

ARTICLES

JUSTICE KENNEDY AND ECOSYSTEM SERVICES:
A FUNCTIONAL APPROACH TO CLEAN WATER ACT
JURISDICTION AFTER *RAPANOS*

BY
ROBIN KUNDIS CRAIG*

Justice Kennedy's significant nexus test may emerge as the proverbial silver lining of the United States Supreme Court's June 2006 decision in Rapanos v. United States, at least so far as recognition of ecosystem services is concerned. The Court's opinion in Rapanos was fractured. Nevertheless, it left no doubt that Clean Water Act jurisdiction over "navigable waters" had been limited, drawing criticism for both its lack of clarity and its restriction of federal jurisdiction under the Act.

The extent of that restriction, however, would depend on which of the three major opinions in the case—Justice Scalia's plurality, Justice Kennedy's concurrence, or Justice Stevens' dissent—the lower courts chose to follow. Since the Rapanos decision, it has become clear that Justice Kennedy's concurrence provides the controlling test or one of the controlling tests in every circuit where the court of appeals has addressed the issue. As such, Justice Kennedy's significant nexus test is likely to guide Clean Water Act jurisdiction for the foreseeable future, unless Congress decides to act instead.

By forcing lower courts to find and articulate a functional connection between the waters at issue and more traditionally "navigable" waters, Justice Kennedy's test encourages the federal

* Attorneys' Title Insurance Fund Professor of Law, Florida State University College of Law, Tallahassee, Florida. All comments and questions may be directed to the author at rrcraig@law.fsu.edu.

courts to articulate the ecosystem functions that these waters serve and to identify the ecosystem services that they provide to humans. As a result, this Article argues, Justice Kennedy's significant nexus test may help to produce an ecosystem services rhetoric that will emphasize both the ecological and economic value of the nation's waters, potentially improving both the public's appreciation of water quality regulation and the overall quality of that regulation.

I. INTRODUCTION	102
II. ECOSYSTEM SERVICES AND THE PRESERVATION OF AQUATIC ECOSYSTEMS UNDER THE CLEAN WATER ACT	107
<i>A. Ecosystem Services in General</i>	107
<i>B. Ecosystem Services from Aquatic Ecosystems and Wetlands</i>	107
<i>C. The Need for an Ecosystem Services Rhetoric</i>	109
III. CLEAN WATER ACT JURISDICTION, OLD AND NEW	110
<i>A. Statutory Provisions</i>	110
<i>B. Determining Jurisdiction, Old Style: A Formalistic Approach</i>	111
1. <i>The Classificatory Approach to Clean Water Act Jurisdiction</i>	111
2. <i>The Occasional Wetland Deviation</i>	114
<i>C. The Supreme Court and a Functional Approach to Clean Water Act Jurisdiction</i>	115
1. <i>United States v. Riverside Bayview Homes, Inc.</i>	115
2. <i>Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers</i>	117
3. <i>Rapanos v. United States</i>	119
IV. JUSTICE KENNEDY'S <i>RAPANOS</i> TEST AND ECOSYSTEM SERVICES: THE EXAMPLE OF <i>UNITED STATES V. CUNDIFF</i>	123
<i>A. Lower Courts and the Rapanos Split: The Ascendancy of Justice Kennedy's Significant Nexus Test</i>	123
<i>B. The Agencies' 2007 Rapanos Guidance</i>	124
<i>C. United States v. Cundiff</i>	127
<i>D. A Difference that Makes a Difference</i>	128
V. CONCLUSION	130

I. INTRODUCTION

The Federal Water Pollution Control Act (FWPCA),¹ better known as the Clean Water Act, sets out “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”² As such, the Act would seem to focus intensely on aquatic ecosystem integrity and function. Nevertheless, implementation of the Act has not emphasized this eco-centric perspective on water quality regulation, particularly when courts

¹ 33 U.S.C. §§ 1251–1387 (2000).

² *Id.* § 1251.

consider the question of the federal government's authority to regulate particular discharges into particular waters.

Indeed, at least as it has been implemented since 1972, the Clean Water Act has been far more concerned about delineating and regulating the uses to which humans put the nation's waters than about preserving ecosystem function per se. As one court has emphasized, "[t]he cornerstone of the CWA regulatory scheme is Section 301, 33 U.S.C. § 1311, which prohibits the discharge of pollutants into navigable waters except when in compliance with various provisions of the Act"³—not the Act's scattered acknowledgements of aquatic ecosystems and ecosystem function. Moreover, as regulators put the Act's basic prohibition into practice, their implementation has focused primarily on *classification*—that is, on identifying and regulating qualifying "discharges" into various categories of "navigable waters."⁴

Nevertheless, Congress's decision to regulate pollutant discharges did acknowledge that aquatic ecosystems' ability to assimilate various kinds of pollutants is limited. By 1972, the year that Congress comprehensively amended the FWPCA to create the contemporary structure of the Clean Water Act, it had become clear that waters can become over-polluted, to the point of catching fire or posing public health threats.⁵ In other words, pollution could affect ecosystem function in ways that detrimentally impacted human needs for and uses of waterways. As such, even though one must acknowledge the Act's lack of a fully developed ecosystem approach to water management, it is still fair to discuss the Clean Water Act's regulatory programs in terms of their ability to restore and protect certain aquatic ecosystem services.

As a term, "ecosystem services" acknowledges that functional ecosystems provide for human needs in ways that have real economic value.⁶ Pollutant dilution, assimilation, sequestration, and breakdown are some of the ecosystem services that aquatic ecosystems provide,⁷ and Clean Water Act regulation serves in part to ensure that human wastes do not overwhelm aquatic ecosystems' capacity to provide these services. Moreover, the value of these ecosystem services becomes obvious from the costs of technological

³ United States v. Banks, 873 F. Supp. 650, 656 (S.D. Fla. 1995).

⁴ See *infra* note 65 and accompanying text.

⁵ See Sandra Postel & Stephen Carpenter, *Freshwater Ecosystem Services*, in NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS 195, 200 (Gretchen C. Daily ed., 1997) [hereinafter NATURE'S SERVICES] ("The old adage 'Dilution is the solution to pollution' described the basic approach to pollution control up until about 1970, when, in response to pollution episodes like the Cuyahoga River catching fire in the United States, laws began to be passed requiring that cities and industries treat their waste before releasing it to the environment. Large sums were spent to restore and protect water quality.").

⁶ Gretchen C. Daily, *Introduction: What Are Ecosystem Services?*, in NATURE'S SERVICES, *supra* note 5, at 1, 3.

⁷ Postel & Carpenter, *supra* note 5, at 200–01.

substitutes: secondary or tertiary treatment for sewage,⁸ and effluent control technologies for most other types of waste discharges.⁹

Nor does the Clean Water Act protect only the ecosystem services associated with pollution assimilation. Overly polluted waters can also interfere with other aquatic ecosystem services. For example, sediment-contaminated (turbid) waters absorb more heat, interfering with those waters' ability to support cold-water fisheries (and human food supplies) such as salmon.¹⁰ Some toxic pollutants, such as mercury and PCBs, can bioaccumulate in the food web, resulting in fish that are too contaminated for humans and other higher-order predators to eat.¹¹ Unregulated sewage discharges impair the public health benefits of drinking water.¹²

Regulators can acknowledge ecosystem services at several points during Clean Water Act implementation. For example, states can often capture (implicitly, if not explicitly) the connections between discharges of pollutants and interference with ecosystem services in their water quality standards. Water quality standards consist of the designated uses for particular waters and the water quality criteria necessary to achieve and maintain those uses,¹³ and they form the regulatory backstops for discharge regulation under the Clean Water Act.¹⁴ While designated uses need not consider the water's function in the relevant aquatic ecosystem,¹⁵ they nevertheless do routinely (if

⁸ "During the 1970s and 1980s, the [Clean Water Act's] Construction Grants Program provided more than \$60 billion for the construction of public wastewater treatment plants," which represented 55%–75% of the costs of the construction that cities and counties undertook during those decades. ROBERT C. ANDERSON, U.S. ENVTL. PROT. AGENCY (EPA), EPA-240-R-01-001, THE UNITED STATES EXPERIENCE WITH ECONOMIC INCENTIVES FOR PROTECTING THE ENVIRONMENT 137 (2001), available at [http://yosemite.epa.gov/ee/epa/eamfile.nsf/vwAN/EE-0216B-13.pdf/\\$File/EE-0216B-13.pdf](http://yosemite.epa.gov/ee/epa/eamfile.nsf/vwAN/EE-0216B-13.pdf/$File/EE-0216B-13.pdf).

⁹ As one example, the technologies suggested as Best Practicable Technology (BPT) for the Poultry First Processing subcategory of industries imposed annualized costs of \$4.8 to \$29.7 million in 1999 dollars. OFFICE OF WATER, U.S. EPA, EPA-821-B-01-007, DEVELOPMENT DOCUMENT FOR THE PROPOSED EFFLUENT LIMITATIONS GUIDELINES AND STANDARDS FOR THE MEAT AND POULTRY PRODUCTS INDUSTRY POINT SOURCE CATEGORY 12-6 (2002), available at <http://www.epa.gov/guide/mpp/proposed/technicaldev.pdf>.

¹⁰ Glenn Research Center, National Aeronautics and Space Administration (NASA), *Water Quality*, <http://www.grc.nasa.gov/WWW/K-12/fenlewis/Waterquality.html> (last visited July 20, 2008).

¹¹ U.S. GEOLOGICAL SURVEY, U.S. DEP'T OF THE INTERIOR, FACT SHEET FS-216-95, MERCURY CONTAMINATION OF AQUATIC ECOSYSTEMS 2–3 (1995), available at http://water.usgs.gov/wid/FS_216-95/FS_216-95.pdf.

¹² Natural Resources Defense Council, *Sewage Pollution Threatens Public Health*, <http://www.nrdc.org/water/pollution/sewage.asp> (last visited July 20, 2008); Office of Wetlands, Oceans, & Watersheds, U.S. EPA, *Vessel Sewage Discharges and No Discharge Zones*, http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/ (last visited July 20, 2008).

¹³ Federal Water Pollution Control Act, 33 U.S.C. § 1313(c)(2)(A) (2000).

¹⁴ See *id.* §§ 1313(c) (requiring states or the EPA to set water quality standards for all the waters within state borders), 1312 (requiring water quality-based effluent limitations for dischargers when the standard technology-based effluent limitations are insufficient to support water quality standards), 1313(d) (requiring states or the EPA to establish total maximum daily loads (TMDLs) for any water body that does not meet its water quality standards; the TMDLs, in turn, can lead to reductions in discharge allowances).

¹⁵ *Id.* § 1313(c)(2)(A).

only implicitly) acknowledge the ecosystem services that particular water segments provide, whether for drinking water, recreation, fish and wildlife propagation, or sewage and other waste assimilation.¹⁶

By far, however, it has been the dredging and filling of wetlands pursuant to section 404 of the Act¹⁷ that has produced the clearest articulations of the connections between Clean Water Act regulation and aquatic ecosystem services. In 1985, for example, the United States Supreme Court in *United States v. Riverside Bayview Homes, Inc.*¹⁸ emphasized both the Clean Water Act's larger ecosystem purposes and the pervasive ecosystem functions and services that wetlands provide.¹⁹ Destruction of wetlands through dredging and filling destroys these ecosystem services, and the existence of these services, while not always addressed as such, can be relevant to section 404 permit evaluations pursuant to both the United States Environmental Protection Agency's (EPA's) Section 404(b)(1) Guidelines²⁰ and the U.S. Army Corps of Engineers' (Army Corps') public interest review.²¹

Nevertheless, acknowledgement of ecosystem services in the standards and permitting contexts presupposes that the waters in question fall within the Act's jurisdiction. Ecosystem services have been far less relevant to establishing Clean Water Act jurisdiction in the first place—a paradoxical fact, given the Act's overall aquatic function goals.²²

Throughout most of the Act's history, establishing jurisdiction has been approached as a fairly formalistic analysis of four or five (depending on how you count) jurisdictional elements: an addition of a pollutant from a point source to a navigable water by a person.²³ With occasional and generally controversial exceptions in the wetlands context,²⁴ consideration of what the pollutant is doing to the larger aquatic ecosystem or to ecosystem services has not been a part of the jurisdictional analysis. Thus, establishing Clean Water Act jurisdiction has been a matter of formalized categorization rather than a functional analysis describing the need to regulate the waters in question to protect them from proposed human activities.

However, in June 2006, a fractured U.S. Supreme Court decided *Rapanos v. United States*,²⁵ restricting the scope of the Clean Water Act's

¹⁶ *Id.*

¹⁷ *Id.* § 1344.

¹⁸ 474 U.S. 121 (1985).

¹⁹ *Id.* at 133–35.

²⁰ 40 C.F.R. §§ 230.1(c), (d), 230.3(c), 230.10(a)(3), (b)(3), (c)(2)–(4), 230.40–230.45, 230.70–230.77 (2007).

²¹ 33 C.F.R. § 320.4(b)(4), (c), (d), (J)(2), (m) (2007).

²² See 33 U.S.C. § 1251(a) (2000) (establishing the goals and policy of the Clean Water Act to restore and maintain the “chemical, physical and biological integrity of the Nation's waters”).

²³ See, e.g., 40 C.F.R. § 122.1(b) (2007); *United States v. Lucas*, 516 F.3d 316, 325–27 (5th Cir. 2008); *United States v. Plaza Health Labs., Inc.*, 3 F.3d 642, 645–46 (2d Cir. 1993); *United States v. M.C.C. of Fla., Inc.*, 772 F.2d 1501, 1505–06 (11th Cir. 1985); *Avoyelles Sportsmen's League, Inc. v. Marsh*, 715 F.2d 897, 922 (5th Cir. 1983).

²⁴ See, e.g., *Borden Ranch P'ship v. U.S. Army Corps of Eng'rs (Borden Ranch)*, 261 F.3d 810, 814–16 (9th Cir. 2001), *aff'd*, 537 U.S. 99 (2002).

²⁵ 126 S. Ct. 2208 (2006).

“navigable waters.” In that 4–1–4 decision, Justice Kennedy articulated a “significant nexus” test that, despite his being the only Justice to sign his concurring opinion, has become either the controlling test or one of two possible tests (depending on the circuit) for identifying “navigable waters” subject to the Act’s jurisdiction.²⁶ Justice Kennedy’s test is at heart a functional analysis of jurisdiction, and hence it opens jurisdictional analyses under the Act to consideration of both ecosystem function and ecosystem services arguments for including waters within the Act’s protections.

This Article argues that, if federal courts continue to accept Justice Kennedy’s invitation to look at aquatic ecosystem function and aquatic ecosystem services, *Rapanos* may—contrary to initial appearances—end up producing two salutary effects for Clean Water Act jurisprudence. First, incorporating ecosystem function and ecosystem services into the Act’s jurisdictional analysis will likely require agencies and courts to stress the interrelationship and interconnection of water resources, providing stronger arguments for broad Clean Water Act jurisdiction. Second, repeated articulation of ecosystem function and ecosystem services will underscore the vital role that the Act plays in protecting economic as well as ecological values, enhancing the Act’s continuing popular and political support.

Part II of this Article defines and describes the ecosystem services that aquatic ecosystems provide and that the Clean Water Act can protect. Part III describes approaches to establishing Clean Water Act jurisdiction, emphasizing the classic formalistic approach to analyzing Clean Water Act jurisdiction and analyzing the three major Supreme Court opinions on the scope of “navigable waters,” with an eye to this traditional approach. In addition, Part III concludes by describing how Justice Kennedy’s “significant nexus” test from *Rapanos* could demand a new approach to the jurisdictional analysis. Part IV describes the ascendancy of Justice Kennedy’s test and the Western District of Kentucky’s use of a functional jurisdictional analysis in *United States v. Cundiff*,²⁷ arguing that *Cundiff* demonstrates how the difference in analytical approach can both identify ecosystem functions and services that aquatic ecosystems provide and underscore the value of those functions and services to humans in the surrounding area, ultimately disclosing broader water quality concerns. The Article concludes by arguing that if other courts follow the Western District of Kentucky’s lead, the *Rapanos* decision and Justice Kennedy’s “significant nexus” test may unexpectedly enhance public and legal awareness of the larger values of the Clean Water Act and the aquatic ecosystems that it protects.

²⁶ See *infra* Part IV.A.

²⁷ 480 F. Supp. 2d 940 (W.D. Ky. 2007).

II. ECOSYSTEM SERVICES AND THE PRESERVATION OF AQUATIC ECOSYSTEMS UNDER THE CLEAN WATER ACT

A. *Ecosystem Services in General*

“*Ecosystem services* are the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life.”²⁸ These services include both the processes that produce ecosystem goods, such as seafood and timber, and “the actual life support functions, such as cleansing, recycling, and renewal,” that ecosystems provide.²⁹

Ecosystem services are thus obviously tied to ecosystem function, creating a link between an ecosystem approach to environmental and natural resources regulation and the economic emphasis that the evaluation of ecosystem services provides.³⁰ Indeed, one of the points of recognizing ecosystem services is to acknowledge that intact and functional ecosystems have economic value for humans.³¹ Nevertheless,

it is important not to confuse ecosystem *functions*, which are ubiquitous, with ecosystem *services*, which are the consequence of only some ecosystem functions. The critical difference between the two, and which makes the development of ecosystem services policy both complicated and controversial, is that ecosystem services have relevance only to the extent *human* populations benefit from them. They are purely anthropocentric.³²

B. *Ecosystem Services from Aquatic Ecosystems and Wetlands*

Freshwater ecosystems provide a variety of goods and services,³³ which can be grouped into three broad categories: “(1) the supply of water for drinking, irrigation, and other purposes; (2) the supply of goods other than water, such as fish and waterfowl; and (3) the supply of nonextractive or ‘instream’ benefits, such as recreation, transportation, and flood control.”³⁴ The monetary value of freshwater supply can be estimated by comparing the costs of treatment or, at the extreme, desalinization of seawater; for example,

²⁸ Daily, *supra* note 6, at 3.

²⁹ *Id.*; see also NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., VALUING ECOSYSTEM SERVICES: TOWARD BETTER ENVIRONMENTAL DECISION-MAKING 1 (2005) [hereinafter NAT’L RESEARCH COUNCIL] (“[S]ociety is increasingly recognizing the myriad functions—the observable manifestations of ecosystem processes such as nutrient recycling, regulation of climate, and maintenance of biodiversity—that [ecosystems] provide, without which human civilizations could not thrive.”).

³⁰ See J.B. RUHL ET AL., THE LAW AND POLICY OF ECOSYSTEM SERVICES 17 (2007) [hereinafter LAW & POLICY OF ECOSYSTEM SERVICES].

³¹ See *id.*

³² *Id.* at 15.

³³ NAT’L RESEARCH COUNCIL, *supra* note 29, at 1.

³⁴ Postel & Carpenter, *supra* note 5, at 196; see also NAT’L RESEARCH COUNCIL, *supra* note 29, at 80–81 tbl.3-2.

to supply the world with freshwater, the cost of the latter could run into the billions or even trillions of dollars.³⁵ Freshwater fisheries and waterfowl similarly produce goods valued in the billions of dollars.³⁶

The value of instream services is more difficult to estimate, but pollution dilution and assimilation are certainly two of the more valuable of these natural services. Moreover, the costs of technological replacement for such natural ecosystem services can be estimated through the known costs of sewage and drinking water treatment. In 1997, for example, two researchers estimated the value of freshwater dilution and assimilation services to be at least \$150 billion per year.³⁷

Wetlands, both freshwater and saltwater, are particularly important sources of ecosystem services. “Although wetlands account for only a small portion of the earth’s surface, they are often concentrated in a particular area, where they dominate the landscape.”³⁸ Wetlands provide a variety of ecosystem services, including support of biodiversity, “[p]roduction of harvested wildlife,” wood and fiber production, “[c]arbon accumulation,” “[m]ethane production,” and “[s]ulfur reduction.”³⁹

In the context of the Clean Water Act, however, the most relevant ecosystem services that wetlands provide are “[w]ater quality improvement,” “[f]lood mitigation and abatement,” and “[w]ater conservation.”⁴⁰ Indeed, municipalities can substitute functional wetlands for more expensive treatment plants in pursuit of wastewater treatment and recycling.⁴¹ More expansively, natural wetlands “have absorbed and recycled nutrients from human settlements since the dawn of civilization”⁴² and are particularly good at sequestering and retaining phosphorus, nitrogen, and sediments.⁴³

Another important aspect of freshwater ecosystems and the services they provide is that the United States has lost a significant percentage of its aquatic ecosystems. Over half of the nation’s wetlands have been converted to agriculture, and approximately 98 percent of the continuing wetland losses of over 58,000 acres a year are freshwater wetlands.⁴⁴ In addition, “less than 2 percent of the nation’s 3.1 million miles of rivers and

³⁵ Postel & Carpenter, *supra* note 5, at 197.

³⁶ *Id.* at 198–99.

³⁷ *Id.* at 201.

³⁸ Katherine C. Ewel, *Water Quality Improvement by Wetlands*, in *NATURE’S SERVICES*, *supra* note 5, at 329–30.

³⁹ *Id.* at 330; NAT’L RESEARCH COUNCIL, *supra* note 29, at 80 tbl.3-2.

⁴⁰ Ewel, *supra* note 38, at 330.

⁴¹ *Id.* at 331–33; *see also* LAW & POLICY OF ECOSYSTEM SERVICES, *supra* note 30, at 6 (“Indeed, we often find it cost efficient to ‘produce’ ecosystem services by replicating natural ecosystem structures, as in the case of ‘constructed wetlands,’ which have long been built and employed to remove nutrients and sediments from polluted water sources such as municipal wastewater and agricultural runoff.” (citations omitted)).

⁴² Ewel, *supra* note 38, at 330–31.

⁴³ *See id.* at 334–35 (describing the retention of inorganic nitrogen and phosphorus and the accumulation of sediments in natural wetlands).

⁴⁴ NAT’L RESEARCH COUNCIL, *supra* note 29, at 17, 74.

streams remain free flowing for longer than 125 miles”⁴⁵ Loss of habitat has also imperiled many aquatic species.⁴⁶ “Thus, the number and amount of intact functional aquatic ecosystems have been substantially reduced in recent decades. This relative scarceness has called increasing attention to the need to better understand the functionality and value of the remaining ecosystems to society.”⁴⁷

C. *The Need for an Ecosystem Services Rhetoric*

As noted, the concept of “ecosystem services” recognizes that intact and functional natural ecosystems provide services to humans that have economic value.⁴⁸ Nevertheless, although ecosystem services “are absolutely pervasive, [they are] unnoticed by most human beings going about their daily lives.”⁴⁹ Traditionally, “the goods and services flowing from natural ecosystems are greatly undervalued by society” because “the benefits those ecosystems provide are not traded in formal markets and do not send price signals of changes in their supply or condition.”⁵⁰ Thus, “[t]he disparity between actual and perceived value is probably nowhere greater than in the case of ecosystem services. . . . Ecosystem services are absolutely essential to civilization, but modern urban life obscures their existence.”⁵¹

Such obscurity demands a counteractive rhetoric—an articulation of what natural processes support modern life. Nevertheless, currently, “ecosystem services values derived directly from nature show up practically nowhere in our economy as it is structured, and much less so in the law supporting that structure.”⁵²

Certain fields of economics are working to make the economic realities of ecosystem services visible in regulatory and other decision-making.⁵³ Environmental and natural resources law, creatively employed, can serve a similar rhetorical and educational function. For example, one step in this direction was the EPA’s decision to include ecosystem services

⁴⁵ *Id.* at 18.

⁴⁶ *See id.* (presenting percentages of shellfish, fish, and amphibian species considered imperiled or at risk of extinction).

⁴⁷ *Id.*

⁴⁸ *Id.* at 1.

⁴⁹ Daily, *supra* note 6, at 5; *see also* NAT’L RESEARCH COUNCIL, *supra* note 29, at 1 (noting that ecosystem functions “are seldom experienced directly by users of the resource”).

⁵⁰ Daily, *supra* note 6, at 2.

⁵¹ *Id.* at 6–7; *see also* LAW & POLICY OF ECOSYSTEM SERVICES, *supra* note 30, at 57 (“Ecosystem services are, for the most part, free for the taking; however, this does not mean they are without value.”).

⁵² LAW & POLICY OF ECOSYSTEM SERVICES, *supra* note 30, at 6; *see* NAT’L RESEARCH COUNCIL, *supra* note 29, at 2, 29 (“Despite growing recognition of the importance of ecosystem functions and services, they are often taken for granted and overlooked in environmental decision-making.”).

⁵³ For example, “[a] major thrust of ecological economics . . . is to illuminate the role of ecosystems in providing economically valuable services to people.” J.B. Ruhl & James Salzman, *Ecosystem Services and the Public Trust Doctrine: Working Change from Within*, 15 SE. ENVTL. L.J. 223, 230–31 (2006).

values in the valuation of natural resources damages under both the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)⁵⁴ and the Oil Pollution Act (OPA).⁵⁵

Nevertheless, assessing Clean Water Act jurisdiction traditionally has not lent itself to an ecosystem services analysis. However, Justice Kennedy's opinion in *Rapanos* may have opened the Act to a new rhetoric of ecosystem functions and ecosystem services. The next part explores this evolution.

III. CLEAN WATER ACT JURISDICTION, OLD AND NEW

A. Statutory Provisions

Federal jurisdiction under the Clean Water Act is largely a matter of definitional classification and categorization. Section 301(a) of the Clean Water Act prohibits the "discharge of any pollutant" by any person except as in compliance with the Act.⁵⁶ The Act then defines "discharge of a pollutant" to be, for inland and near-shore discharges, "any addition of any pollutant to navigable waters from any point source."⁵⁷

According to the Act, a "pollutant" is "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."⁵⁸ A "point source," in turn, is "any discernible, confined, and discrete conveyance,"⁵⁹ like a pipe, while a "person" is "an individual, corporation, partnership, association, State, municipality, commission, or political subdivision of a State, or any interstate body."⁶⁰ Finally, the "navigable waters" are "the waters of the United States, including the territorial seas."⁶¹

The Clean Water Act does not define "addition." However, extensive case law has effectively defined an "addition" of pollutants to be a human-controlled conveyance of pollutants to a body of water where they would not naturally occur.⁶²

⁵⁴ Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601–9675 (2000). *See also* Natural Resource Damage Assessments—Type A Procedures, 61 Fed. Reg. 20,560 (May 7, 1996); Natural Resource Damage Assessments, 59 Fed. Reg. 14,262 (Mar. 25, 1994); 43 C.F.R. §§ 11.13(e)(2), 11.25(e)(2), 11.38(c)(2)(i), 11.70 (2007).

⁵⁵ Oil Pollution Act of 1990, 33 U.S.C. §§ 2701–2761 (2000). *See also* 15 C.F.R. §§ 990.10, 990.11, 990.21 (2007).

⁵⁶ Federal Water Pollution Control Act, 33 U.S.C. § 1311(a) (2000).

⁵⁷ *Id.* § 1362(12).

⁵⁸ *Id.* § 1362(6).

⁵⁹ *Id.* § 1362(14).

⁶⁰ *Id.* § 1362(5).

⁶¹ *Id.* § 1362(7).

⁶² *E.g.*, *Miccosukee Tribe of Indians of Fla. v. S. Fla. Water Mgmt. Dist.*, 280 F.3d 1364, 1368–69 (11th Cir. 2002), *rev'd on other grounds*, 541 U.S. 95 (2004); *Catskill Mountains Chapter of Trout Unlimited, Inc. v. City of New York (Trout Unlimited)*, 273 F.3d 481, 491–93 (2d Cir. 2001); *United States v. Deaton*, 209 F.3d 331, 334 (4th Cir. 2000); *Nat'l Mining Ass'n v. U.S. Army Corps of Eng'rs*, 145 F.3d 1399, 1403–04 (D.C. Cir. 1998); *Dubois v. U.S. Dept. of Agric.*, 102 F.3d 1273,

*B. Determining Jurisdiction, Old Style: A Formalistic Approach**1. The Classificatory Approach to Clean Water Act Jurisdiction*

Given the basic prohibition in section 301(a) and the Clean Water Act's definitional extrapolation of that prohibition, most federal courts approach jurisdiction under the Act formalistically, through a four-to-five-element classificatory test. Under this approach, to establish Clean Water Act jurisdiction, the government⁶³ or citizen plaintiff⁶⁴ must show that the defendant (a "person") was: 1) adding, 2) a pollutant, 3) from a point source, 4) to a navigable water.⁶⁵

Of course, definitional ambiguities can arise with respect to all of these elements. For example, as noted, the Clean Water Act does not define "addition," and a fair amount of case law has developed regarding whether an "addition" of pollutants occurs in various circumstances, such as when water passes through a dam⁶⁶ or when a developer redeposits material dredged from the bottom of a water.⁶⁷

Nevertheless, most such definitional clarifications of "additions" have remained formalistically classificatory, not functional, in focus. Thus, for example, when determining whether additions of pollutants occurred among the various canals that drain the Florida Everglades as a result of pumping, the Supreme Court indicated, and the Southern District of Florida accepted, that the critical test is whether the waters in question are "meaningfully

1293 (1st Cir. 1996); *Dague v. City of Burlington*, 935 F.2d 1343, 1354–55 (2d Cir. 1991); *Nat'l Wildlife Fed'n v. Consumers Power Co.*, 862 F.2d 580, 581–85 (6th Cir. 1988); *Nat'l Wildlife Fed'n v. Gorsuch*, 693 F.2d 156, 174–83 (D.C. Cir. 1982).

⁶³ The government can enforce the Clean Water Act in court, or defendants can challenge those enforcement actions in court. 33 U.S.C. § 1319 (2000).

⁶⁴ The Clean Water Act's citizen suit provision allows private citizens to sue persons who are discharging pollutants in violation of the Act. *Id.* § 1365.

⁶⁵ *E.g.*, *Sierra Club v. El Paso Gold Mines, Inc.*, 421 F.3d 1133, 1141–42 (10th Cir. 2005); *Parker v. Scrap Metal Processors, Inc.*, 386 F.3d 993, 1008 (11th Cir. 2004); *Trout Unlimited*, 273 F.3d at 486; *Borden Ranch*, 261 F.3d 810, 813–14 (9th Cir. 2001), *aff'd*, 537 U.S. 99 (2002); *Headwaters, Inc. v. Talent Irrigation Dist.*, 243 F.3d 526, 532–34 (9th Cir. 2001); *Deaton*, 209 F.3d at 334–37; *Dubois*, 102 F.3d at 1296–97; *Comm. to Save Mokelumne River v. E. Bay Mun. Util. Dist.*, 13 F.3d 305, 308 (9th Cir. 1993); *Plaza Health Labs.*, 3 F.3d 643, 645 (2d Cir. 1993); *M.C.C. of Fla.*, 772 F.2d 1501, 1505–06 (11th Cir. 1985); *Avoyelles Sportsmen's League*, 715 F.2d 897, 922 (5th Cir. 1983); *Gorsuch*, 693 F.2d at 165; *Minnehaha Creek Watershed Dist. v. Hoffman*, 597 F.2d 617, 624–25 (8th Cir. 1979).

⁶⁶ *Trout Unlimited*, 273 F.3d at 489–92 (holding that Clean Water Act's discharge permit requirement applies to discharges from dams); *Consumers Power*, 862 F.2d at 581–85 (holding that hydroelectric facility's movement of pollutants already in water was not "addition of pollutants" so as to require permit); *Gorsuch*, 693 F.2d at 174–83 (deferring to EPA determination that discharges from dams are not "additions" because statute is ambiguous).

⁶⁷ *Deaton*, 209 F.3d at 335 (classifying sidestepping of dredged material as the "addition" of a pollutant); *Nat'l. Mining Ass'n*, 145 F.3d at 1403–04 (holding that incidental fallback of some dredged material cannot be considered an "addition" because there is a net withdrawal of pollutants); *United States v. Wilson*, 133 F.3d 251, 273–74 (4th Cir. 1997) (classifying sidestepping as the "addition" of a pollutant).

distinct”⁶⁸ physically—not whether the pumping changed the character and function of the receiving waters. In other words, allowing pollutants to flow unimpeded through a large but undivided aquatic ecosystem would not trigger Clean Water Act jurisdiction, regardless of what those pollutants might do to the ecosystem and the services that it provides.

Similarly, although the Clean Water Act does define “navigable waters,” that definition—“waters of the United States”—is not particularly helpful. By 1977, the EPA and the Army Corps had promulgated parallel regulations that provided a much more extensive definition of “waters of the United States”⁶⁹ and that reflected the agencies’ understanding that Congress intended the Clean Water Act to apply broadly.⁷⁰ Again, however, this regulatory definition is primarily classificatory, providing would-be regulators and citizens with a long list of categories of waters that qualify as “waters of the United States.” Specifically:

The term waters of the United States means

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purpose by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a)(1) through (4) of this section;

⁶⁸ S. Fla. Water Mgmt. Dist. v. Miccosukee Tribe of Indians, 541 U.S. 95, 109–12 (2004); Friends of the Everglades, Inc. v. S. Fla. Water Mgmt. Dist., No. 02-80309 Civ., 2006 WL 3635465, at *32, *37 (S.D. Fla. Dec. 12, 2006).

⁶⁹ 33 C.F.R. § 328.3(a) (2007); 40 C.F.R. § 122.2 (2007).

⁷⁰ *Rapanos*, 126 S. Ct. 2208, 2252 (2006) (Stevens, J., dissenting); *Riverside Bayview Homes*, 474 U.S. 121, 133–37 (1985).

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1) through (6) of this section.

(8) Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.⁷¹

Functional characteristics are relevant to only three of these categories: waters used in interstate or foreign commerce; intrastate waters that can affect interstate or foreign commerce; and tributaries of other waters.

To be sure, especially in the first two of these categories, the agencies' regulations hint at some of the ecosystem services that waters used in interstate commerce provide, especially fish production and recreational opportunities. Moreover, by emphasizing these waters' affect on interstate or foreign commerce, the regulations also acknowledge at least some of these waters' economic benefits.

Nonetheless, by emphasizing traditional commercial uses rather than ecological function, the regulations invite a more grossly physical than chemical and biological examination of waters for purposes of establishing Clean Water Act jurisdiction. Are the waters in question large enough to support commercial navigation and/or recreational boating? Do they have beaches and other areas suitable for recreation? Are the waters in question physically connected to larger waters so as to qualify as a tributary?

Moreover, even when ecologically functional attributes are examined, they traditionally have served only a classificatory, rather than an evaluative, role in establishing Clean Water Act jurisdiction. For example, the Army Corps and the EPA included tributaries within the regulatory definition of "waters of the United States" because discharges into tributaries of navigable waters can substantially affect downstream water quality—an ecological fact that federal courts sometimes acknowledge.⁷² Nevertheless, given the existence of the regulation and the federal agencies' generalized finding of water quality effects, tributary status generally has been relevant to Clean Water Act jurisdiction *only* as a status—not because of the role that a tributary might play in the larger aquatic ecosystem. For example, in one early case, the Tenth Circuit upheld Clean Water Act jurisdiction over an oil

⁷¹ 33 C.F.R. § 328.3(a) (2007) (Army Corps); *see also* 40 C.F.R. § 122.2 (2007) (EPA).

⁷² *See, e.g.,* Treacy v. Newdunn Assoc. L.L.P., 344 F.3d 407, 417 (4th Cir. 2003) (explaining that manmade tributaries are equally subject to Clean Water Act jurisdiction as natural tributaries because discharges into either can affect downstream water quality, as the Army Corps itself recognized).

spill into a creek that was tributary to the Red River, even though no water flow could carry the oil to the Red River at the time of the spill. What mattered was the creek's *status* as a tributary, not any immediate effects on downstream water quality.⁷³ Even in 2004 (and hence post-*Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*⁷⁴), the Eleventh Circuit was clearly engaged in a classification exercise, not an analysis of ecosystem function, in this jurisdictional determination:

The term “navigable” has little importance, and “navigable waters” includes tributaries of waters that can be navigated. Thus, “ditches and canals, as well as streams and creeks” are navigable waters if they are tributaries of a larger body of water. Here, the plaintiffs presented evidence establishing that storm-water runoff entered the stream behind the property. This stream is a tributary of the Yellow River. Thus, the stream is a “navigable water,” or “water of the United States” under the CWA.⁷⁵

Thus, establishing Clean Water Act jurisdiction over most waters is and has been in most cases an act of categorization rather than an analysis of function and effect. As such, the jurisdictional assessment has not, typically, looked at either the full functional capacity of the waters involved nor the effect of the discharge on those functions. Instead, functional issues become relevant, if at all, during the permitting process, as the permitting agency decides what conditions and requirements to place on the discharge.⁷⁶

2. The Occasional Wetland Deviation

As noted, the destruction of wetlands occasionally prompts exceptions to the normal formal classificatory approach to Clean Water Act jurisdiction.⁷⁷ For example, as will be discussed in more detail below, in *Riverside Bayview Homes*, the U.S. Supreme Court unanimously upheld the EPA's and Army Corps' regulatory extension of Clean Water Act jurisdiction to wetlands adjacent to larger waters in part because of the role of those adjacent wetlands in protecting the water quality of the larger waters.⁷⁸

Probably the most extreme example of a functional jurisdictional analysis in the wetlands context was the Ninth Circuit's assessment of jurisdiction in *Borden Ranch Partnership v. U.S. Army Corps of Engineers (Borden Ranch)*,⁷⁹ which an equally divided Supreme Court upheld without

⁷³ *United States v. Texas Pipe Line Co.*, 611 F.2d 345, 346–47 (10th Cir. 1979).

⁷⁴ 531 U.S. 159 (2001). See discussion *infra* Part III.C.2.

⁷⁵ *Parker*, 386 F.3d 993, 1009 (11th Cir. 2004) (quoting *United States v. Eidson*, 108 F.3d 1336, 1342 (11th Cir. 1997)) (citations omitted).

⁷⁶ See *supra* notes 20–21 and accompanying text.

⁷⁷ See, e.g., *Borden Ranch*, 261 F.3d 810, 814–15 (9th Cir. 2001), *aff'd*, 537 U.S. 99 (2002) (concluding “that activities that destroy the ecology of a wetland are not immune from the Clean Water Act merely because they do not involve the introduction of material brought in from somewhere else” and subjecting “deep ripping”—“essentially pok[ing] a hole in the bottom of protected wetlands”—to regulation under the Act).

⁷⁸ *Riverside Bayview Homes*, 474 U.S. 121, 133–37 (1985).

⁷⁹ 261 F.3d 810 (9th Cir. 2001), *aff'd*, 537 U.S. 99 (2002).

analysis.⁸⁰ In this case, the Army Corps sought to subject the “deep ripping” of wetland swales—the use of long metal prongs to break up a restrictive layer of clay that allows the wetlands to retain water, specifically to allow the wetlands to drain for agricultural purposes—to Clean Water Act jurisdiction and permitting.⁸¹ The Ninth Circuit upheld the Army Corps’ jurisdiction, primarily on the basis of what “deep ripping” did to the functioning and ecology of the wetlands:

The[] cases recognize that activities that destroy the ecology of a wetland are not immune from the Clean Water Act merely because they do not involve the introduction of material brought in from somewhere else. In this case, the Corps alleges that Tsakopoulos has essentially poked a hole in the bottom of protected wetlands. That is, by ripping up the bottom layer of soil, the water that was trapped can now drain out. While it is true, that in so doing, no new material has been “added,” a “pollutant” has certainly been “added.” Prior to the deep ripping, the protective layer of soil was intact, holding the wetland in place. Afterwards, that soil was wrenched up, moved around, and redeposited somewhere else.⁸²

Thus, the courts in *Borden Ranch* suggested that ecological function has always been relevant to Clean Water Act jurisdiction, at least where wetlands are concerned.

Nevertheless, even most wetlands cases have proceeded on the basis of a formalistic and classificatory jurisdictional analysis.⁸³ For all waters, this formal analysis risks allowing regulators, regulated entities, and the courts to lose sight of the Clean Water Act’s ultimately functional goals—restoration and maintenance of “the chemical, physical, and biological integrity of the Nation’s waters.”⁸⁴

C. The Supreme Court and a Functional Approach to Clean Water Act Jurisdiction

I. United States v. Riverside Bayview Homes, Inc.

In *Riverside Bayview Homes*, the U.S. Supreme Court had to decide whether to uphold the Army Corps’ decision (and, by implication, the EPA’s parallel decision) to include wetlands adjacent to a larger body of water within the scope of the Clean Water Act’s jurisdiction.⁸⁵ Notably, wetlands

⁸⁰ *Borden Ranch P’ship v. U.S. Army Corps of Eng’rs*, 537 U.S. 99, 100 (2002).

⁸¹ *Borden Ranch*, 261 F.3d at 812–13.

⁸² *Id.* at 814–15.

⁸³ *Lucas*, 516 F.3d 316, 329–30 (5th Cir. 2008); *Greenfield Mills, Inc. v. Macklin*, 361 F.3d 934, 947 (7th Cir. 2004); *Simsbury-Avon Pres. Soc’y, LLC v. Metacon Gun Club, Inc.*, 472 F. Supp. 2d 219, 223–29 (D. Conn. 2007); *W. Va. Coal Ass’n v. Reilly*, 728 F. Supp. 1276, 1288–90 (S.D. W. Va. 1989); *Sun Enters., Ltd. v. Train*, 394 F. Supp. 211, 223 (S.D.N.Y. 1975); *United States v. Holland*, 373 F. Supp. 665, 668–69 (M.D. Fla. 1974).

⁸⁴ Federal Water Pollution Control Act, 33 U.S.C. § 1251(a) (2000).

⁸⁵ *Riverside Bayview Homes*, 474 U.S. 121 (1985).

functionality was the *agencies'* argument in this case, and the Supreme Court upheld that functional analysis as rational.

According to the *Riverside Bayview Homes* Court, “Section 404 originated as part of the Federal Water Pollution Control Act Amendments of 1972, which constituted a comprehensive legislative attempt ‘to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.’”⁸⁶ Water quality and ecosystem function were intimately connected, in the Court’s view, because “‘the word “integrity” . . . refers to a condition in which the natural structure and function of ecosystems is [are] maintained.’” Protection of aquatic ecosystems, Congress recognized, demanded broad federal authority to control pollution, for “[w]ater moves in hydrologic cycles and it is essential that discharge of pollutants be controlled at the source.”⁸⁷

As a result, “the evident breadth of congressional concern for protection of water quality and aquatic ecosystems suggests that it is reasonable for the Corps to interpret the term ‘waters’ to encompass wetlands adjacent to waters as more conventionally defined.”⁸⁸ The Court emphasized the Army Corps’s determination that “[t]he regulation of activities that cause water pollution cannot rely on . . . artificial lines . . . but must focus on all waters that together form the entire aquatic system.”⁸⁹ As a result, it concluded that, “[i]n view of the breadth of federal regulatory authority contemplated by the Act itself[,] the inherent difficulties of defining precise bounds to regulable waters, [and] the Corps’ ecological judgment about the relationship between waters and their adjacent wetlands,” the Corps (and the EPA) could include wetlands within the Act’s jurisdiction—even wetlands not regularly connected to other waters through flooding or permeation.⁹⁰

The Corps has concluded that wetlands may affect the water quality of adjacent lakes, rivers, and streams even when the waters of those bodies do not actually inundate the wetlands. For example, wetlands that are not flooded by adjacent waters may still tend to drain into those waters. In such circumstances, the Corps has concluded that wetlands may serve to filter and purify water draining into adjacent bodies of water, see 33 CFR § 320.4(b)(2)(vii) (1985), and to slow the flow of surface runoff into lakes, rivers, and streams and thus prevent flooding and erosion, see §§ 320.4(b)(2)(iv) and (v). In addition, adjacent wetlands may “serve significant natural biological functions, including food chain production, general habitat, and nesting, spawning, rearing and resting sites for aquatic . . . species.” § 320.4(b)(2)(i). In short, the Corps has concluded that wetlands adjacent to lakes, rivers, streams, and other bodies of water may function as integral parts of the aquatic environment even when the moisture creating the wetlands does not find its source in the adjacent bodies of water.⁹¹

⁸⁶ *Id.* at 132 (quoting 33 U.S.C. § 1251(a) (2000)).

⁸⁷ *Id.* at 132–33 (quoting H.R. REP. NO. 92-911, at 76 (1972); S. REP. NO. 92-414, at 77 (1972), reprinted in 1972 U.S.C.C.A.N. 3668, 3742).

⁸⁸ *Id.* at 133.

⁸⁹ *Id.* at 133–34 (quoting Regulatory Programs of the Corps of Engineers, 42 Fed. Reg. 37,122, 37,128 (July 19, 1977)).

⁹⁰ *Id.* at 134.

⁹¹ *Id.* at 134–35.

The *Riverside Bayview Homes* Court thus clearly connected ecosystem function—and ecosystem services such as flood control, erosion control, pollution regulation, and food production—to the Corps’ ability to define waters subject to Clean Water Act jurisdiction.

Given the posture of this case, however, no true functional analysis of Clean Water Act jurisdiction emerged. Instead, the Supreme Court essentially decided that the agencies’ categorization of waters subject to Clean Water Act jurisdiction, delineated in part on the basis of some of the waters’ functional connection to water quality, made sense in light of the Act’s larger goals. *Application* of the regulations to new waters remained primarily a formalistic act of classification: Were the wetlands adjacent wetlands or not?

As such, *Riverside Bayview Homes* essentially submerged the relevance of waters’ functionality—and the ecosystem services that various waters can provide—into the agencies’ own justifications for their regulations rather than highlighting such functions and services in the day-to-day application of the Act. Indeed, even the Army Corps’s *Wetlands Delineation Manual* emphasizes the formalistic aspects of wetlands jurisdiction rather than a functional analysis of how a particular wetland might affect water quality in a given aquatic system. For example, the *Manual* begins by announcing that wetlands “are a subset of ‘waters of the United States’” and one of six kinds of “special aquatic sites.”⁹² As a category, moreover, the *Manual* emphasizes that wetlands can be identified by their vegetation, soil, and hydrology and distinguishes wetlands from two other categories—deepwater aquatic habitats and nonwetlands.⁹³

2. Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers⁹⁴

Solid Waste Agency of Northern Cook County, better known as *SWANCC*, involved another facet of the EPA’s and Army Corps’s attempts to incorporate aquatic ecosystem functionality into Clean Water Act jurisdiction. In 1986, in an attempt to clarify its definition of “waters of the United States,” the Army Corps incorporated a nonregulatory preliminary explanation of its regulations that became known as the Migratory Bird Rule. Under this explanation, the Corps noted that it would assert Clean Water Act jurisdiction over intrastate waters:

a. Which are or would be used as habitat by birds protected by Migratory Bird Treaties; or

b. Which are or would be used as habitat by other migratory birds which cross state lines; or

⁹² ENVTL. LAB., U.S. ARMY CORPS OF ENG’RS, TECHNICAL REPORT Y-87-1, CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL 2 (1987), available at <http://www.epa.gov/region09/qa/pdfs/USACEwetlandsmanual.pdf>.

⁹³ *Id.* at 9–11.

⁹⁴ 531 U.S. 159 (2001).

- c. Which are or would be used as habitat for endangered species; or
- d. Used to irrigate crops sold in interstate commerce.⁹⁵

The Migratory Bird Rule thus clearly includes some waters within Clean Water Act jurisdiction on the basis of those waters' ecosystem functions and ecosystem services—habitat for birds or endangered species and use in irrigation.

At the U.S. Supreme Court, however, functionality became less important to interpreting the scope of the Clean Water Act than other principles, such as federalism. As a result, a 5–4 majority “conclude[d] that the ‘Migratory Bird Rule’ is not fairly supported by the Clean Water Act.”⁹⁶ The Court characterized the holding in *Riverside Bayview Homes* as being “based in large measure upon Congress’ unequivocal acquiescence to, and approval of, the Corps’ regulations interpreting the CWA to cover wetlands adjacent to navigable waters” and emphasized “that Congress’ concern for the protection of water quality and aquatic ecosystems indicated its intent to regulate wetlands ‘inseparably bound up with the “waters” of the United States.’”⁹⁷

However, according to the *SWANCC* majority, “[i]t was the significant nexus between the wetlands and ‘navigable waters’ that informed our reading of the CWA in *Riverside Bayview Homes*.”⁹⁸ This functional justification for including adjacent wetlands within the Act’s scope did not extend to isolated wetlands and ponds, because Congress’s use of “navigable waters” in the statute “has at least the import of showing us what Congress had in mind as its authority for enacting the CWA: its traditional jurisdiction over waters that were or had been navigable in fact or which could reasonably be so made.”⁹⁹ Moreover, the Court refused to defer to the Army Corps’s more expansive and functional view of Clean Water Act jurisdiction because that interpretation “alters the federal-state framework by permitting federal encroachment upon a traditional state power,” raising constitutional concerns.¹⁰⁰ The Migratory Bird Rule was therefore *ultra vires*.¹⁰¹

SWANCC thus significantly limited the agencies’ authority to rely upon ecosystem functions and ecosystem services as the basis for Clean Water Act jurisdiction. However, in rejecting that functional regulatory approach the majority also articulated what became known as the “significant nexus”

⁹⁵ Final Rule for Regulatory Programs of the Corps of Engineers, 51 Fed. Reg. 41,206, 41,217 (Nov. 13, 1986).

⁹⁶ *SWANCC*, 531 U.S. at 167.

⁹⁷ *Id.* at 167 (citing *Riverside Bayview Homes*, 474 U.S. 121, 135–39 (1985), and quoting *id.* at 134).

⁹⁸ *Id.* at 167.

⁹⁹ *Id.* at 172 (citing *United States v. Appalachian Elec. Power Co.*, 311 U.S. 377, 407–08 (1940)).

¹⁰⁰ *Id.* at 173. “Permitting respondents to claim federal jurisdiction over ponds and mudflats falling within the ‘Migratory Bird Rule’ would result in a significant impingement of the States’ traditional and primary power over land and water use.” *Id.* at 174 (citing *Hess v. Port Authority Trans-Hudson Corp.*, 513 U.S. 30, 44 (1994)).

¹⁰¹ *Id.* at 174.

test.¹⁰² Post-*SWANCC*, lower federal courts thus felt compelled to evaluate the connections between waters where jurisdiction was questionable and waters where jurisdiction was clear.¹⁰³ Therefore, while *SWANCC* in some respects undermined the import of ecosystem function to Clean Water Act jurisdiction, it nevertheless laid the groundwork for other considerations of functionality in that jurisdictional analysis.

3. *Rapanos v. United States*¹⁰⁴

The Supreme Court's next foray into Clean Water Act jurisdiction, *Rapanos v. United States*, addressed the issue of jurisdiction over wetlands adjacent to *tributaries* of traditional navigable waters.¹⁰⁵ However, the Court's decision did little to clarify that jurisdiction, producing a 4–1–4 split among the Justices.¹⁰⁶ As the federal courts have begun to interpret *Rapanos*, however, Justice Kennedy's lone view of jurisdiction under the Act has opened the door to a fully functional analysis of how small and even apparently isolated waters might nevertheless affect the water quality of larger waters clearly subject to federal regulation.

Much ink has already been spilled reviewing the three-way split among the Justices in *Rapanos*,¹⁰⁷ and hence this Article will spend little time explicating Justice Scalia's plurality opinion or Justice Stevens's dissenting opinion. Instead, it is sufficient for purposes of this Article to note that both the plurality and the dissenters would have perpetuated a formalistic approach to Clean Water Act jurisdiction.

Justice Scalia's approach was the more overtly formalistic of the two, focusing on the plain meaning of "the *waters* of the United States" to conclude that the Clean Water Act extends only "to water '[a]s found in streams and bodies forming geographical features such as oceans, rivers, [and] lakes' or

¹⁰² See *id.* at 167.

¹⁰³ See, e.g., Robin Kundis Craig, *Beyond SWANCC: The New Federalism and Clean Water Act Jurisdiction*, 33 ENVTL. L. 113, 132–37 (2003) (describing how several courts have applied the "significant nexus" test post-*SWANCC*).

¹⁰⁴ 126 S. Ct. 2208 (2006).

¹⁰⁵ *Id.* at 2219.

¹⁰⁶ There were actually five opinions in *Rapanos*, but neither Chief Justice Roberts's concurring opinion nor Justice Breyer's dissenting opinion offered viable jurisdictional analyses. The Chief Justice's opinion served primarily to berate the EPA and the Army Corps for not promulgating new regulations after *SWANCC*. *Id.* at 2235–36 (Roberts, C.J., concurring). Justice Breyer, dissenting alone, would have extended Clean Water Act jurisdiction to the limits of the Commerce Clause, an option largely foreclosed by the *SWANCC* decision. *Id.* at 2266 (Breyer, J., dissenting).

¹⁰⁷ E.g., Brandon C. Smith, *Jurisdictional Donnybrook: Deciphering Wetlands Jurisdiction After Rapanos*, 73 BROOK. L. REV. 337, 349–51 (2007); Raynique T. Keelen-Williams, Comment, *Navigating Un-Chartered Waters: Will Justice Kennedy's Concurrence in Rapanos v. United States Become the Controlling Test Regarding Federal Jurisdiction Over Wetlands?*, 34 S.U. L. REV. 227, 234–42 (2007); James Murphy, *Hard to Navigate: Rapanos and the Future of Protecting Our Waters*, NAT. RES. & ENV'T, Summer 2007, at 3, 4–6; Taylor Romigh, Comment, *The Bright Line of Rapanos: Analyzing the Plurality's Two-Part Test*, 75 FORDHAM L. REV. 3295, 3303–06 (2007).

‘the flowing or moving masses, as of waves or floods, making up such streams or bodies.’”¹⁰⁸ As a result, according to the plurality, jurisdiction under the Act exists only for “those relatively permanent, standing or continuously flowing bodies of water ‘forming geographic features’ that are described in ordinary parlance as ‘streams[,] . . . oceans, rivers, [and] lakes.’”¹⁰⁹ As for wetlands, “*only* those wetlands with a continuous surface connection to bodies that are ‘waters of the United States’ in their own right, so that there is no clear demarcation between ‘waters’ and wetlands, are ‘adjacent to’ such waters and covered by the Act.”¹¹⁰

Justice Stevens’s dissenters, in contrast, would have expanded Clean Water Act jurisdiction to fulfill the Act’s purposes of restoring and maintaining the integrity of the nation’s waters. Nevertheless, their approach was to defer to the Army Corps’s classification scheme, in acknowledged perpetuation and extension of the *Riverside Bayview Homes* analysis. Thus:

The Army Corps has determined that wetlands adjacent to tributaries of traditionally navigable waters preserve the quality of our Nation’s waters by, among other things, providing habitat for aquatic animals, keeping excessive sediment and toxic pollutants out of adjacent waters, and reducing downstream flooding by absorbing water at times of high flow. The Corps’ resulting decision to treat these wetlands as encompassed within the term “waters of the United States” is a quintessential example of the Executive’s reasonable interpretation of a statutory provision.¹¹¹

Notably, the dissenters did quote expert testimony regarding the ecological functions of the wetlands at issue, emphasizing the wetlands’ roles in providing habitat, trapping sediment, recycling nutrients, controlling floods, and providing water storage for dry periods.¹¹² However, the dissenters’ purposes in doing so were to demonstrate that the wetlands fit within the Army Corps’s regulatory definitions and to contradict the plurality’s assertion that a continuous surface water connection was a necessary component of wetland adjacency.¹¹³

Thus, the debate between the plurality and the dissent was not about whether to use a formalistic categorical approach to Clean Water Act jurisdiction, but rather over which categories should be included—and, to a lesser extent, over who (Army Corps or Supreme Court) gets to decide. In contrast, Justice Kennedy challenged the whole categorical approach to jurisdiction, rejecting formal categories in favor of a case-by-case functional analysis.

¹⁰⁸ *Rapanos*, 126 S. Ct. at 2220–21 (emphasis added) (alterations in original) (quoting WEBSTER’S NEW INT’L DICTIONARY 2882 (2d ed. 1954)).

¹⁰⁹ *Id.* at 2225 (alterations in original) (quoting WEBSTER’S NEW INT’L DICTIONARY 2882 (2d ed. 1954)).

¹¹⁰ *Id.* at 2226.

¹¹¹ *Id.* at 2252–53 (Stevens, J., dissenting) (citing *Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 842–45 (1984)).

¹¹² *Id.* at 2253–54 (Stevens, J., dissenting).

¹¹³ *Id.* at 2256 (Stevens, J., dissenting).

As Justice Kennedy framed the issue in *Rapanos*, the “consolidated cases require the Court to decide whether the term ‘navigable waters’ in the Clean Water Act extends to wetlands that do not contain and are not adjacent to waters that are navigable in fact.”¹¹⁴ He argued that the “significant nexus” test announced in *SWANCC* resolved the issue.¹¹⁵ However, rather than formulate this test as another act of binary classification, Justice Kennedy required a functional analysis of the non-adjacent wetland’s effect on the downstream navigable water.¹¹⁶

Emphasizing that “[t]he ‘objective’ of the Clean Water Act (Act) is ‘to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters,’”¹¹⁷ Justice Kennedy also relied heavily on the Army Corps’s regulations and *Wetlands Delineation Manual* to underscore that “wetlands are not simply moist patches of earth.”¹¹⁸ Reading *Riverside Bayview Homes* and *SWANCC* together, he concluded

that in some instances, as exemplified by *Riverside Bayview*, the connection between a nonnavigable water or wetland and a navigable water may be so close, or potentially so close, that the Corps may deem the water or wetland a “navigable water” under the Act. In other instances, as exemplified by *SWANCC*, there may be little or no connection. Absent a significant nexus, jurisdiction under the Act is lacking.¹¹⁹

In this sense, according to Justice Kennedy, Justice Scalia’s plurality ignored *Riverside Bayview Homes*’ “broader focus on wetlands’ ‘significant effects on water quality and the aquatic ecosystem,’”¹²⁰ underestimated the probability “that the discharge of fill material can impair downstream water quality,”¹²¹ and ignored the fact that

[w]here wetlands perform . . . filtering and runoff-control functions, filling them may increase downstream pollution, much as a discharge of toxic pollutants would. Not only will dirty water no longer be stored and filtered but the act of filling and draining itself may cause the release of nutrients, toxins, and pathogens that were trapped, neutralized, and perhaps amenable to filtering or detoxification in the wetlands. In many cases, moreover, filling in wetlands separated from another water by a berm can mean that flood water, impurities, or runoff that would have been stored or contained in the wetlands will instead flow out to major waterways.¹²²

¹¹⁴ *Id.* at 2236 (Kennedy, J., concurring).

¹¹⁵ *Id.* (Kennedy, J., concurring).

¹¹⁶ *Id.* at 2237 (Kennedy, J., concurring).

¹¹⁷ *Id.* at 2236–37 (Kennedy, J., concurring) (33 U.S.C. § 1251(a) (2000)).

¹¹⁸ *Id.* at 2237–38 (Kennedy, J., concurring).

¹¹⁹ *Id.* at 2241 (Kennedy, J., concurring).

¹²⁰ *Id.* at 2244 (Kennedy, J., concurring) (quoting *Riverside Bayview Homes*, 474 U.S. 121, 135 n.9 (1985)).

¹²¹ *Id.* at 2245 (Kennedy, J., concurring).

¹²² *Id.* (Kennedy, J., concurring).

According to Justice Kennedy, *SWANCC*'s "significant nexus" test served to eliminate one category of waters from Clean Water Act jurisdiction—those isolated intrastate waters "that appeared likely, as a category, to raise constitutional difficulties and federalism concerns"¹²³—while preserving the United States's legitimate concerns over water quality. Moreover, Justice Kennedy, unlike the plurality, clearly acknowledged that "[i]mportant public interests are served by the Clean Water Act in general and by protection of wetlands in particular," such as avoiding "dead zones" like that created in the Gulf of Mexico.¹²⁴

To preserve this balance, however, jurisdiction over wetlands must be assessed functionally, on a case-by-case basis.¹²⁵ A categorical approach to Clean Water Act jurisdiction risks both under- and over-inclusiveness.¹²⁶ As such:

The required nexus must be assessed in terms of the statute's goals and purposes. Congress enacted the law to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," 33 U.S.C. § 1251(a), and it pursued that objective by restricting dumping and filling in "navigable waters," §§ 1311(a), 1362(12). With respect to wetlands, the rationale for Clean Water Act regulation is, as the Corps has recognized, that wetlands can perform critical functions related to the integrity of other waters – functions such as pollutant trapping, flood control, and runoff storage. 33 CFR § 320.4(b)(2). *Accordingly, wetlands possess the requisite nexus, and thus come within the statutory phrase "navigable waters," if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as "navigable."* When, in contrast, wetlands' effects on water quality are speculative or insubstantial, they fall outside the zone fairly encompassed by the statutory term "navigable waters."¹²⁷

To be sure, as a practical matter and as Justice Kennedy acknowledged, categorical classifications of wetlands are likely to re-emerge as a result of this test. Thus, pursuant to *Riverside Bayview Homes*, "[a]s applied to wetlands adjacent to navigable-in-fact waters, the Corps' conclusive standard for jurisdiction rests upon a reasonable inference of ecologic interconnection, and the assertion of jurisdiction for those wetlands is sustainable under the Act by a showing of adjacency alone."¹²⁸

However, in contrast to *Riverside Bayview Homes*, the role of ecosystem functions and services resurfaced for future agency

¹²³ *Id.* at 2246 (Kennedy, J., concurring).

¹²⁴ *Id.* at 2246–47 (Kennedy, J., concurring).

¹²⁵ *Id.* at 2249 (Kennedy, J., concurring) ("Absent more specific regulations, however, the Corps must establish a significant nexus on a case-by-case basis . . .").

¹²⁶ *Id.* at 2248 (Kennedy, J., concurring) (noting that "[a]lthough the dissent acknowledges that wetlands' ecological functions vis-à-vis other covered waters are the basis for the Corps' regulation of them," the dissent would incorrectly allow the Corps to extend jurisdiction to *all* non-isolated wetlands).

¹²⁷ *Id.* (Kennedy, J., concurring) (emphasis added).

¹²⁸ *Id.* (Kennedy, J., concurring).

classifications in Justice Kennedy's *Rapanos* opinion. According to Justice Kennedy, a similar "adjacency only" test might be appropriate for "wetlands adjacent to certain major tributaries," such as those "that, due to their volume of flow (either annually or on average), their proximity to navigable waters, or other relevant considerations, are significant enough that wetlands adjacent to them are likely, in the majority of cases, to perform important functions for an aquatic ecosystem incorporating navigable waters."¹²⁹ Thus, adjacency is not justifiable as a basis of legal jurisdiction as a physical status, but only because of the adjacent waters' ability to affect aquatic ecosystem functions. Similarly, in particular locations, "[w]here an adequate nexus is established for a particular wetland, it may be permissible, as a matter of administrative convenience or necessity, to presume covered status for other comparable wetlands in the region."¹³⁰ In other words, establishing one wetland's effect on ecosystem function and services may be sufficient to extend Clean Water Act jurisdiction to other, similarly situated wetlands—but not to all wetlands categorically.

Categorization, in other words, must now be based on demonstrated ecological connection and function—not, as is true of the EPA's and Army Corps's existing regulations, a broad Commerce Clause approach to "waters of the United States." As such, Justice Kennedy's test forces both the federal agencies (the Army Corps and by implication, the EPA) and the federal courts to articulate how various waters are interconnected and how activities in one can affect the proper function of another in order to establish Clean Water Act jurisdiction.

IV. JUSTICE KENNEDY'S *RAPANOS* TEST AND ECOSYSTEM SERVICES: THE EXAMPLE OF *UNITED STATES V. CUNDIFF*

A. Lower Courts and the Rapanos Split: The Ascendancy of Justice Kennedy's Significant Nexus Test

Since the Supreme Court decided *Rapanos*, Justice Kennedy's significant nexus test has emerged as the majority analysis among the lower federal courts. Those lower federal courts have generally taken one of two paths in following this one-Justice opinion. First, some courts have viewed Justice Kennedy's analysis as the narrowest, and hence controlling, grounds of the *Rapanos* decision.¹³¹ Second, and perhaps most rationally, courts have noted that the four dissenters acknowledged that they would uphold Clean Water Act jurisdiction under either the plurality's or Justice Kennedy's tests

¹²⁹ *Id.* (Kennedy, J., concurring).

¹³⁰ *Id.* at 2249 (Kennedy, J., concurring).

¹³¹ *E.g.*, *United States v. Gerke Excavating, Inc.*, 464 F.3d 723, 725 (7th Cir. 2006) (per curiam) (applying *Marks v. United States*, 430 U.S. 188 (1977)); *United States v. Robison*, 505 F.3d 1208, 1221–22 (11th Cir. 2007) (following *Gerke Excavating*, 464 F.3d at 725); *N. Cal. River Watch v. City of Healdsburg*, 457 F.3d 1023, 1029 (9th Cir. 2006) (applying *Marks v. United States*, 430 U.S. 188 (1977)).

and hence apply both tests.¹³² As a result, it is a rare federal court that will not engage in Justice Kennedy's "significant nexus" analysis to determine whether discharges into questionable waters are subject to Clean Water Act jurisdiction.¹³³

B. The Agencies' 2007 Rapanos Guidance

Like the federal courts, in their June 2007 *Rapanos* Guidance the EPA and the Army Corps acknowledged both the tension between the plurality and Justice Kennedy tests from *Rapanos* and the importance of Justice Kennedy's "significant nexus" test.¹³⁴ This Guidance essentially blends traditional formalistic analysis with a *Rapanos*-inspired functional analysis, relying on Justice Kennedy's functional "significant nexus" approach to establish whether Clean Water Act jurisdiction exists over waters that are "close calls."¹³⁵

In formalistic mode, the agencies declared that they would continue to assert jurisdiction over four categories of waters: "[t]raditional navigable waters" (the classic source of federal water jurisdiction); "[w]etlands adjacent to traditional navigable waters" (the *Riverside Bayview Homes* category, which even Justice Kennedy admitted as a category); "[n]on-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally" (i.e., tributaries that meet the plurality's test from *Rapanos*); and "[w]etlands that directly abut such tributaries" (i.e., wetlands that meet the plurality's test from *Rapanos*).¹³⁶

In contrast, "[t]he agencies will decide jurisdiction over [other] waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water . . ."¹³⁷ The three categories of waters subject to this functional analysis are: "[n]on-navigable tributaries that are not relatively permanent"; "[w]etlands adjacent to non-navigable tributaries that are not relatively permanent"; and "[w]etlands adjacent to but that do not directly abut a relatively

¹³² *E.g.*, *United States v. Johnson*, 467 F.3d 56, 60–65 (1st Cir. 2006); *Cundiff*, 480 F. Supp. 2d 940, 944 (W.D. Ky. 2007); *Simsbury-Avon Pres. Soc'y, LLC v. Metacon Gun Club, Inc.*, 472 F. Supp. 2d 219, 226–27 (D. Conn. 2007); *United States v. Evans*, No. 3:05 CR 159 J 32HTS, 2006 WL 2221629, at *19 (M.D. Fla. Aug. 2, 2006); *see also Lucas*, 516 F.3d 316, 325–27 (5th Cir. 2008) (applying all three tests from *Rapanos*).

¹³³ *But see United States v. Chevron Pipe Line Co.*, 437 F. Supp. 2d 605, 613–14 (N.D. Tex. 2006) (reverting to prior precedent rather than applying *Rapanos* "[b]ecause Justice Kennedy failed to elaborate on the 'significant nexus' required").

¹³⁴ U.S. EPA & U.S. ARMY CORPS OF ENG'RS, CLEAN WATER ACT JURISDICTION FOLLOWING THE U.S. SUPREME COURT'S DECISION IN *RAPANOS V. UNITED STATES & CARABELL V. UNITED STATES* 3 (2007), available at http://www.usace.army.mil/cw/cecwo/reg/cwa_guide/rapanos_guide_memo.pdf [hereinafter *RAPANOS GUIDANCE*].

¹³⁵ *See id.* at 1, 7 (discussing use of significant nexus analysis when jurisdiction is dependent on "fact-specific analysis").

¹³⁶ *Id.* at 1.

¹³⁷ *Id.*

permanent non-navigable tributary.”¹³⁸ The agencies plan to determine whether a significant nexus exists by “assess[ing] the flow characteristics and functions of the tributary itself, together with the functions performed by any wetlands adjacent to that tributary, to determine whether collectively they have a significant nexus with traditional navigable waters.”¹³⁹

Thus, the agencies plan to use a functional approach to assess jurisdiction over questionable waters, emphasizing both hydrological (physical) and ecological factors. Hydrological factors include “volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary”; “proximity to the traditional navigable water”; “size of the watershed”; “average annual rainfall”; and “average annual winter snow pack.”¹⁴⁰ Ecological factors include “potential of tributaries to carry pollutants and flood waters to traditional navigable waters”; “provision of aquatic habitat that supports a traditional navigable water”; “potential of wetlands to trap and filter pollutants or store flood waters”; and “maintenance of water quality in traditional navigable waters.”¹⁴¹

It remains to be seen whether the agencies’ mixed approach to Clean Water Act jurisdiction after *Rapanos* will be upheld in those federal circuits where the courts of appeal have held that only Justice Kennedy’s test applies.¹⁴² To date, however, only one federal court has addressed the *Rapanos* Guidance, and it did so only in passing and only with reference to the purely administrative law issue of whether the Army Corps had reopened its regulations defining “waters of the United States.”¹⁴³

However, even in circuits such as the First, where the mixed approach is likely to be upheld, the agencies’ Guidance underscores a new role for ecosystem function and ecosystem services in the jurisdictional analysis, at least for borderline waters. As the agencies themselves noted, they “have focused on the integral relationship between the ecological characteristics of tributaries and those of their adjacent wetlands, which determines in part their contribution to restoring and maintaining the chemical, physical, and biological integrity of the Nation’s traditional navigable waters.”¹⁴⁴ Specifically:

¹³⁸ *Id.*

¹³⁹ *Id.* at 7.

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² *E.g., Gerke Excavating*, 464 F.3d 723, 725 (7th Cir. 2006) (per curiam) (applying *Marks v. United States*, 430 U.S. 188, 193 (1977)); *N. Cal. River Watch*, 457 F.3d 1023, 1025 (9th Cir. 2006) (applying *Marks v. United States*, 430 U.S. 188, 193 (1977)). The EPA and Army Corps did not subject the *Rapanos* Guidance to notice and comment rulemaking, which is likely to reduce the deference that the Guidance receives in *any* circuit. *United States v. Mead Corp.*, 533 U.S. 218, 229–31 (2001). Moreover, because the *Rapanos* Guidance is an interpretation of the *Rapanos* decision, not the Clean Water Act per se, federal courts are doubly unlikely to defer wholeheartedly to the agencies’ interpretations, particularly in circuits where the relevant court of appeals has already held that Justice Kennedy’s opinion and test control.

¹⁴³ *P & V Enters. v. U.S. Army Corps of Eng’rs*, 516 F.3d 1021, 1026 (D.C. Cir. 2008).

¹⁴⁴ *RAPANOS* GUIDANCE, *supra* note 134, at 8.

The flow parameters and ecological functions that Justice Kennedy describes as most relevant to an evaluation of significant nexus result from the ecological inter-relationship between tributaries and their adjacent wetlands. For example, the duration, frequency, and volume of flow in a tributary, and subsequently the flow in downstream navigable waters, is directly affected by the presence of adjacent wetlands that hold floodwaters, intercept sheet flow from uplands, and then release waters to tributaries in a more even and constant manner. Wetlands may also help to maintain more consistent water temperature in tributaries, which is important for some aquatic species. Adjacent wetlands trap and hold pollutants that may otherwise reach tributaries (and downstream navigable waters) including sediments, chemicals, and other pollutants. Tributaries and their adjacent wetlands provide habitat (e.g., feeding, nesting, spawning, or rearing young) for many aquatic species that also live in traditional navigable waters.¹⁴⁵

The Guidance emphasizes that the agencies should consider the “functions of the tributary together with the functions performed by all the [adjacent] wetlands” when determining whether jurisdiction exists.¹⁴⁶ Among the relevant functions are the tributaries’ and wetlands’ abilities to carry pollutants such as petroleum wastes, toxic pollutants, and sediment to more traditionally navigable waters or to prevent such downstream pollution; “the capacity to transfer nutrients and organic carbon vital to support downstream foodwebs”; “habitat services such as providing spawning areas for recreationally or commercially important species in downstream waters”; and “maintenance of downstream water quality.”¹⁴⁷

The agencies also emphasize in their *Rapanos* Guidance that the “significant nexus” test requires documentation of the evidence of the connections between tributaries and wetlands and traditional navigable waters.¹⁴⁸ As such, the agencies confirm that Justice Kennedy’s test imposes new informational demands on the regulatory agencies themselves. However, the *Rapanos* Guidance also acknowledges that the “significant nexus” analysis will result in the broader public dissemination of information about aquatic ecosystem function, because all of that jurisdictional information will be documented in the public administrative record, along with the agencies’ explanation of whether and why a significant nexus exists.¹⁴⁹

Thus, the *Rapanos* Guidance acknowledges both the drawbacks and the benefits of Justice Kennedy’s approach. As many commentators have noted, case-by-case determinations of jurisdiction based on actual water quality effects are likely to be expensive and time-consuming.¹⁵⁰ However, the

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* at 9.

¹⁴⁷ *Id.* at 10.

¹⁴⁸ *Id.*

¹⁴⁹ *Id.* at 9–12.

¹⁵⁰ See generally, e.g., Donna Dowling, Tracie-Lynn Nadeau, & Rose Kwok, *Technical and Scientific Challenges in Implementing Rapanos’ “Water of the United States,”* NAT. RES. & ENV’T, Summer 2007, at 42; Bradford C. Mank, *Implementing Rapanos—Will Justice Kennedy’s Significant Nexus Test Provide a Workable Standard for Lower Courts, Regulators, and*

agencies confirm that one of the unintended consequences of Justice Kennedy's opinion in *Rapanos* is that more detailed public discussions of aquatic ecosystem connectivity and ecosystem services are likely to become more commonplace in Clean Water Act jurisdictional analyses. Case law is beginning to underscore this *Rapanos* consequence, as the discussion in *United States v. Cundiff* makes clear.

C. United States v. Cundiff

As Justice Kennedy apparently intended, courts following the "significant nexus" test have begun to look more closely at the functions and interconnections of so-called "minor" waterways. Some have even begun to articulate the ecosystem services that various waters of the United States perform for humans, taking Justice Kennedy's test a step farther than strictly required. One clear example of this evolution is the Western District of Kentucky's 2007 analysis of Clean Water Act jurisdiction in *United States v. Cundiff*.¹⁵¹

Cundiff began in 2005 as a civil enforcement action against a father and son, George and Christopher Cundiff, to enjoin them from dredging and filling wetlands on their properties in Muhlenberg County, Kentucky.¹⁵² The two properties were adjacent to Pond and Caney Creeks, two tributaries of the Green River, which is in turn a tributary of the Ohio River,¹⁵³ an indisputably navigable water. In January 2005, the district court enjoined the defendants and required restoration, but while the appeal was pending in the Sixth Circuit, the U.S. Supreme Court decided *Rapanos*.¹⁵⁴ The Sixth Circuit thus remanded the case for reconsideration in light of *Rapanos*.¹⁵⁵

The Western District of Kentucky first decided which *Rapanos* opinion was controlling, electing to follow the First Circuit's conclusion that jurisdiction existed if the waters met either the plurality's or Justice Kennedy's tests.¹⁵⁶ It then applied Justice Kennedy's test, finding "that a significant nexus exists between the wetlands in question and the traditional navigable-in-fact water—the Green River."¹⁵⁷

In reaching this conclusion, the district judge relied heavily on expert testimony about the ecosystem functions—and ecosystem services—that the Cundiff wetlands provided. For example, wetland scientist Dr. Lyndon C. Lee opined that the wetlands provided short- and long-term water storage, that they filtered acid mine drainage and sediment, and that they provided habitat for plants and wildlife important to the aquatic ecosystem.¹⁵⁸ Dr. Lee

Developers?, 40 IND. L.J. 291 (2007).

¹⁵¹ 480 F. Supp. 2d 940 (W.D. Ky. 2007).

¹⁵² *Id.* at 941.

¹⁵³ *Id.*

¹⁵⁴ *Id.*

¹⁵⁵ *Id.* at 942.

¹⁵⁶ *Id.* at 944 (citing *United States v. Johnson*, 467 F.3d 56, 60, 65 (1st Cir. 2006)).

¹⁵⁷ *Id.* at 945.

¹⁵⁸ *Id.*

emphasized the wetlands' water storage functions, concluding that the Cundiffs' dredging and filling of the wetlands could contribute to downstream flooding, particularly during peak floods in the Green River, which in turn would affect navigation in, farming along, and erosion and sedimentation of the Green River.¹⁵⁹

Nevertheless, the wetlands' pollution assimilation and control was also important because the Cundiff wetlands effectively reduced upstream pollution from mining operations.¹⁶⁰ Specifically:

Dr. Lee and Ed Carroll, Environmental Control Supervisor with the Kentucky Division of Water, testified that they observed acid mine drainage and sediment flow onto the Cundiff property from upstream sites. Mr. Carroll testified that the wetlands in question, along with other surrounding wetlands, perform vital filtering and sediment trapping functions which treats pollutants, contaminants, and toxins and affect the overall water quality of the Green River.¹⁶¹

The Cundiffs' dredging and filling was causing this acidic runoff to by-pass the wetlands and flow far more quickly into the creeks and Green River, with measurable effects on navigation (from sedimentation) and aquatic food webs (from both sedimentation and acidified water).¹⁶²

As a result, the court concluded, "the Cundiff wetlands, alone and in combination with other area wetlands, 'significantly affect the chemical, physical, and biological integrity' of the Green River."¹⁶³ Clean Water Act jurisdiction thus existed.¹⁶⁴

D. A Difference that Makes a Difference

One could argue that the Cundiff wetlands presented a relatively easy case. For example, the wetlands also met the plurality's arguably more restrictive test of having a continuous surface water connection to a relatively permanent "water" of the United States.¹⁶⁵ From this perspective, *Cundiff* accomplished nothing more than what would have (and in fact did) occur under the Army Corps's and EPA's categorical regulations: wetlands adjacent to tributaries of navigable-in-fact waters are themselves "waters of the United States."¹⁶⁶

Such a purely instrumental view of Clean Water Act jurisdictional analyses, however, ignores the suggestiveness of the facts that Justice Kennedy's significant nexus test required the court to find and articulate. A court's analysis of these wetlands under the Army Corps's regulation (the

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ *Id.* (quoting *Rapanos*, 126 S. Ct. 2208, 2248 (2006) (Kennedy, J., concurring)).

¹⁶⁴ *Id.* at 947–48.

¹⁶⁵ *Id.* at 943, 946–47.

¹⁶⁶ See *RAPANOS* GUIDANCE, *supra* note 134, at 6.

test that the *Rapanos* dissenters would have preserved)¹⁶⁷ would focus on relatively few, and relatively uninteresting, facts: Are the wetlands in question adjacent to Pond and Caney Creeks? Are Pond and Caney Creeks tributary to the Green River? And, perhaps, is the Green River a navigable-in-fact water? Such a jurisdictional analysis is efficient, but ultimately uninspiring: Neither the court, the parties, nor the nonparty readers of the eventual decision need wrestle with the messy issues of what the wetlands are actually *doing*—for the ecosystem *or* for humans.

Similarly, the *Cundiff* court's analysis of the *Rapanos* plurality's test was nowhere near as suggestive as its significant nexus analysis. Experts in the case showed aerial photographs and provided testimony "that the South Channel located on the northern tract, Pond Creek, and Caney Creek are all relatively permanent bodies of water connected to a traditional interstate navigable water, the Green River" and that the flow was relatively continuous, satisfying the plurality's first element.¹⁶⁸ As for the second element, the court rejected the defendants' argument that water in the wetlands must be level with water in the tributaries. The court concluded that a continuous surface water connection existed because there was no clear demarcation of where the tributaries ended and the wetlands began and "the wetlands at the site physically abut the South Channel, Pond Creek, and Caney Creek."¹⁶⁹

In contrast, the *Cundiff* significant nexus analysis both underscored what the wetlands are doing for all residents of Kentucky (or at least those who have anything to do with the Green River) and suggested a back story of past, or perhaps ongoing, environmental abuses.¹⁷⁰ Flood control is a valuable ecosystem service, which the *Cundiff* court put in immediate human context through its reference to "crop production in bottomlands."¹⁷¹ Its opinion thus identifies the *Cundiffs*' wetlands as part of a natural water retention system that allows farmers downstream to grow crops with reduced fear of flooding. Whether farming in floodplains is a wise policy overall is beside the point: Justice Kennedy's significant nexus test prompted the court to articulate a value of the wetlands' ecosystem services that mere categorization of the wetlands ignored.

Even more suggestive are the wetlands' role in controlling the negative effects of acid mine drainage. Notably, the court treated this acid mine drainage, presumably nonpoint source pollution from abandoned mining operations,¹⁷² as a background fact of life, never explaining the source of the

¹⁶⁷ *Rapanos*, 126 S. Ct. at 2255–56 (Stevens, J., dissenting) (stating that under *Riverside Bayview Homes*, the Corps's regulation defining "waters of the United States" was reasonable).

¹⁶⁸ *Cundiff*, 480 F. Supp. 2d at 946.

¹⁶⁹ *Id.* at 946–47.

¹⁷⁰ *Id.* at 944–54.

¹⁷¹ *Id.* at 945 (quoting Lee Report at 7) (quotations omitted).

¹⁷² "The EPA estimates that there are currently over 1.1 million acres of abandoned coal mine lands in the United States, which have produced over 9,709 miles of streams polluted by acid mine drainage. Roughly ninety percent of this acid mine drainage comes from coal mines abandoned prior to the passage of federal laws regulating pollution and reclamation of mined lands." Citizens Coal Council v. U.S. EPA, 447 F.3d 879, 882 (6th Cir. 2006) (citing Coal Mining

drainage or the lack of water pollution controls at the mine site. Nevertheless, its significant nexus analysis made clear that the Cundiffs' wetlands are performing human waste treatment services, for wastes that are presumably (again, the court gives no background) not of the Cundiffs' own making but that could severely impair downstream aquatic ecosystem function.¹⁷³

In other words, Justice Kennedy's significant nexus test prompted the district court to highlight the fact that, in effect, the Cundiffs' wetlands have been pressed into the service of unnamed (and perhaps by now nonexistent) miners and mining operations in order to protect the public as a whole. Moreover, this exploitation of the wetlands' ecosystem services by others now supports regulation of the Cundiffs' activities on their own property in order to protect the Green River's water quality and larger ecosystem. In other words, unlike both the traditional categorization of waters that the *Rapanos* dissenters supported and the *Rapanos* plurality's approach to "waters," Justice Kennedy's "significant nexus" not only prompted the court to articulate the fact that the Cundiffs' wetlands are indeed "doing something" for the Green River and for the benefit of other humans, but also revealed that this aquatic ecosystem is already being stressed by pollution sources not under the Cundiffs' control.

V. CONCLUSION

Nobody familiar with the history of the Clean Water Act can view Justice Kennedy's significant nexus test as an enlightened panacea that resolves all of the difficulties of water quality regulation in the United States, or even that clearly solves the problem of which waters are "waters of the United States" that fall within the Act's regulatory scope. Most obviously, Justice Kennedy's test can impose substantial, expensive, and time-consuming evidentiary burdens on federal and state governments and on citizen plaintiffs, making it more likely that these enforcers will fail to meet their burden of proof that waters are "navigable waters" covered by the Clean Water Act. For example, the Connecticut District Court has already found plaintiffs' testing for lead migration and lead contamination failed to prove the existence of a significant nexus between wetlands and the Farmington River in Connecticut because the testing was flawed and inconclusive, despite the close proximity of the wetlands to the river.¹⁷⁴

From this perspective, restoration of the EPA's and Army Corps's categorical approach to "waters of the United States" would almost certainly ensure, as a practical matter, broader application of the Clean Water Act than is likely to occur in the wake of *Rapanos*. However, it is important to

Point Source Category; Amendments to Effluent Limitations Guidelines and New Source Performance Standards, 65 Fed. Reg. 19,440, 19,444 (Apr. 11, 2000)). See also *W. Va. Highlands Conservancy, Inc. v. Kempthorne*, Fed. App'x 220, 221–22 (4th Cir. 2007) (describing water quality problems from acid mine drainage).

¹⁷³ *Cundiff*, 480 F. Supp. 2d at 945.

¹⁷⁴ *Simsbury-Avon Pres. Soc'y, LLC v. Metacon Gun Club, Inc.*, 472 F. Supp. 2d 219, 229–30 (D. Conn. 2007).

remember that those agencies' regulations have been in question since the Supreme Court's 2001 decision in *SWANCC*, and *Rapanos* only makes clear that the Court will not tolerate the broad application of the current Clean Water Act that existed after *Riverside Bayview Homes*. The task of re-establishing broad Clean Water Act jurisdiction now rests with Congress, not the lower federal courts or the agencies.

Nor can it be said that considerations of aquatic ecosystem function were wholly absent from Clean Water Act jurisdiction before the *Rapanos* decision. Especially in the context of wetlands, courts at all levels—including the Supreme Court itself—have occasionally articulated the values and functions of such ecosystems, both for the environment and for humans. In 1995, for example, the Southern District of Florida noted the Army Corps's conclusion that the property at issue “was valuable freshwater wetlands, a scarce resource and important habitat for Key Deer, for shore and wading birds, and other wildlife on Big Pine Key, and that destruction of such wetlands was not in the public interest”¹⁷⁵ Moreover, “[t]he Defendant's leveling, spreading and filling activities have caused identifiable adverse effects, both individual and cumulative, on the sites' vital aquatic and habitat functions.”¹⁷⁶ These “vital functions” included providing food and habitat for the endangered Key Deer, providing habitat and food to migratory wading birds (ibises, herons, and egrets), providing habitat to fish, frogs, turtles, and birds, and serving as a filter that enhanced water quality.¹⁷⁷ Moreover, “[i]t is well established that wetlands such as these also serve as storage areas for storm and flood waters and to stem erosion and control sedimentation.”¹⁷⁸

Nevertheless, the *Cundiff* case illustrates that even Congress would be well-advised to consider a more functional view of the Act and its jurisdiction, because Justice Kennedy's significant nexus test more readily encourages parties and the courts to identify and articulate the important ecosystem services that aquatic ecosystems like wetlands provide.¹⁷⁹ This identification and articulation is valuable in and of itself, because developing an ecosystem services rhetoric in Clean Water Act jurisdiction would make it clear that the “waters of the United States” provide ecosystem functions and economically valuable ecosystem services worth protecting through regulation. Such rhetoric could do much to counter the perception, clearly presented in Justice Scalia's plurality opinion in *Rapanos*, that the current Clean Water Act represents an “immense expansion of federal regulation of land use that has occurred . . . during the past five Presidential administrations” that has unnecessarily imposed, with little public benefit, huge costs on private landowners just because their lands contain “storm drains, roadside ditches, ripples of sand in

¹⁷⁵ *Banks*, 873 F. Supp. 650, 654 (S.D. Fla. 1995) (summarizing the Army Corps's findings during the permit application evaluation).

¹⁷⁶ *Id.* at 656.

¹⁷⁷ *Id.*

¹⁷⁸ *Id.* at 659.

¹⁷⁹ See *Cundiff*, 480 F. Supp. 2d 940, 945 (W.D. Ky. 2007) (identifying ecological benefits of the contested wetlands as part of the significant nexus test analysis).

the desert that may contain water once a year, and lands that are covered by floodwaters once every 100 years,” or, of course, “swampy lands.”¹⁸⁰

Cundiff also suggests that the significant nexus approach may have ancillary benefits both for the practical valuation of ecosystem services and for water quality regulation. First, from the Cundiffs’ perspective, the litigation identified downstream farmers who might be interested in contributing to the wetlands’ preservation.¹⁸¹ The district court’s opinion thus articulated that the farmers’ interests are linked to the Cundiffs’ property, setting the stage for cooperative (and perhaps pecuniary) interactions between the Cundiffs and their downstream beneficiaries to ensure continued preservation and perhaps even enhancement of the wetlands at issue.

Second, the *Cundiff* court identified upstream polluters who are free-riding on the Cundiffs’ (admittedly forced) maintenance of the wetlands and the wetlands’ attendant ecosystem services.¹⁸² The identification of such upstream polluters and the uncontrolled nonpoint source (presumably) of pollution could prompt the Cundiffs and similarly situated property owners to demand that their state and local governments do more to control such pollution. One potential result of the *Cundiff* litigation, therefore, is increased water quality controls and nonpoint source regulation and hence more comprehensive improvements in water quality.

Thus, there is a silver lining to *Rapanos* and the ascendancy of Justice Kennedy’s significant nexus approach. While Clean Water Act jurisdiction is almost certainly narrower than it was prior to June 2006, Justice Kennedy’s concurrence should prompt the EPA, the Army Corps, and the federal courts to more clearly and more forcefully articulate the functional interconnectedness of the nation’s aquatic ecosystems and the services that those ecosystems provide to the American public. Such narratives, in turn, underscore the particular details, and the local and regional significance, of human dependence upon those ecosystem services, and hence should inspire a greater valuation of and desire to protect the country’s aquatic resources.

¹⁸⁰ *Rapanos*, 126 S. Ct. 2208, 2215 (2006).

¹⁸¹ See *Cundiff*, 480 F. Supp. 2d at 945 (crediting expert testimony that destruction of the Cundiffs’ wetlands negatively impacts farmers’ “crop production in bottomlands”).

¹⁸² *Id.* (identifying filtration of “acid mine drainage” as an ecological function of the Cundiffs’ wetlands).