administratively to demand that the U.S. Customs Service enforce a zero-tolerance standard for the THC content of all forms of imported hemp, and hemp foods in particular.

The DEA followed up, in October 2001, with publication of an interpretive rule in the *Federal Register* explaining the basis of its zero-tolerance standard.[59] It held that when Congress wrote the statutory definition of marijuana in 1937, it "exempted certain portions of the *Cannabis* plant from the definition of marijuana based on the assumption (now refuted) that such portions of the plant contain none of the psychoactive component now known as THC." Both the proposed rule (which was published concurrently with the interpretive rule) and the final 2003 rule gave retailers of hemp foods a date after which the DEA could seize all such products remaining on shelves. On both rules, hemp trade associations requested and received court-ordered stays blocking enforcement of that provision. The DEA's interpretation made hemp with any THC content subject to enforcement as a controlled substance.

Hemp industry trade groups, retailers, and a major Canadian exporter filed suit against the DEA, arguing that congressional intent was to exempt plant parts containing naturally occurring THC at non-psychoactive levels, the same way it exempts poppy seeds containing trace amounts of naturally occurring opiates.[60] Industry groups maintain that (1) naturally occurring THC in the leaves and flowers of cannabis varieties grown for fiber and food is already at below-psychoactive levels (compared with drug varieties); (2) the parts used for food purposes (seeds

[56] University of Kentucky Cooperative Extension Service, "Industrial Hemp—Legal Issues," September 2012.

[57] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources.

[58] Ibid.

[59] 66 *Federal Register* 51530, October 9, 2001.

[60] 21 U.S.C. §802 (19) and (20).

and oil) contain even less; and (3) after processing, the THC content is at or close to zero. U.S. and Canadian hemp seed and food manufacturers have in place a voluntary program for certifying low, industry-determined standards in hemp-containing foods. Background information on the TestPledge Program is available at http://www.TestPledge.com. The intent of the program is to assure that consumption of hemp foods will not interfere with workplace drug testing programs or produce undesirable mental or physical health effects.

On February 6, 2004, the U.S. Court of Appeals for the Ninth Circuit permanently enjoined the enforcement of the final rule.[61] The court stated that "the DEA's definition of 'THC' contravenes the unambiguously expressed intent of Congress in the CSA and cannot be upheld."[62] In late September 2004 the Bush Administration let the final deadline pass without filing an appeal.

Other DEA Policy Statements

Other DEA documentation illustrates how DEA has reviewed inquiries about the legal status of hemp-based products (such as those shown in **Figure 2**), including inquiries from U.S. Customs inspectors regarding the need for guidance regarding imported hemp products:[63]

> DEA took the position that it would follow the plain language of the Controlled Substances Act (CSA), which expressly states that anything that contains "any quantity" of marijuana or THC is a schedule I controlled substance. However, as a reasonable accommodation, DEA exempted from control legitimate industrial products that contained THC but were not intended for human consumption (such as clothing, paper, and animal feed).

DEA's position that "anything that contains 'any quantity' of marijuana or THC" should be regarded as a controlled substance is further supported by reports published by the National Institute on Drug Abuse (NIDA), which is part of the National Institutes of Health. Although NIDA does not have a formal position about industrial hemp, NIDA's research tends to conflate all cannabis varieties, including marijuana and hemp. For example, NIDA reports: "All forms of marijuana are mind-altering (psychoactive)" and "they all contain THC (delta-9-tetrahydrocannabinol), the main active chemical in marijuana."[64] The DEA further maintains that the CSA does not differentiate between different varieties of cannabis based on THC content.[65]

Regarding DEA's issuance of its 2003 rules and the import dispute that followed (discussed in the previous report sections), the agency continues to maintain that the courts have expressed conflicting opinions on these issues:[66]

> Despite the plain language of the statute supporting DEA's position, the ninth circuit ruled in 2004 that the DEA rules were impermissible under the statute and therefore ordered DEA to refrain from enforcing them. Subsequently, in 2006, another federal court of appeals (the eight circuit) took a different view, stating, as DEA had said in its rules: "The plain language of the CSA states that schedule I(c) includes 'any material ... which contains any quantity of THC' and

[61] 68 *Federal Register* 14113, March 21, 2003.

[62] *Hemp Industries Association v. Drug Enforcement Administration*, 357 F.2d (9th Circuit 2004).

[63] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources.

[64] NIDA, "Marijuana: Facts for Teens," http://www.drugabuse.gov/publications/marijuana-facts-teens/letter-to-teens.

[65] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources.

[66] Ibid.

> thus such material is regulated."…[67] Thus, the federal courts have expressed conflicting views regarding the legal status of cannabis derivatives.

Regarding interest among growers in some states to cultivate hemp for industrial use, DEA claims that the courts have supported the agency's current policy that all hemp growers—regardless of whether a state permit has been issued and of the THC content—are subject to the CSA and must obtain a federal permit:[68]

> Under the CSA, anyone who seeks to grow marijuana for any purpose must first obtain a DEA registration authorizing such activity. However, several persons have claimed that growing marijuana to produce so-called "hemp" (which purportedly contains a relatively low percentage of THC) is not subject to CSA control and requires no DEA registration. All such claims have thus far failed, as every federal court that has addressed the issue has ruled that any person who seeks to grow any form of marijuana (no matter the THC content or the purpose for which it is grown) must obtain a DEA registration.

Regarding states that have enacted laws legalizing cannabis grown for industrial purposes, "these laws conflict with the CSA, which does not differentiate, for control purposes, between marijuana of relatively low THC content and marijuana of greater THC content."[69]

2013 DEA Guidance Outlined in "Cole Memo"

In August 2013, DOJ updated its federal marijuana enforcement policy following 2012 state ballot initiatives in Washington and Colorado that "legalized, under state law, the possession of small amounts of marijuana and provide for the regulation of marijuana production, processing, and sale."[70] The guidance—commonly referred to as the "Cole memo"—outlines DOJ's policy, clarifying that "marijuana remains an illegal drug under the Controlled Substances Act and that federal prosecutors will continue to aggressively enforce this statute." DOJ identified eight enforcement areas that federal prosecutors should prioritize. These include:[71]

- preventing the distribution of marijuana to minors;
- preventing revenue from the sale of marijuana from going to criminal enterprises, gangs, and cartels;
- preventing the diversion of marijuana from states where it is legal under state law in some form to other states;
- preventing state-authorized marijuana activity from being used as a cover or pretext for the trafficking of other illegal drugs or other illegal activity;
- preventing violence and the use of firearms in the cultivation and distribution of marijuana;

[67] DEA-cited court case: *United States v. White Plume*, 447 F.3d 1067, 1073 (8th Cir. 2006).

[68] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources. DEA-cited court cases: *New Hampshire Hemp Council, Inc. v. Marshall*, 203 F.3d I (1st Cir 2000); *United States v. White Plume*, supra; *Monson v. DEA*, 522 F.Supp.2d 1188 (D. N.D. 2007), No. 07-3837 (8th Cir. 2007).

[69] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources.

[70] Letter providing guidance regarding marijuana enforcement from Deputy U.S. Attorney General James Cole to all U.S. States Attorneys, August 29, 2013, http://www.justice.gov/opa/pr/2013/August/13-opa-974.html.

[71] Ibid.

- preventing drugged driving and the exacerbation of other adverse public health consequences associated with marijuana use;
- preventing the growing of marijuana on public lands and the attendant public safety and environmental dangers posed by marijuana production on public lands; and
- preventing marijuana possession or use on federal property.

Although the Cole memo does not specifically address industrial hemp, because DOJ regards all varieties of the cannabis plant as "marijuana" and does not distinguish between low- and high-THC varieties, the August 2013 guidance appears to cover industrial hemp production as well. Accordingly, some are interpreting the guidance as allowing states to proceed to implement their laws regulating and authorizing the cultivation of hemp.[72]

In November 2013, in response to a letter to Representative Earl Blumenauer, DOJ officials in Oregon clarified that since "industrial hemp' is marijuana, under the CSA, these eight enforcement priorities apply to hemp just as they do for all forms of cannabis" and that "federal prosecutors will remain aggressive" when it comes to protecting these eight priorities.[73]

DEA's Blocking of Imported Viable Hemp Seeds

In response to the enactment of the 2014 farm bill provision allowing for the cultivation of industrial hemp by research institutions and state departments of agriculture (see "2014 Farm Bill"), several states made immediate plans to initiate new hemp pilot projects.

For example, the state of Kentucky announced plans for several pilot projects through the Kentucky Department of Agriculture.[74] However, in May 2014, the Department's shipment of 250 pounds of imported *viable* hemp seed from Italy was blocked by U.S. Customs officials at Louisville International Airport. DEA officials contend the action was warranted since the "importation of cannabis seeds continues to be subject to the Controlled Substances Imports and Export Act (CSIEA)"[75] and to the implementing regulations, which restrict persons from importing *viable* cannabis seed unless the person is registered with DEA and has obtained the necessary Schedule I research permit, among other requirements.

Viable seeds refer to seeds that are alive and have the potential to germinate and develop into normal reproductively mature plants, under appropriate growing conditions. The DEA has required that seeds be either heat sterilized or steam sterilized to remove any naturally occurring traces of THC, which makes the seeds mostly incapable of germination. The importation, sterilization, and commercial distribution of hemp seed is regulated by the DEA pursuant to CSIEA (21 U.S.C. 951 et. seq. and 21 C.F.R. 1311).

[72] Letter to interested parties from Joe Sandler, Counsel for Vote Hemp, November 13, 2013.

[73] Letter to Representative Earl Blumenauer, from S. Amanda Marshall, U.S. Attorney, District of Oregon, November 7, 2013.

[74] See, for example, Kentucky Department of Agriculture, "Industrial Hemp Program," http://www.kyagr.com/marketing/hemp-pilot.html.

[75] 21 U.S.C. §§951-971. Letter from Joseph T. Rannazzisi, Deputy Assistant Administrator, DEA Office of Diversion Control to Luke Morgan, Counsel for Kentucky Department of Agriculture, May 13, 2014.

To facilitate release of the hemp seeds, the Kentucky Department of Agriculture filed a lawsuit in U.S. District Court against the DEA, the Justice Department, U.S. Customs and Border Protection (CBP), and the U.S. Attorney General.[76] In the lawsuit, the Department contends that its efforts to grow industrial hemp are authorized under both state and federal law, and that the DEA should not seek to impose "additional requirements, restrictions, and prohibitions" on hemp production beyond requirements in the 2014 farm bill, or otherwise interfere with its delivery of hemp seeds.

Although Kentucky's seeds were eventually released and planted,[77] these circumstances have resulted in uncertainty for U.S. hemp growers. In response, Congress enacted additional legislation to stop DEA from taking similar actions in the future. (See discussion in "FY2015 Commerce-Justice-Science (C-J-S) Appropriations.")

Farm Bill and Other Federal Actions

2014 Farm Bill

The 113th Congress considered various changes to U.S. policies regarding industrial hemp during the omnibus farm bill debate.[78] The Agricultural Act of 2014 ("farm bill," P.L. 113-79, §7606) provides that certain research institutions and state departments of agriculture may grow industrial hemp, as part of an agricultural pilot program, if allowed under state laws where the institution or state department of agriculture is located. The farm bill also established a statutory definition of "industrial hemp" as "the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis."[79] The provision was included as part of the research title of the law. The provision did not include an effective date that would suggest any kind of program rollout, and there appears to be nothing in the conference report or bill language to suggest that the states might not be able to immediately initiate action on this provision.

This provision was adopted when Representatives Polis, Massie, and Blumenauer introduced an amendment to the House version of the farm bill (H.R. 1947, the Federal Agriculture Reform and Risk Management Act of 2013) during floor debate on the bill. The amendment (H.Amdt. 208) was to allow institutions of higher education to grow or cultivate industrial hemp for the purpose of agricultural or academic research, and applied to states that already permit industrial hemp growth and cultivation under state law. The amendment was adopted by the House of Representatives. Although the full House ultimately voted to reject H.R. 1947, similar language was included as part of a subsequent revised version of the House bill (H.R. 2642), which was passed by the full House.

[76] Kentucky Department of Agriculture v. U.S. Drug Enforcement Agency, U.S. Customs and Border Protection, U.S. Justice Department, and Eric Holder (Western District of Kentucky, Louisville Division), May 2014, http://media.kentucky.com/smedia/2014/05/14/16/44/X9Fs3.So.79.pdf.

[77] J. Patton, "Hemp Seeds Planted in Central Kentucky for First Time in Decades," *Lexington Herald-Ledger*, May 27, 2014.

[78] For more detailed information on the farm bill, see CRS Report R43076, *The 2014 Farm Bill (P.L. 113-79): Summary and Side-by-Side*.

[79] P.L. 113-79 (§7606).

In the Senate, Senators Wyden, McConnell, Paul, and Merkley introduced an amendment to the Senate version of the farm bill (S. 954, the Agriculture Reform, Food and Jobs Act of 2013). The amendment (S.Amdt. 952) would have amended the CSA to exclude industrial hemp from the definition of marijuana. The amendment was not adopted as part of the Senate-passed farm bill.

During conference on the House and Senate bills, the House provision was adopted with additional changes. The enacted law expands the House bill provision to allow both certain research institutions and also state departments of agriculture to grow industrial hemp, as part of an agricultural pilot program, if allowed under state laws where the institution or state department of agriculture is located.

As the farm bill did not include an effective date distinct from the date of enactment, several states responded by making immediate plans to initiate new hemp pilot projects. In addition, several states enacted legislation to allow for hemp cultivation, which is a pre-condition for allowances under the 2014 farm bill. (For more information on state actions, see "State Laws".)

FY2015 Commerce-Justice-Science (C-J-S) Appropriations

In response to actions taken by DEA to block seeds imported by some states in order to grow industrial hemp, and to avoid future similar actions by DEA to stall full implementation of the hemp provision of the farm bill, Congress acted swiftly. Both the House and Senate FY2015 Commerce-Justice-Science (CJS) appropriations bills[80] contained provisions to block federal law enforcement authorities from interfering with state agencies and hemp growers, as well as to counter efforts to obstruct agricultural research. The enacted FY2015 appropriation (P.L. 113-235) blocks federal law enforcement authorities from interfering with state agencies, hemp growers, and agricultural research.[81] The provision states that "none of the funds made available" to the U.S. Department of Justice (DOJ) and the Drug Enforcement Agency (DEA) "may be used in contravention" of the 2014 farm bill (P.L. 113-79, §7606). The House bill had further provided that no funds be used to prevent a state from implementing its own state laws that "authorize the use, distribution, possession, or cultivation of industrial hemp" as defined in the 2014 farm bill, but this provision was not adopted.[82]

Other Federal Actions Involving USDA

In 1994, President Clinton issued Executive Order 12919, entitled "National Defense Industrial Resources Preparedness," which was intended to strengthen the U.S. industrial and technology base for meeting national defense requirements. The order included hemp among the essential agricultural products that should be stocked for defense preparedness purposes.[83] Some hemp

[80] H.R. 4660, §560; and S. 2437, §220.

[81] P.L. 113-235, Division B—Commerce, Justice, Science, and Related Agencies Appropriations Act, 2015, Title V, General Provisions, §539.

[82] H.R. 4660, §557.

[83] Hemp is included under the category of "food resources," which it defined to mean, in part, "all starches, sugars, vegetable and animal or marine fats and oils, cotton, tobacco, wool, mohair, hemp, flax, fiber and other materials, but not any such material after it loses its identity as an agricultural commodity or product."

supporters have argued that the executive order gives hemp a renewed value as a strategic crop for national security purposes, in line with its role in World War II.[84]

USDA has supported research on alternative crops and industrial uses of common commodities since the late 1930s. Some alternative crops have become established in certain parts of the United States—kenaf (for fiber) in Texas, jojoba (for oil) in Arizona and California, and amaranth (for nutritious grain) in the Great Plains states. Many have benefits similar to those ascribed to hemp, but are not complicated by having a psychotropic variety within the same species.

The Critical Agricultural Materials Act of 1984 (P.L. 98-284, 7 U.S.C. §178) supports the supplemental and alternative crops provisions of the 1985 and 1990 omnibus farm acts and other authorities, and funds research and development on alternative crops at USDA and state laboratories. In 2010, USDA recommended $1.083 million for programs under the act.[85] In addition, Section 1473D of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA, 7 U.S.C. §3319d(c)) authorizes USDA to make competitive grants toward the development of new commercial products derived from natural plant material for industrial, medical, and agricultural applications.[86] In 2010, USDA recommended $835,000 for the program.[87] To date, these authorities have not been used to develop hemp cultivation and use.

The United States is a signatory of the United Nations Single Convention on Narcotic Drugs, 1961 (as amended by the 1972 Protocol Amending the Single Convention on Narcotic Drugs, 1961).[88] The principal objectives of the convention are to "limit the possession, use, trade in, distribution, import, export, manufacture and production of drugs exclusively to medical and scientific purposes and to address drug trafficking through international cooperation to deter and discourage drug traffickers."[89] The convention requires that each party control cannabis cultivation within its borders; however, Article 28.2 of the convention states: "This Convention shall not apply to the cultivation of the cannabis plant exclusively for industrial purposes (fibre and seed) or horticultural purposes."[90] Thus the convention need not present an impediment to the development of a regulated hemp farming sector in the United States.

State Laws

Since the mid-1990s, there has been a resurgence of interest in the United States in producing industrial hemp. Farmers in regions of the country that are highly dependent upon a single crop, such as tobacco or wheat, have shown interest in hemp's potential as a high-value alternative crop, although the economic studies conducted so far paint a mixed profitability picture. Following passage of the 2014 farm bill provision allowing for growing hemp under certain circumstances (see "2014 Farm Bill"), several states have quickly been adopting new state laws to allow for cultivation. These include California, Colorado, Connecticut, Delaware, Hawaii,

[84] J. B. Kahn, "Hemp ... Why Not?" Berkeley Electronic Press (bepress) Legal Series, Paper 1930, 2007.

[85] USDA's 2011 Explanatory Notes, http://www.obpa.usda.gov/17nifa2011notes.pdf.

[86] For information, see USDA, http://www.csrees.usda.gov/funding/rfas/pdfs/10_alt_crops.pdf.

[87] See USDA's 2011 Explanatory Notes, http://www.obpa.usda.gov/17nifa2011notes.pdf.

[88] United Nations Single Convention on Narcotic Drugs, 1961 (as amended by the 1972 Protocol Amending the Single Convention on Narcotic Drugs, 1961), Article 28.

[89] Information posted on International Narcotics Control Board (INCB) website.

[90] Ibid.

Illinois, Indiana, Kentucky, Maine, Montana, Nebraska, New Hampshire, New York, North Dakota, Oregon, South Carolina, Tennessee, Utah, Vermont, and West Virginia. The status of state actions regarding hemp is changing rapidly; resources for updated information include the National Conference of State Legislatures (NCSL) and the advocacy group Vote Hemp.[91]

Beginning around 1995, an increasing number of state legislatures began to consider a variety of initiatives related to industrial hemp. Most of these have been resolutions calling for scientific, economic, or environmental studies, and some are laws authorizing planting experimental plots under state statutes. Nonetheless, the actual planting of hemp, even for state-authorized experimental purposes, remains regulated by the DEA under the Controlled Substances Act.

As of January 2015, nearly 30 states or territories have reportedly introduced legislation favorable to hemp cultivation, and 20 states have already passed such legislation.[92] A rough summary of current state legislative actions regarding industrial hemp is as follows.

- Several states (between 15 to 18 states, depending on the source) have laws to provide for industrial hemp production as described by the 2014 farm bill provision: California, Colorado, Hawaii, Indiana, Kentucky, Maine, Minnesota, Montana, Nebraska, New York, North Dakota, Oregon, South Carolina, Tennessee, Utah, Vermont, Washington, and West Virginia.
- Several states (28) and Puerto Rico have introduced or carried over industrial hemp legislation: Alabama, Arizona, California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, New York, Oklahoma, South Carolina, South Dakota, Tennessee, Utah, Washington, West Virginia, and Wisconsin.
- Several states have passed hemp resolutions (e.g., California, Colorado, Illinois, Maine, Montana, New Hampshire, New Mexico, North Dakota, Oregon, Vermont, and Virginia).
- Several states have passed bills creating commissions or authorizing research (e.g., Hawaii, Kentucky, and Maryland).
- Several states have passed hemp study bills (e.g., Arkansas, Illinois, Maine, Minnesota, New Mexico, North Carolina, North Dakota, and Vermont). Other states have done studies without a legislative directive.
- Production of industrial hemp has been reported in Colorado, Kentucky, and Vermont.

Among the types of current state policies are the following:[93] defining industrial hemp based on the percentage of tetrahydrocannabinol it contains; authorizing the growing and possessing of industrial hemp; requiring state licensing of industrial hemp growers; promoting research and

[91] NCSL, State Industrial Hemp Statutes (http://www.ncsl.org/research/agriculture-and-rural-development/state-industrial-hemp-statutes.aspx); Vote Hemp (http://www.votehemp.com/state.html#2014).

[92] CRS using information from NCSL and Vote Hemp. Information for some states on these two websites oftentimes does not agree.

[93] NCSL, State Industrial Hemp Statutes (http://www.ncsl.org/research/agriculture-and-rural-development/state-industrial-hemp-statutes.aspx).

development of markets for industrial hemp; excluding industrial hemp from the definition of controlled substances under state law; and establishing a defense to criminal prosecution under drug possession or cultivation.

Many states have established programs under which a farmer may be able to grow industrial hemp under certain circumstances, however, despite some state laws, a grower would still need to obtain a DEA permit and abide by the DEA's strict production controls. For example, changes to Colorado's state laws in November 2012 now allow for industrial hemp cultivation. Industrial hemp was reported as being grown in Colorado in 2013.[94] However, growers and state authorities continue to face a number of challenges implementing Colorado's law, including sampling, registration and inspection, seed availability and sourcing, disposition of non-complying plants, and law enforcement concerns, as well as production issues such as hemp agronomics, costly equipment, and limited manufacturing capacity, among other grower and processor concerns.[95] It also remains unclear how federal authorities will respond to production in states where state laws permit growing and cultivating hemp.

In November 2012, state authorities in Colorado wrote a letter to DOJ requesting clarification about how federal enforcement authorities might respond to its newly enacted laws and forthcoming regulations.[96] Since federal law regards all varieties of the cannabis plant as "marijuana," many regard DOJ's August 2013 guidance as also likely applicable to the regulation of industrial hemp (see also "2013 DEA Guidance Outlined in "Cole Memo").[97] In November 2013, Colorado's State Department of Agriculture officials wrote to the U.S. Department of Agriculture requesting clarification regarding the cultivation of industrial hemp specifically.[98]

In September 2013, Representative Blumenauer sent a letter to Oregon state officials urging them to implement that state's hemp laws.[99] In response, DOJ officials in Oregon indicated that they do not intend to interfere with their state's hemp production as long as it is well-regulated and subject to enforcement.[100] Some now regard that correspondence as further indicative of how federal authorities might respond to production in states where state laws permit growing and cultivating hemp.[101]

[94] S. Raabe, "First major Hemp Crop in 60 Years is Planted in Southeast Colorado," *Denverpost.com*, May 13, 2013; also see E. Hunter, "Industrial Hemp in Colorado," November 17 (presentation at the 2013 HIA conference).

[95] R. Carleton, "Regulating Industrial Hemp: The Colorado Experience," February 3, 2013 (presentation at the 2014 National Association of State Department of Agriculture (NASDA) winter meeting); and E. Hunter, "Industrial Hemp in Colorado," November 17, 2013 (presentation at the 2013 HIA conference).

[96] Letter to Eric Holder, Jr., U.S. Attorney General, from the Governor and Attorney General of the State of Colorado, November 13, 2012.

[97] See discussion in "2013 DEA Guidance Outlined in "Cole Memo" Letter to interested parties from Joe Sandler, Counsel for Vote Hemp, November 13, 2013.

[98] Letter to Tom Vilsack, Secretary of Agriculture, from the Commissioner of the Colorado Department of Agriculture, November 13, 2013.

[99] Letter from Representative Earl Blumenauer to Oregon Department of Agriculture and State Board of Agriculture officials, September 17, 2013.

[100] Letter to Representative Earl Blumenauer, from S. Amanda Marshall, U.S. Attorney, District of Oregon, November 7, 2013. See also N. Crombie, "U.S. Rep. Earl Blumenauer urges Oregon to implement industrial hemp law," *The Oregonian*, September 18, 2013.

[101] CRS communication with representatives of Vote Hemp, Inc., January 2014.

Ongoing Legislative Activity

Industrial Hemp Farming Act

Other introduced legislation would provide for even greater opportunities for commercial cultivation of industrial hemp in the United States.

In the 114th Congress, the Industrial Hemp Farming Act of 2015 (Massie/H.R. 525; Wyden/S. 134) is intended to facilitate the possible commercial cultivation of industrial hemp in the United States. The bill would amend Section 102 of the Controlled Substances Act (21 U.S.C. 802(16)) to exclude "industrial hemp" and specify that the term "marijuana" does not include industrial hemp, which the bill would define based on a determination of its THC content (not more than 0.3% THC), marijuana's primary psychoactive chemical. Such a change could remove low-THC hemp from being covered by the CSA as a controlled substance and subject to DEA regulation, thus allowing for industrial hemp to be grown and processed under some state laws. The bill could grant authority to any state permitting industrial hemp production and processing to determine whether any such cannabis plants met the limit on THC concentration as set forth in the CSA. In any criminal or civil action or administrative proceeding, the state's determination may be conclusive and binding. The House and Senate bills differ in that S. 134 includes a provision that would allow states to override this determination if the U.S. Attorney General determines that the state law does not "reasonably" comply with the requirements of the proposed CSA amendments. H.R. 525 does not include this language.

The Industrial Hemp Farming Act was first introduced in the 109th Congress by former Representative Ron Paul, and was reintroduced in subsequent legislative sessions (H.R. 1831, 112th Congress; H.R. 1866, 111th Congress; H.R. 1009, 110th Congress; H.R. 3037, 109th Congress). In the 112th Congress, Senator Ron Wyden introduced S. 3501 in the Senate.[102] Representative Massie introduced H.R. 525, and Senator Wyden introduced S. 359 in the 113th Congress. Some in Congress believe that industrial hemp production could result in economic and employment gains in some states and regions.[103]

Charlotte's Web Medical Hemp Act

In the 113th Congress, Representative Scott Perry introduced the Charlotte's Web Medical Hemp Act of 2014 (H.R. 5226). In this bill, Charlotte's Web referred to high-CBD (low THC) products, such as the CBD oils that have been reported to help address ailments, such as neuropathic pain, post-traumatic stress disorder, and nausea as a result of chemotherapy, and other disorders.[104] The

[102] Previous versions of the bill differ. Section 3 of the 2009 bill would apply when a state has an industrial hemp regulatory scheme, whereas the 2011 bills would apply whenever state law permits "making industrial hemp," which a state might do by exempting hemp making from its controlled substance regulatory scheme. Section 3 of the 2009 bill would have afforded state officials "exclusive authority" to construe the proposed hemp exclusion from the definition of marijuana (amending 21 U.S.C. §802(16)(B)), whereas the 2011 bills would include within the proposed industrial hemp exclusion (amending 21 U.S.C. §802(57)) any industrial hemp grown or possessed in accordance with state law relating to making industrial hemp. For more information, contact Charles Doyle, CRS attorney, 7-6968.

[103] See, for example, B. Schreiner, "Senate Committee Approves Hemp Legislation," Associated Press, February 11, 2013; also press release of Senate Minority Leader, Mitch McConnell, "Industrialized Hemp Will Help Spur Economic Growth and Create Jobs in Kentucky," January 31, 2013.

[104] Named after Charlotte Figi, who suffers from a rare pediatric seizure disorder and who reportedly has experienced (continued...)

bill sought to amend Section 102 of the CSA to exclude "therapeutic hemp" and cannabidiol from definition of "marihuana," which the bill defined based on its THC content, marijuana's primary psychoactive chemical. The bill defined "therapeutic hemp" to mean "the plant Cannabis sativa L. and any part of such plant" with THC concentrations of not more than 0.3% on a dry weight basis, and defined "cannabidiol" (CBD) as "derived from therapeutic hemp." Only CBD made from low THC hemp, as defined, would be exempt. Not all high-CBD products are formulated from industrial hemp meeting these requirements. Most of the CBD oils currently being marketed are formulated from strains of cannabis with THC levels higher than 0.3%, but generally less than 1% THC.[105]

Groups Supporting/Opposing Further Legislation

In addition to groups such as HIA and Vote Hemp Inc. that are actively promoting reintroducing hemp as a commodity crop in the United States, some key agricultural groups also support U.S. policy changes regarding industrial hemp. For example:

- The National Farmers Union (NFU) updated its 2013 farm policy regarding hemp to urge the President, Attorney General, and Congress to "direct the U.S. Drug Enforcement Administration (DEA) to reclassify industrial hemp as a non-controlled substance and adopt policy to allow American farmers to grow industrial hemp under state law without affecting eligibility for USDA benefits."[106] Previously NFU's policy advocated that the DEA "differentiate between industrial hemp and marijuana and adopt policy to allow American farmers to grow industrial hemp under state law without requiring DEA licenses."[107]
- The National Association of State Departments of Agriculture (NASDA) "supports revisions to the federal rules and regulations authorizing commercial production of industrial hemp," and has urged USDA, DEA, and the Office of National Drug Control Policy to "collaboratively develop and adopt an official definition of industrial hemp that comports with definitions currently used by countries producing hemp." NASDA also "urges Congress to statutorily distinguish between industrial hemp and marijuana and to direct the DEA to revise its policies to allow USDA to establish a regulatory program that allows the development of domestic industrial hemp production by American farmers and manufacturers."[108]
- In 2014, the American Farm Bureau Federation, from efforts led by the Indiana Farm Bureau, endorsed a policy to support the "production, processing, commercialization, and utilization of industrial hemp,"[109] and reportedly also

(...continued)

relief from seizures with this strain of medical marijuana that is high in CBD and low in THC.

[105] CRS communication with Project CBD representatives, September 22, 2014.

[106] NFU, "Policy of the National Farmers Union," March 2-5, 2013.

[107] NFU, "National Farmers Union Adopts New Policy on Industrial Hemp," March 22, 2010. Also see NFU, "Policy of the National Farmers Union," enacted by delegates to the 108th annual convention, Rapid City, SD, March 14-16, 2010.

[108] NASDA, "New Uses of Agricultural Products," 2010, http://www.nasda.org/cms/7196/9017/9350/7945.aspx.

[109] "AFBF delegates fine tune policies on WOTUS, embrace hemp," *Agri-Pulse*, January 14, 2015.

passed a policy resolution to oppose the "classification of industrial hemp as a controlled substance." Previously, in 1995, the Farm Bureau had passed a resolution supporting "research into the viability and economic potential of industrial hemp production in the United States... [and] further recommend that such research includes planting test plots in the United States using modern agricultural techniques."[110]

- Regional farmers' organizations also have policies regarding hemp. For example, the North Dakota Farmers Union (NDFU), as part of its federal agricultural policy recommendations, has urged "Congress to legalize the production of industrial hemp."[111] The Rocky Mountain Farmers Union (RMFU) has urged "Congress and the USDA to re-commit and fully fund research into alternative crops and uses for crops" including industrial hemp; also, they "support the decoupling of industrial hemp from the definition of marijuana" under the CSA and "demand the President and the Attorney General direct the U.S. Drug Enforcement Agency (DEA) to differentiate between industrial hemp and marijuana and adopt a policy to allow American farmers to grow industrial hemp under state law without requiring DEA licenses," to "legalize the production of industrial hemp as an alternative crop for agricultural producers."[112]
- The National Grange voted in 2009 to support "research, production, processing and marketing of industrial hemp as a viable agricultural activity."[113]
- In California, ongoing efforts to revise the definition of marijuana to exclude "industrial hemp" (SB 566) are supported by the State's Sheriffs' Association.[114] Previous efforts in 2011 to establish a pilot program to grow industrial hemp in selected counties were supported by the county farm bureau and two sheriff's offices (although the bill, SB 676, was later vetoed by the state's governor).[115]

Despite support by some, other groups continue to oppose policy changes regarding cannabis. For example, the National Alliance for Health and Safety, as part of Drug Watch International, claims that proposals to reintroduce hemp as an agricultural crop are merely a strategy by "the international pro-drug lobby to legalize cannabis and other illicit substances."[116] The California Narcotic Officer's Association claims that allowing for industrial hemp production would undermine state and federal enforcement efforts to regulate marijuana production, since they claim the two crops are not distinguishable through ground or aerial surveillance, but would require costly and time-consuming lab work to be conducted.[117] This group also claims that these

[110] See, for example, J. Patton, "American Farm Bureau calls for end to federal ban on hemp production," *Lexington Herald-Leader*, January 22, 2014; and "Farm Bureau passes policy urging removal of industrial hemp classification as controlled substance," *Lane Report*, January 22, 2014.

[111] NDFU, "2010 Program of Policy & Action," p. 8; also see http://www.ndfu.org.

[112] RMFU, "Policy 2010," http://www.rmfu.org/pdfs/RMFUPolicy10.pdf, p. 6, pp. 15-16, and p. 24.

[113] The National Grange, "Legislative Policies," http://www.nationalgrange.org/legislation/policy/policy_ag.htm; also see The National Grange, "Hemp Policy," http://www.grangehemppolicy.info/.

[114] Letter from the California State Sheriff's Association to Chairwoman Cathleen Galgiani of the State Senate Agriculture Committee, March 21, 2013.

[115] Letters of support for SB 678 to California State Senator, Mark Leno, from the Imperial County Farm Bureau (June 16, 2011), Office of Sheriff, Kings County (July 19, 2011), and Office of Sheriff, Kern County (July 21, 2011).

[116] See, for example, Drug Watch International, "Position Statement on Hemp (*Cannabis sativa* L.)," November 2002.

[117] Letter from the California Narcotic Officers' Association to Governor Arnold Schwarzenegger, September 18, 2007.

similarities would create an incentive to use hemp crops to mask illicit marijuana production, since marijuana is such a lucrative cash crop.[118] Concerns about the potential linkages to the growing and use of illegal drugs are also expressed by some parent and community organizations, such as Drug Free America Foundation, Inc. and PRIDE Inc.[119]

Given the DEA's current policy positions and perceived DEA opposition to changing its current policies because of concerns over how to allow for hemp production without undermining the agency's drug enforcement efforts and regulation of the production and distribution of marijuana, hemp proponents say that further policy changes regarding industrial hemp are likely not forthcoming absent congressional legislative action.

Concluding Remarks

Hemp production in the United States faces a number of obstacles in the foreseeable future. The main obstacles facing this potential market are U.S. government drug policies and DEA concerns about the ramifications of U.S. commercial hemp production. These concerns are that commercial cultivation could increase the likelihood of covert production of high-THC marijuana, significantly complicating DEA's surveillance and enforcement activities and sending the wrong message to the American public concerning the government's position on drugs. DEA officials and a variety of other observers also express the concern that efforts to legalize hemp—as well as those to legalize medical marijuana—are a front for individuals and organizations whose real aim is to see marijuana decriminalized.[120]

Hemp production in the United States also faces competition from other global suppliers. The world market for hemp products remains relatively small, and China, as the world's largest hemp fiber and seed producer, has had and likely will continue to have major influence on market prices and thus on the year-to-year profits of producers and processors in other countries.[121] Canada's head start in the North American market for hemp seed and oil also would likely affect the profitability of a start-up industry in the United States.

Nevertheless, the U.S. market for hemp-based products has a highly dedicated and growing demand base, as indicated by recent U.S. market and import data for hemp products and ingredients, as well as market trends for some natural foods and body care products. Given the existence of these small-scale, but profitable, niche markets for a wide array of industrial and consumer products, commercial hemp industry in the United States could provide opportunities as an economically viable alternative crop for some U.S. growers.

[118] CRS conversation with John Coleman, August 22, 2011.

[119] Information provided to CRS by Jeanette McDougal, National Alliance for Health and Safety, August 22, 2011.

[120] For more information on legislative and executive branch actions concerning illegal drugs, see CRS Report RL32352, *War on Drugs: Reauthorization and Oversight of the Office of National Drug Control Policy.* For information on issues pertaining to medical marijuana, see CRS Report CRS Report RL33211, *Medical Marijuana: Review and Analysis of Federal and State Policies*.

[121] T. R. Fortenbery and M. Bennett, "Opportunities for Commercial Hemp Production," *Review of Agricultural Economics*, vol. 26, no. 1, Spring 2004, pp. 97-117. The time period covered in this study ends with the year 2000.

Appendix. Listing of Selected Hemp Studies

Below is a listing of reports and studies, ranked by date (beginning with the most recent).

- University of Kentucky, Department of Agricultural Economics, *Economic Considerations for Growing Industrial Hemp: Implications for Kentucky's Farmers and Agricultural Economy*, July 2013, http://www2.ca.uky.edu/cmspubsclass/files/EconomicConsiderationsforGrowingIndustrialHemp.pdf.
- C. A. Kolosov, "Regulation of Industrial Hemp under the Controlled Substances Act" *UCLA Law Review,* vol. 57, no. 237, October 2009, http://uclalawreview.org/pdf/57-1-5.pdf.
- Manitoba Agriculture, *National Industrial Hemp Strategy*, March 2008 (prepared for Food and Rural Initiative Agriculture and Agri-Food Canada).
- Reason Foundation, "Illegally Green: Environmental Costs of Hemp Prohibition," Policy Study 367, March 2008, http://www.reason.org/ps367.pdf.
- Agriculture and Agri-Food Canada, *Canada's Industrial Hemp Industry*, March 2007, http://www.agr.gc.ca/misb/spcrops/sc-cs_e.php?page+hemp-chanvre.
- Maine Agricultural Center, *An Assessment of Industrial Hemp Production in Maine*, January 2007, http://www.mac.umaine.edu/.
- N. Cherrett et al., "Ecological Footprint and Water Analysis of Cotton, Hemp and Polyester," Stockholm Environment Institute, 2005, http://www.sei-international.org/mediamanager/documents/Publications/Future/cotton%20hemp%20polyester%20study%20sei%20and%20bioregional%20and%20wwf%20wales.pdf.
- T. R. Fortenbery and M. Bennett, "Opportunities for Commercial Hemp Production," *Applied Economics Perspectives and Policy,* 26(1): 97-117, 2004.
- E. Small and D. Marcus, "Hemp: A New Crop with New Uses for North America," In: *Trends in New Crops and New Uses*, 2002, http://www.hort.purdue.edu/newcrop/ncnu02/v5-284.html.
- T. R. Fortenbery and M. Bennett, "Is Industrial Hemp Worth Further Study in the U.S.? A Survey of the Literature," Staff Paper No. 443, July 2001, http://ageconsearch.umn.edu/bitstream/12680/1/stpap443.pdf.
- J. Bowyer, "Industrial Hemp (Cannabis sativa L.) as a Papermaking Raw Material in Minnesota: Technical, Economic and Environmental Considerations," Department of Wood & Paper Science Report Series, May 2001.
- K. Hill, N. Boshard-Blackey, and J. Simson, "Legislative Research Shop: Hemp," University of Vermont, April 2000, http://www.uvm.edu/~vlrs/doc/hemp.htm.
- USDA, Economic Research Service, *Industrial Hemp in the United States: Status and Market Potential*, AGES001E, January 2000, http://www.ers.usda.gov/publications/ages001e/ages001em.pdf.

- M. J. Cochran, T. E. Windham, and B. Moore, "Feasibility of Industrial Hemp Production in Arkansas," University of Arkansas, SP102000, May 2000.
- D. G. Kraenzel et al., "Industrial Hemp as an Alternative Crop in North Dakota," AER 402, North Dakota State University, Fargo, July 1998, http://ageconsearch.umn.edu/handle/23264.
- E. C. Thompson et al., *Economic Impact of Industrial Hemp in Kentucky*, University of Kentucky, July 1998.
- D. T. Ehrensing, *Feasibility of Industrial Hemp Production in the United States Pacific Northwest*, SB 681, Oregon State University, May 1998, http://extension.oregonstate.edu/catalog/html/sb/sb681/.

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