COMMENT

DO ISOLATED WETLANDS SUBSTANTIALLY AFFECT INTERSTATE COMMERCE?

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INTRODUCTION

Isolated wetlands—wetlands that do not have a hydrological surface connection to another body of water and are not adjacent[1] to an interstate or navigable body of water[2]—have been the center of much recent controversy. First, the House of Representatives passed a bill[3] ("House Bill 961") to amend the Clean Water Act[4] that drastically would have reduced federal protection of isolated wetlands.[5] Second, a Supreme Court decision[6] establishing limits on congressional

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1. "Adjacent" means "bordering, contiguous, or neighboring." 33 C.F.R. § 328.3 (1995).

2. The Army Corps of Engineers ("Corps") defines isolated waters as "those non-tidal waters of the United States that are: (1) Not part of a surface tributary system to interstate or navigable waters of the United States; and (2) Not adjacent to such tributary waterbodies." *Id.* § 330.2(e).

3. H.R. 961, 104th Cong. (1995). H.R. 961 attempts to rank wetlands in three categories based on ecological value. *See id.* Category A wetlands would receive the highest amount of protection provided that landowners were compensated by the federal government. *See id.* Wetlands in category B would receive an intermediate level of protection, less than what is provided under current law. *See id.* Category C wetlands would receive no protection under federal law. *See id.*

Many scientists have criticized H.R. 961 as scientifically unsound. *See, e.g.*, John H. Cushman, Jr., *Scientists Reject Criteria for Wetlands Bill*, N.Y. TIMES, May 10, 1995, at D19 [hereinafter Cushman, *Criteria for Wetlands*] (reporting that William M. Lewis, Jr., Chairman, National Academy of Science's Wetlands Committee, called bill's ranking of wetlands "arbitrary"); John H. Cushman, Jr., *House and Science Panels Clash on Wetlands' Fate*, N.Y. TIMES, Apr. 7, 1995, at A30 (quoting wetlands biologist Joy B. Zedler as saying, "I don't see the use of science in the preparation of this [bill]."); Richard Stone, *Wetlands Reform Bill is All Wet, Say Scientists*, 268 SCIENCE 970, 970 (1995) (finding that H.R. 961 failed to take scientific research into consideration); Michael Terrazas, *HR 961 Limits Federal Wetland Protection*, AM. CITY & COUNTRY, July 1995, at 20 (stating that House of Representatives failed to consider available scientific information in passing bill); *Wetlands Provisions in CWA Legislation Lack Scientific Basis, Research Council Says*, 26 Env't Rep. (BNA) 177, 183 (1995) (reporting that National Research Council's Committee on Wetlands Characterization determined that H.R. 961's classification scheme lacked scientific justification).

4. *See* 33 U.S.C. § 1251 (1994).

5. *See* Editorial, *Bud Shuster's Dirty Water Act*, N.Y. TIMES, Apr. 2, 1995, D14 (charging that H.R. 961 "would reverse a 25-year effort to preserve diminishing wetlands"); *see also Water Pollution: Over 20 Percent of Major Permittees in Serious Violation of CWA, Group Says*, NAT'L ENV'T DAILY (BNA), June 23, 1995 at D12 (observing that although Clean Water Act is being violated by many nonpermitted discharges, House of Representatives has taken actions to weaken law rather than to strengthen it). If this bill had been adopted as law, it was estimated that 50 to 80% of the United States' wetlands currently regulated by federal law would have lost federal protection. *See* Terrazas, *supra* note 3, at 20 (observing that decreasing federal protection of wetlands will go against "no net loss" wetland policy adopted by Bush and Clinton administrations).

H.R. 961 expired at the conclusion of the congressional session without having been passed by the Senate.

6. *See* United States v. Lopez, 115 S. Ct. 1624, 1634 (1995) (overturning federal law banning possession of firearms in school zones because Congress exceeded its Commerce Clause authority).

Commerce Clause authority is a likely impetus for an increase in isolated wetlands litigation.[7]

The federal regulation of isolated wetlands sometimes prevents individuals from undertaking economically advantageous activities on private land.[8] Generally, opponents of such regulation argue that federal oversight of isolated wetlands located entirely within a state's boundaries exceeds the reach of the Commerce Clause because there is not a sufficient nexus between isolated wetlands and interstate commerce.[9] This argument rests on the fact that isolated wetlands have no surface connection to any navigable body of water.[10] Proponents of federal regulation of isolated wetlands, on the other hand, look beyond hydrological connections to the ecological functions of these wetlands in order to establish a connection to interstate commerce.[11]

Isolated wetland regulation is predicated primarily on the use or potential use of the isolated wetland as a migratory bird habitat.[12] Courts have held that this rationale for regulation is within the scope of Congress' commerce power.[13] House Bill 961, however, expressly prohibited protection of isolated wetlands based on use or potential use by migratory birds as a habitat.[14] If the Senate had passed

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7. *See* Mark A. Chertok, *Federal Regulation of Wetlands*, C127 ALI-ABA COURSE OF STUDY 1131, 1144 n.58 (1995) ("The Supreme Court's recent decision in *United States v. Lopez* . . . may presage further litigation challenging jurisdiction over 'isolated' wetlands.").

8. *See* Cushman, *Criteria for Wetlands*, *supra* note 3, at D19 (attributing debate of isolated wetlands regulations to "giant economic stakes involved in their development").

9. *See High Court Refuses to Review Question of Whether Isolated Wetlands Regulated*, 26 Env't Rep. (BNA) 1163, 1163 (1995) (reporting that petitioner argued "that Congress lacked the power under the U.S. Constitution to bring isolated water bodies within the sweep of the Clean Water Act's wetlands regulations"). A recent petition to the Supreme Court regarding the regulation of isolated wetlands argued that Congress did not have authority under the Constitution to extend the Clean Water Act to isolated wetlands. *See id.*

10. "It is undisputed that the [isolated wetlands] at issue in this case have never been, are not now, and probably will never be susceptible to use in interstate or foreign commerce." Cargill, Inc. v. United States, 116 S. Ct. 407, 407-09 (1995) (Thomas, J., dissenting) (explaining reason for his dissent from Supreme Court's denial of certiorari), *denying cert. to* Leslie Salt Co. v. United States, 55 F.3d 1388 (9th Cir. 1995).

11. *See* NATIONAL RESEARCH COUNCIL, *infra* note 72, at 59, 156 (advocating "ecosystem concept" in regulating wetlands); *see also Leslie Salt Co.*, 55 F.3d at 1395 (finding Corps' rationale for regulating adjacent wetlands applicable to regulation of isolated wetlands). Although isolated wetlands may have "no hydrologic connection to any other body of water," *id.* at 1394, "'they may serve significant natural biological functions, including food chain production, general habitat, and nesting, spawning, rearing, and resting sites for aquatic . . . species.'" *Id.* at 1395 (quoting United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 134-35 (1985)).

12. This practice is known as the migratory bird rule. For a discussion of this rule, see *infra* notes 78-82 and accompanying text.

13. *See infra* note 79 and accompanying text (listing cases in which migratory bird rule was upheld).

14. *See* H.R. 961, 104th Cong. (1995); *see also* Stone, *supra* note 3, at 970 (explaining how H.R. 961 eliminates protection of isolated wetlands by proscribing use of migratory bird rule).

House Bill 961, the Army Corps of Engineers ("Corps") and the Environmental Protection Agency ("EPA") could have lost their jurisdiction over these wetlands unless courts recognized other functions of isolated wetlands that implicate interstate commerce.[15]

A recent Supreme Court case, *United States v. Lopez*,[16] also could impede the Corps' and the EPA's regulatory jurisdiction over isolated wetlands. According to *Lopez*, the federally regulated activity must have a substantial connection to interstate commerce for a congressional exercise of Commerce Clause authority to be upheld.[17] Although the case concerned a federal criminal regulation and not an environmental protection statute, the Commerce Clause analysis that the Court adopted in *Lopez* could be applied to any law passed under Congress' commerce power, including the Clean Water Act.[18]

Some environmental protection statutes already have been singled out as possible targets for Commerce Clause challenges based on *United States v. Lopez*.[19] In particular, regulations concerning the discharge of fill and dredged materials onto isolated wetlands[20] are likely to be contested on the ground that the activity does not have a substantial effect on interstate commerce.[21] Although many circuits already have upheld the constitutionality of federal regulation of isolated wetlands,[22] courts have not yet applied the

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15. *See* H.R. 961, 104th Cong. § 404.

16. 115 S. Ct. 1624 (1995).

17. *See* Joan Biskupic, *Court Signals Sharp Shift on Congressional Powers*, WASH. POST, Apr. 28, 1995, at A3 (finding that Court's decision in *Lopez* brings into question federal environmental regulations directed at local activities, such as regulation of wetlands).

18. *See* United States v. Lopez, 115 S. Ct. 1624, 1630 (1995).

19. *See Water Pollution: Isolated Waters Do Not Affect Interstate Commerce, Not Covered by Water Act, Petition Argues*, 26 Env't Rep. (BNA) 617, 625 (1995) [hereinafter *Water Pollution*] (reporting that petition for certiorari to Supreme Court in Cargill, Inc. v. United States, 116 S. Ct. 407 (1995), argues that isolated wetlands do not affect interstate commerce under *Lopez* analysis). William C. Banks, a Syracuse University law professor, predicted that *Lopez* will call into question "a whole body of federal criminal law, federal environmental law, [and] social policies." Biskupic, *supra* note 17, at A3.

20. *See* 33 U.S.C. § 1344 (1994).

21. *See Water Pollution*, *supra* note 19, at 625.

22. *See, e.g.*, Leslie Salt Co. v. United States, 55 F.3d 1388, 1392 (9th Cir. 1995) (affirming that "'[t]he commerce clause power, and thus the Clean Water Act, is broad enough to extend the Corps' jurisdiction to local waters which may provide habitat to migratory birds and endangered species.'" (quoting Leslie Salt Co. v. United States, 896 F.2d 354, 360 (9th Cir. 1990))); Rueth v. EPA, 13 F.3d 227, 261 (7th Cir. 1993) (recognizing that interstate commerce is affected by wetlands used by migratory birds); Hoffman Homes, Inc. v. EPA, 999 F.2d 256 (7th Cir. 1993) (identifying migratory birds as nexus between interstate commerce and isolated wetlands); United States v. Sargent County Water Resource Dist., 876 F. Supp. 1081, 1087 (D.N.D. 1992) (holding that isolated wetlands are within jurisdiction of Clean Water Act when important to migratory birds). *But see* Tabb Lakes, Ltd. v. United States, 715 F. Supp. 726, 728-29 (E.D. Va. 1989) (holding that Corps does not have authority to regulate isolated wetlands on the ground that they are used or possibly used by migratory birds because rule is not in accord with Administrative Procedure Act); *infra* note 78 (discussing *Tabb Lakes*).

Commerce Clause analysis set forth in *Lopez* to isolated wetlands regulation.

In light of the *Lopez* decision, this Comment relies on scientific evidence to establish that the destruction of isolated wetlands has a substantial effect on interstate commerce. Part I summarizes the regulation of isolated wetlands under the Clean Water Act. Part II examines court decisions addressing Commerce Clause challenges to isolated wetlands regulation. After a brief review of Commerce Clause jurisprudence in Part III, Part IV of this Comment considers the Commerce Clause analysis set forth by the majority of the Court in *Lopez*. Finally, Part V explores the repercussion of *Lopez* on future Commerce Clause challenges to isolated wetlands regulations. This Comment ultimately recommends that the ecological functions of isolated wetlands and their connections to other ecosystems should be considered when determining whether there is a substantial nexus between isolated wetlands and interstate commerce.

I. THE CLEAN WATER ACT

A. Defining "Navigable Waters"

Congress enacted the Clean Water Act[23] pursuant to its Commerce Clause authority.[24] The primary purpose of the Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[25] A secondary goal of the Clean Water Act is to achieve a level of water quality that serves to protect and encourage the propagation of fish and wildlife.[26] Although the Clean Water Act does not explicitly mention wetlands, legislative history indicates that Congress included section 404 of the Act to regulate wetlands.[27] Section 404 requires a permit for the "discharge of dredged or fill material into navigable waters."[28] "Navigable waters" are broadly defined as "waters of the United States."[29]

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23. *See* 33 U.S.C. § 1251.

24. *See* U.S. CONST. art. 1, § 8, cl. 3 (granting Congress power "to regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes").

25. *See* 33 U.S.C. § 1251(a).

26. *See id.* at § 1251(a)(2).

27. *See* S. REP. NO. 95-370, at 10 (1977) ("There is no question that the systematic destruction of the Nation's wetlands is causing serious, permanent ecological damage.... The unregulated destruction of these areas is a matter which needs to be corrected and which implementation of section 404 has attempted to achieve."), *reprinted in* 1977 U.S.C.C.A.N. 4326, 4336.

28. 33 U.S.C. § 1344(a).

29. *Id.* § 1362(7).

Initially, the Corps narrowly construed the Act's definition of "navigable waters."[30] The Corps' interpretation, however, was challenged successfully by environmental groups who asserted that Congress intended a broad definition of "navigable waters."[31] As a result, the Corps was ordered to issue regulations "recognizing the full regulatory mandate" of the Clean Water Act.[32]

Both the EPA and the Corps subsequently interpreted "waters of the United States" to include wetlands.[33] Congress acquiesced to this interpretation when it amended the Clean Water Act in 1977.[34] Currently, section 404 of the Clean Water Act extends to any isolated wetlands "which could affect interstate or foreign commerce" if destroyed or degraded.[35]

B. The Scope of Federal Regulation of Isolated Wetlands and the Permit Process

It is important to maintain perspective about the scope of federal regulation of isolated wetlands. Not every isolated wetland is subject to regulation,[36] and many activities are exempted by section

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30. *See* 39 Fed. Reg. 12,119 (1974) (defining navigable waters as "those waters of the United States which are subject to the ebb and flow of the tide, and/or are presently, or in the future susceptible for use for purposes of interstate or foreign commerce").

31. *See* Natural Resources Defense Council, Inc. v. Calloway, 392 F. Supp. 685, 686 (D.D.C. 1975) (holding that Corps' definition was not in accord with statutory definition that intended navigable waters to be defined "to the maximum extent permissible under the Commerce Clause"). The case was brought by the NRDC and the National Wildlife Federation. *See* also 118 CONG. REC. S33,692, 33,699 (1972) (statement of Sen. Muskie) ("The confereees fully intend that the term 'navigable waters' be given the broadest possible constitutional interpretation . . . .").

32. *See Natural Resources Defense Council*, 392 F. Supp. at 686.

33. The EPA and the Corps both define "waters of the United States," in pertinent part, as:

> (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 purposes by industries in interstate commerce . . . .

33 C.F.R. § 328.3(a) (1995) (Corps' definition); 40 C.F.R. § 230.3(s) (1995) (EPA's definition).

34. *See* S. REP. NO. 95-370, at 10 (1977), *reprinted in* 1977 U.S.C.C.A.N. 4326, 4336 (asserting that § 404 is intended to be implemented to protect wetlands).

35. *See* 33 C.F.R. § 328.3(a)(3) (Corps' definition); 40 C.F.R. § 230.3(s)(3) (EPA's definition).

36. *See infra* notes 44-45.

404.[37] Individuals must obtain a permit before discharging dredged[38] or fill[39] material into a wetland;[40] yet, permits are not required under section 404 for other activities, such as draining, that also destroy isolated wetlands.[41] Furthermore, section 404 exempts from regulation many activities that involve the discharge of fill or dredged materials.[42] Many farming, ranching, and timber harvesting activities, for example, do not require a permit for discharging fill or dredged materials into wetlands.[43] In addition, individual permits are not required for small isolated wetlands.[44] Finally, the Corps regulates only those isolated wetlands with a substantial connection to interstate commerce.[45]

Typically, the permit process is initiated by an individual who wants to discharge fill or dredged material into a wetland to convert it from an aquatic to a terrestrial environment for development purposes.[46] An application for a permit must be submitted to the Corps, the agency responsible for issuing permits under section 404.[47] When

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37. *See* 33 U.S.C. § 1344(f)(1) (1994) (exempting discharge of fill material for normal farming, maintenance, construction, or approved state purposes from prohibitions of Act).

38. "Dredged material" is defined as "material that is excavated or dredged from the waters of the United States." 33 C.F.R. § 323.2 (Corps' definition); 40 C.F.R. § 232.2(g)(5)(ii) (EPA's definition).

39. The Corps defines "fill material" as "material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a waterbody." 33 C.F.R. § 323.2(e). The EPA defines "fill material" as "any 'pollutant' which replaces portions of the 'waters of the United States' with dry land or which changes the bottom elevation of a water body for any purpose." 40 C.F.R. § 232.2(j).

40. *See* 33 U.S.C. § 1344(a).

41. Section 404 of the Clean Water Act does not regulate the draining of wetlands. *See* 33 U.S.C. § 1344 (1994). A CITIZENS' GUIDE TO PROTECTING WETLANDS recognizes a substantial hole in wetlands regulation under section 404: "Unless activities such as draining, dredging, excavating, flooding, and contamination of wetlands actually involve some discharge of dredged or fill material, they are not regulated under section 404." NATIONAL WILDLIFE FED'N, A CITIZENS' GUIDE TO WETLANDS 13 (1989).

42. *See* 33 U.S.C. § 1344(f).

43. *See id.* § 1344(f)(1)(A).

44. *See* 33 C.F.R. pt. 330 app. A(26) (exempting from regulation discharges causing loss of less than 10 acres of isolated wetlands).

45. *See id.* § 328.3(a)(3) (defining "waters of the United States" as waters which "the use, degradation or destruction of . . . could affect interstate or foreign commerce"). Dredging and filling activities affecting less than one acre of isolated wetlands rarely are regulated by the Corps. *See id.* pt. 330 app. A(26)(a)-(b). In addition, activities affecting less than 10 acres are eligible for a "nationwide permit 26 a general permit that streamlines the administrative process by allowing dredge and fill activity on such a small scale without requiring individual review of the application." *Id.*

46. *See generally* Jon Kusler, *Wetlands Delineation: An Issue of Science or Politics?*, 34 ENV'T 7, 9 (1992) (charting permit process); WORLD WILDLIFE FUND, STATEWIDE WETLANDS STRATEGIES: A GUIDE TO MANAGING THE RESOURCE 75-78 (1992) (providing overview of § 404 permit process).

47. *See* 33 U.S.C. § 1344(a). The Corps receives 15,000 section 404 permit applications each year. *See* WORLD WILDLIFE FUND, *supra* note 46, at 76.

considering a permit application,[48] the Corps follows the guidelines it established jointly with the EPA.[49] Each application must undergo a public interest review and meet a public notice requirement[50] before the Corps can issue a permit.[51]

The EPA also reviews section 404 permit applications[52] and is authorized to exempt an activity from the permit requirement if section 404 does not prohibit the proposed discharge.[53] In addition, the EPA has authority to veto any permit application if the proposed discharge would adversely affect water supplies, wildlife, or recreational areas.[54]

With respect to isolated wetlands, the scope of the EPA's and the Corps' jurisdiction under section 404 has been the subject of considerable litigation.[55] Courts generally have upheld regulations promulgated by the EPA and the Corps' that pertain to isolated wetlands.[56] Furthermore, courts have found the use or possible use of isolated wetlands by migratory birds, as either a habitat or breeding ground, to be a sufficient connection to interstate commerce.[57]

II. COMMERCE CLAUSE CHALLENGES TO REGULATING ISOLATED WETLANDS

A. *The Supreme Court's Reasoning in* United States v. Riverside Bayview Homes, Inc. *Is Applicable to Isolated Wetlands*

The Supreme Court thus far has avoided deciding whether the regulation of *isolated* wetlands is within the scope of the Commerce

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48. "[E]ach such disposal site shall be specified for each such permit by the Secretary [of the Army] (1) through the application of guidelines developed by the Administrator [of the EPA], in conjunction with the Secretary [of the Army] . . . ." 33 U.S.C. § 1344(b)(1).

49. *See* 33 C.F.R. § 320.4(b)(4); 40 C.F.R. § 230.10 (1995).

50. *See* 33 C.F.R. § 320.4 (stating that factors such as economics, water quality, environmental concerns, flood hazards, and property ownership must be considered during the public interest review); *id.* § 325.3 (providing public notice regulations).

51. "The Secretary may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites." 33 U.S.C. § 1344(a).

52. *See id.* § 1344(c); *see also* 40 C.F.R. § 231.1 (detailing procedure by which EPA may prohibit specification of any area as disposal site for dredged or fill material).

53. *See* 33 U.S.C. § 1344(f) (listing discharges that are exempt from § 404 permit process); *see also* 33 C.F.R. § 323.4 (Corps' regulations); 40 C.F.R. § 232.3 (EPA's regulations).

54. *See* 33 U.S.C. § 1344(c) (authorizing EPA to veto discharge that would have "an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas").

55. *See infra* notes 73-87 and accompanying text (discussing litigation over isolated wetlands regulations).

56. *See supra* note 22 (listing cases upholding federal regulation of isolated wetlands).

57. *See infra* notes 78-82 and accompanying text (explaining link between migratory birds and interstate commerce).

Clause.[58] In *United States v. Riverside Bayview Homes, Inc.*,[59] however, the Court considered whether the Clean Water Act authorized the Corps to require section 404 permits for discharging fill material into *adjacent* wetlands.[60] Although this case is not dispositive of the *isolated* wetlands issue, much of the Court's reasoning is relevant because adjacent and isolated wetlands perform many of the same ecological functions.[61]

In *Riverside*, the Court stated two reasons for upholding the Corps' regulatory authority over adjacent wetlands. First, the Court found that the Corps' jurisdiction over adjacent wetlands was reasonable because, in order to protect aquatic ecosystems, Congress broadly defined "waters" covered by the Clean Water Act.[62] Furthermore, the Court interpreted Congress' refusal to exclude adjacent wetlands from the definition of "waters" as an acquiescence to the Corps' inclusion of adjacent wetlands in the definition of "waters" under the Act.[63] Second, the Court agreed with the Corps' conclusion that adjacent wetlands play an important role in "protecting and enhanc-

58. *See* Cargill v. United States, 116 S. Ct. 407 (1995) (denying certiorari to petition challenging regulation of isolated wetlands on Commerce Clause grounds); United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 131 n.8 (1985) (limiting Commerce Clause discussion to wetlands *adjacent* to bodies of water, not including *isolated* wetlands).

59. 474 U.S. 121 (1985).

60. *See Riverside Bayview Homes*, 474 U.S. at 123 (questioning whether Clean Water Act and related regulations "authorize[] the Corps to require landowners to obtain permits from the Corps before discharging fill material into wetlands adjacent to navigable bodies of water and their tributaries"); *see also* Kenneth L. Rosenbaum, *The Supreme Court Endorses a Broad Reading of Corps Wetland Jurisdiction Under FWPCA § 404*, 16 Envtl. L. Rep. (Envtl. L. Inst.) 10,008, 10,012 (1986) (surmising that Court's reasoning in *Riverside Bayview Homes* suggests that isolated wetlands are protected under § 404 because hydrological and ecological connection of isolated wetlands are essential to water quality and aquatic ecosystems).

61. *See Riverside Bayview Homes*, 474 U.S. at 131 n.8. Although the Supreme Court did not consider whether the application of section 404 to isolated wetlands is constitutional, much of the Court's reasoning regarding adjacent wetlands is applicable to isolated wetlands. *See infra* Part V.B (discussing how isolated wetlands perform many of same functions as adjacent wetlands).

62. *See Riverside Bayview Homes*, 474 U.S. at 133 (observing that Congress exercised its power under the Commerce Clause with the intention that the Clean Water Act would extend beyond waters traditionally recognized as "navigable" (citing S. CONF. REP. NO. 92-1236, at 144 (1972); 118 CONG. REC. H33,756-757 (1972) (statement of Rep. Dingell)).

63. Although there was some congressional debate over restricting the scope of waters covered by the Clean Water Act when the Act was reauthorized in 1977, Congress decided not to restrict the scope for fear of diminishing the protection of wetlands. *See Riverside Bayview Homes*, 474 U.S. at 137-38 (citing H.R. REP. NO. 95-139, at 24 (1977)). Furthermore, even those members of Congress who favored narrowing the scope of waters protected by the Act still would have included adjacent wetlands as waters covered by the Act. *See id.* (citing H.R. REP. NO. 95-139, at 24 (1977)). It is noteworthy that "Congress has never indicated that it intended to differentiate among types of wetlands in § 404's coverage." Jerry Jackson & Sarah V. Armitage, United States v. Riverside Bayview Homes: *A Questionable Interpretation of § 404*, 14 Envtl. L. Rep. (Envtl. L. Inst.) 10,366, 10,372 (1984).

ing water quality."[64] Even though not all adjacent wetlands significantly affect water quality, the Court determined that the Corps' inclusion of adjacent wetlands in the definition of "waters" subject to regulation was reasonable.[65] In sum, given Congress' desire for a broad interpretation of "waters" to be protected by the Clean Water Act and the ecological functions that adjacent wetlands serve, the Supreme Court held that adjacent wetlands were within the scope of "waters" protected by the Act.[66]

Like adjacent wetlands, scientific evidence suggests that isolated wetlands can have widespread economic and ecological effects,[67] thereby substantially affecting interstate commerce. These wetlands perform commercial functions including controlling floods and filtering pollutants from water.[68] Although isolated wetlands, by definition, are not linked on the surface with any other body of water, subsurface connections often exist.[69] Thus, the benefits of isolated wetlands affect water sources and communities that may not appear to be directly connected to them. Isolated wetlands also serve important ecological functions, such as providing migratory birds with food, habitat, breeding, and resting areas.[70] Because isolated wetlands have many of the same attributes as adjacent wetlands, which the Supreme Court has held to be within the Corps' regulatory jurisdiction,[71] there is little justification for legislation and judicial decisions that hold isolated wetlands as less significant than adjacent wetlands.[72]

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64. *Riverside Bayview Homes*, 474 U.S. at 133-34 (finding Corps' conclusion that adjacent wetlands are covered by Clean Water Act was not unreasonable because these areas filter and purify water, prevent erosion and flooding, and serve as breeding and habitat areas for species).

65. *See id.* at 135 n.9. It should be noted, however, that not all adjacent wetlands significantly affect water quality.

66. *See id.* at 139.

67. *See infra* Part V.B. (discussing ecological and economic benefits that isolated wetlands provide).

68. *See infra* notes 198-217 and accompanying text (discussing commercial functions of isolated wetlands).

69. *See infra* note 186 and accompanying text (noting that subsurface connection between isolated wetlands and ground water enables isolated wetlands to serve ecological functions such as maintaining water quality).

70. *See infra* notes 194-97 and accompanying text (explaining ecological role isolated wetlands have in promoting migratory bird species and biodiversity).

71. *See Riverside Bayview Homes*, 474 U.S. at 134-35 (holding that Corps has statutory authority to regulate adjacent wetlands under Clean Water Act).

72. *See* NATIONAL RESEARCH COUNCIL, WETLANDS: CHARACTERISTICS AND BOUNDARIES 156, 166-67 (1995).

B. The Migratory Bird Rule

The Supreme Court recently denied certiorari in *Cargill v. United States*,[73] a case directly challenging the constitutionality of regulating the filling of isolated wetlands on private land.[74] The Ninth Circuit, which originally heard the case under the name *Leslie Salt Co. v. United States*,[75] held that the presence of migratory birds and endangered species on the property provided a sufficient nexus between the regulated activity and interstate commerce.[76] Nevertheless, the court recognized the connection as "certainly test[ing] the limits of Congress' commerce powers and, some would argue, the bounds of reason."[77]

In reaching its decision, the Ninth Circuit relied on the Corps' declaration that the Clean Water Act covers waters "which are or would be used as habitat by birds protected by Migratory Bird Treaties . . . or . . . by other migratory birds which cross state lines."[78] This statement is the basis for the "migratory bird rule," a test courts apply to determine whether an isolated wetland may be federally regulated under the Clean Water Act.[79] The migratory bird rule is based on

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73. 116 S. Ct. 407, *denying cert. to* Leslie Salt Co. v. United States, 55 F.3d 1388 (9th Cir. 1995).

74. *See Leslie Salt Co.*, 55 F.3d at 1391.

75. 55 F.3d 1388 (9th Cir. 1995), *aff'g* 820 F. Supp. 478 (N.D. Cal. 1992), *cert. denied sub nom.* Cargill v. United States, 116 S. Ct. 407 (1995).

76. *See id.* at 1396 (finding that lower court's holding was not erroneous "given the broad sweep of the Commerce Clause"), *aff'g* 820 F. Supp. 478 (N.D. Cal. 1992).

77. *Id.*; *see also* Rueth v. EPA, 13 F.3d 227, 231 (7th Cir. 1993) (noting breadth of migratory bird rule in that it brings most isolated wetlands within reach of CWA); Hoffman Homes, Inc. v. EPA, 999 F.2d 256, 263 (7th Cir. 1993) (holding that isolated wetland may not be regulated by EPA because there was not substantial evidence that isolated wetland was suitable as potential habitat for migratory birds).

78. 51 Fed. Reg. 41,217 (1986). At least one court has held that the Corps has no statutory jurisdiction to regulate isolated wetlands because such regulation has not been subjected to public notice and comment. *See* Tabb Lakes, Ltd. v. United States, 715 F. Supp. 726, 729 (E.D. Va. 1988) (holding that Corps does not have authority to regulate isolated wetlands on ground that they are used or possibly used by migratory birds because such rule is not in accord with Administrative Procedure Act), *aff'd*, 10 F.3d 796 (Fed. Cir. 1993); *see also* Administrative Procedure Act, 5 U.S.C. § 553 (1994) (requiring agencies to submit rules that affect public interest to public notice and comment). Other circuits either have overlooked this argument or found the rule to be merely interpretive and not substantive, thus upholding the regulation on statutory grounds. *See Leslie Salt Co.*, 55 F.3d at 1393 (observing that "it is plausible to find that the preamble is merely an interpretive rule, and thus is not subject to the notice-and-comment requirements of the Administrative Procedure Act"); *Hoffman Homes*, 999 F.2d at 260 (focusing on definition of "waters of the United States" for "migratory bird rule" authority and not on Corps' statement). *See generally*, Chertok, *supra* note 7, at 1144 (explaining that Corps' statement is an interpretive rule).

79. *See, e.g.*, *Leslie Salt Co.*, 55 F.3d at 1393 (affirming that "'[t]he Commerce Clause power, and thus the Clean Water Act, is broad enough to extend the Corps' jurisdiction to local waters which may provide habitat to migratory birds and endangered species'" (quoting Leslie Salt Co. v. United States, 896 F.2d 354, 360 (9th Cir. 1989))); *Rueth*, 13 F.3d at 231 (recognizing that

the premise that migratory birds serve as a nexus between isolated wetlands and interstate commerce.[80] Courts have recognized that people spend billions of dollars each year watching, hunting, and photographing migratory birds.[81] Because loss of habitat is the leading cause of declining migratory bird populations, courts have realized that wetlands destruction reduces the amount of interstate commerce money spent on migratory bird recreation activities.[82] Isolated wetlands providing migratory bird habitats therefore are subject to federal regulation under the Commerce Clause.

Unlike the Ninth Circuit in *Leslie Salt Co.*, the Seventh Circuit in *Hoffman Homes, Inc. v. EPA*[83] found isolated wetlands to be outside the scope of the Clean Water Act. In *Hoffman Homes*, the court also relied on the Corps' statement about migratory birds.[84] The court applied the migratory bird rule more narrowly, however, by requiring substantial evidence that the isolated wetland in question was a suitable habitat for migratory birds,[85] and found that it was not enough that the wetlands could serve as a possible habitat for migratory birds.[86] Accordingly, the court in *Hoffman Homes* held that the isolated wetland at issue was not subject to the EPA's jurisdiction because it lacked the characteristics of habitats that migratory birds typically find attractive.[87]

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interstate commerce is affected by wetlands used by migratory birds); *Hoffman Homes*, 999 F.2d at 259 (allowing migratory birds to serve as a nexus between interstate commerce and isolated wetlands); United States v. Sargent County Water Resource Dist., 876 F. Supp. 1081, 1086 (D.N.D. 1992) (holding that isolated wetlands are within jurisdiction of Clean Water Act when such wetlands are important to migratory birds).

80. *See Leslie Salt Co.*, 55 F.3d at 1396.

81. *See Hoffman Homes*, 999 F.2d at 261. Hunters alone spend more than $600 million each year hunting migratory waterfowl that depend on wetlands for habitat. *See Regulatory Reform Act of 1995: Hearings on S. 851 Before the Subcomm. on Clean Air, Wetlands, Private Property, and Nuclear Safety of the Senate Comm. on the Env't and Pub. Works*, 104th Cong. (1995), *available in* 1995 WL 435851 [hereinafter *Regulatory Reform Act Hearings/EPA Testimony*].

82. *See Hoffman Homes*, 999 F.2d at 261 ("[T]he cumulative loss of wetlands has reduced population of many bird species and consequently the ability of people to hunt, trap, and observe those birds.").

83. 999 F.2d 256, 262 (7th Cir. 1993).

84. *See id.* at 261.

85. *See id.* at 261-62 (determining that isolated wetland in question was not connected to interstate commerce absent substantial evidence that it exhibited characteristics sought after by migratory birds and given evidence that it had not been used by migratory birds in past).

86. *See id.* at 266 ("After April showers not every temporary wet spot necessarily becomes subject to governmental control."). *But see id.* at 261 (agreeing that "the use of the word 'could' indicates the regulation covers water whose connection to interstate commerce may be potential rather than actual, minimal rather than substantial").

87. *See id.* at 262 (finding that isolated wetland was less than one acre, its only source of water was rainfall, and migratory birds did not actually use isolated wetland collectively, leading to conclusion that there was no substantial evidence that wetland "was suitable for migratory bird habitat").

The Supreme Court has not provided any direct guidance on the constitutionality of applying section 404 of the Clean Water Act to isolated wetlands. Furthermore, based on its denial of certiorari in *Cargill v. United States*,[88] it is unlikely that the Court will review the constitutionality of regulating isolated wetlands without a split among the circuits.[89] As a result, lower courts are left to grapple with how *United States v. Lopez* will affect Commerce Clause challenges to the federal regulation of isolated wetlands, a question the remaining sections of this Comment will consider.

III. COMMERCE CLAUSE JURISPRUDENCE

The Constitution delegates to Congress the power "[t]o regulate Commerce with foreign Nations, and among the several States."[90] For the past sixty years, this "Commerce Clause" authority has been interpreted broadly, with the Court subjecting federal regulations challenged for exceeding the scope of the commerce power to a "mere rationality" review.[91] Under this standard of review, the Court defers to legislative decisions regarding the need to regulate interstate commerce rather than conduct its own assessment.[92] The broad scope of Congress' Commerce Clause authority is evidenced by Supreme Court decisions upholding the regulation of activities having only indirect effects on interstate commerce,[93] activities affecting

88. 116 S. Ct. 407 (1995).

89. *See* Robert Percival, Remarks at the Meeting of the Environment, Energy, and Natural Resources Section of the District of Columbia Bar (Oct. 30, 1995) (on file with *The American University Law Review*). The fact that the Supreme Court denied certiorari in *Cargill v. United States* signals that the regulation of isolated wetlands is not in great jeopardy. *See* Nancy Firestone, Remarks at the Meeting of the Environment, Energy, and Natural Resources Section of the District of Columbia Bar (Oct. 30, 1995) (on file with *The American University Law Review*).

90. *See* U.S. CONST. art. I, § 8, cl. 3.

91. The "mere rationality" review is a two-part test. First, a court "must defer to a congressional finding that a regulated activity affects interstate commerce if there is any rational basis for such a finding." Hodel v. Virginia Surface Mining & Reclamation Ass'n, 452 U.S. 264, 276 (1981). Second, the court must determine if the regulatory means by which the policy is implemented is *reasonably related* to the policy objective. *See id.*; *see also* Hodel v. Indiana, 452 U.S. 314, 323-24 (1981) (stating that courts may invalidate legislation if there is no rational basis for a congressional finding that regulated activity in question affected interstate commerce or if there is no rational relationship between regulatory means chosen and ends sought).

For a survey of Supreme Court cases developing Commerce Clause jurisprudence during the last 60 years, see *infra* notes 96-113.

92. *See* United States v. Darby, 312 U.S. 100, 121 (1941) (holding that Congress "may choose the means reasonably adapted to the attainment of the permitted end, even though they involve control of intrastate commerce" when regulating interstate commerce).

93. *See* NLRB v. Jones & Laughlin Steel Corp., 301 U.S. 1, 41 (1937) (abandoning "indirect" and "direct" effects test by asserting that if activity has close and substantial relation to interstate commerce, Congress has power to regulate that activity).

interstate commerce only when considered collectively,[94] and even activities that are purely local in nature.[95]

The Supreme Court's deference to Congress' exercise of its authority under the Commerce Clause can be traced to its holding in *National Labor Relations Board v. Jones & Laughlin Steel Corp.*[96] In *Jones & Laughlin Steel Corp.*, the regulation of labor practices involving the production of goods was challenged for exceeding the scope of Congress' commerce power on the theory that it was an attempt to regulate a local activity.[97] Previously, activities that occurred entirely within state lines, such as the production of goods, were thought to be beyond the reach of the Commerce Clause.[98] In a landmark decision, the Court upheld the regulation, determining that Congress' commerce power is plenary and may be exercised to regulate local activities that threaten interstate commerce.[99] This holding paved the way for later decisions validating the regulation of local activities indirectly affecting interstate commerce.[100]

The Court's decision in *Wickard v. Filburn*[101] also broadened Congress' commerce power. *Wickard* involved the Agricultural Adjustment Act of 1938, authorizing the Secretary of Agriculture to set quotas on the amount of wheat grown on a farm regardless of whether the wheat was to be used intrastate or sold through interstate commerce.[102] The Act even went so far as to permit federal regula-

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94. *See* Wickard v. Filburn, 317 U.S. 111, 127-28 (1942) (establishing that cumulative effect of isolated activities may be considered in Commerce Clause analysis).

95. *See Hodel*, 452 U.S. at 281 (allowing regulation of local activity that affects more than one state).

96. *See Jones & Laughlin Steel Corp.*, 301 U.S. at 41 (holding that intrastate activities could be within scope of Congress' commerce power if regulated activity had "close and substantial relation to interstate commerce").

97. *See id.* at 25.

98. Before *Jones & Laughlin Steel Corp.*, the greatest limitation on the commerce power was based on a distinction between transporting goods and manufacturing goods. *See* Carter v. Carter Coal Co., 298 U.S. 238, 304 (1936) (finding that labor provisions in Bituminous Coal Conservation Act regulated local activity of production and not interstate commerce). The Court reasoned that the production of goods was a local activity beyond the reach of the Commerce Clause because it took place entirely within state lines. *See* Hammer v. Dagenhart, 247 U.S. 251, 272 (1918) (observing that statute prohibiting companies who employed children under statutorily specified age from transporting goods in interstate commerce was beyond scope of Commerce Clause because statute regulated production, which is local activity).

99. *See Jones & Laughlin Steel Corp.*, 301 U.S. at 37 (finding that even intrastate activities may affect interstate commerce in way that warrants Congress to regulate such local activity).

100. *See id.* at 36. The Court stated, "The congressional authority to protect interstate commerce from burdens and obstructions is not limited to transactions which can be deemed to be an essential part of a 'flow' of interstate or foreign commerce." *Id.* The Court held that "[b]urdens and obstructions may be due to injurious action springing from other sources." *Id.*

For a discussion of the further expansion of Commerce Clause jurisprudence as a result of *Jones & Laughlin Steel Corp.*, see *infra* notes 101-113.

101. 317 U.S. 111, 127-28 (1942).

102. *See* Wickard v. Filburn, 317 U.S. 111, 115 (1942).

tion of the amount of wheat grown on a farm for personal consumption.[103] The Supreme Court upheld the Act, finding that Congress could regulate a local activity with substantial effects on interstate commerce pursuant to its Commerce Clause authority regardless of whether the activity has a direct or indirect effect on interstate commerce.[104] The Court reasoned that Congress did not abuse its commerce power in passing the Act because homegrown wheat supplies compete with wheat in interstate commerce.[105] Thus, even though one farmer's consumption of wheat had only a trivial effect on interstate commerce, "taken together with that of many others similarly situated, [personal consumption of homegrown wheat] is far from trivial."[106] This rationale became the basis for what is known as the "cumulative effects" doctrine.

In *Hodel v. Virginia Surface Mining & Reclamation Ass'n*,[107] the Court repeated its broad interpretation of Congress' commerce power.[108] At issue was the constitutionality of the Surface Mining Control and Reclamation Act.[109] The Act established a "nationwide program to protect society and the environment from the adverse effects of surface coal mining."[110] The Act was challenged because it regulated mining activity on private lands located entirely within state lines.[111] The Court held that local activities causing environmental problems, such as air or water pollution, were within the scope of activities that Congress can regulate under its Commerce Clause authority.[112] In reaching this decision, the Court deferred to congressional findings that surface mining adversely affected interstate commerce by contributing to water pollution and other environmen-

103. *See id.* at 119.
104. *See id.* at 128.
105. *See id.* at 127 (finding that personal consumption of homegrown wheat is difficult to predict and thus has effect on interstate commerce).
106. *Id.* at 127-28; *see also* United States v. Pozsgai, 999 F.2d 719, 734 (3d Cir. 1993) (applying "cumulative effects" principle to regulation of adjacent wetlands when government was unable to show substantial effects on interstate commerce). *See generally* Dennis J. Priolo, *Section 404 of the Clean Water Act: The Case for Expansion of Federal Jurisdiction over Isolated Wetlands*, 30 LAND & WATER L. REV. 91 (1995) (advancing argument for application of "cumulative effect" doctrine to regulation of isolated wetlands).
107. 452 U.S. 264 (1981).
108. *See* Hodel v. Virginia Surface Mining & Reclamation Ass'n, 452 U.S. 264, 282 (1981).
109. *See* 30 U.S.C. § 1211 (1976 & Supp. III).
110. *Id.*
111. *See Hodel*, 452 U.S. at 275.
112. *See id.* at 282 (confirming lower court decisions that Commerce Clause authorizes Congress to regulate "activities causing air or water pollution, or other environmental hazards that may have effects in more than one State").

tal hazards such as flooding and loss of habitat.[113]

As the foregoing cases illustrate, the Supreme Court has interpreted Congress' Commerce Clause authority very broadly. In considering Commerce Clause challenges to isolated wetland regulations, lower courts have followed the Court's six decades of Commerce Clause precedent, deferring to legislative judgment and administrative interpretations.[114] Although the Supreme Court occasionally has required that the regulated activity substantially affect interstate commerce, the term substantial has been interpreted very loosely.[115]

IV. *UNITED STATES V. LOPEZ*

The Supreme Court in *United States v. Lopez*[116] indicated a willingness to recognize limits on Congress' Commerce Clause authority for the first time in sixty years. In a 5-4 decision with two concurring opinions and three separate dissenting opinions, the Court determined that Congress did not have the power to regulate the possession of handguns in public schools.[117] The majority opinion, written by Chief Justice Rehnquist, held that only commercial activity that substantially affects interstate commerce may be regulated by Congress.[118]

A. Facts of Lopez

The federal statute challenged in *United States v. Lopez* was the Gun-Free School Zones Act of 1990.[119] The Act made possession of

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113. *See id.* at 277, 279, 280. Destruction of isolated wetlands contributes to many of the same environmental problems mentioned in *Hodel. See generally Regulatory Reform Act of 1995: Hearings on S. 851 Before the Subcomm. on Clean Air, Wetlands, Private Property, and Nuclear Safety of the Senate Comm. on the Env't and Pub. Works*, 104th Cong. (1995), *available in* 1995 WL 460623 [hereinafter *Regulatory Reform Act Hearings/NWF Testimony*] (statement of Jan Goldman-Carter, Counsel for Nat'l Wildlife Fed'n) (testifying on adverse environmental effects that stem from destruction of isolated wetlands).

114. *See supra* note 79 (listing cases challenging Congress' authority to regulate isolated wetlands under Commerce Clause).

115. When asked by a congressional committee if Congress could regulate crimes traditionally regulated by the states, Justice Scalia answered that Congress could regulate such crimes as long as they affected interstate commerce, which "doesn't take much." *See* David O. Stewart, *The Supreme Court Has Yet to Reveal the True Significance of* Lopez, A.B.A. J., July 1995, at 46; *see also* United States v. Lopez, 115 S. Ct. 1624, 1657 (1995) (Breyer, J., dissenting) (using word "significantly" rather than "substantially" because, although the word "substantial" was used sometimes in prior cases, "the word 'substantial' implies a somewhat narrower power than recent precedent suggests").

116. 115 S. Ct. 1624 (1995).

117. *See Lopez*, 115 S. Ct. at 1634 (holding that activity was not economic in nature, had no substantial effects on interstate commerce and thus was not within reach of Congress' commerce authority).

118. *See id.* at 1630.

119. *See* 18 U.S.C. § 922(q) (1988 & Supp. V).

firearms within school zones a criminally punishable federal offense.[120] On March 10, 1992, a member of the school faculty at Edison High School in San Antonio received an anonymous tip over the phone.[121] Thereafter, school authorities discovered Alfonso Lopez, Jr., a high school student, carrying an unloaded gun tucked into the waist of his pants and five bullets in his pocket.[122] Lopez had no previous criminal record and was scheduled to graduate in a few weeks.[123] When questioned by authorities, Lopez explained that he had received the gun from someone with instructions to deliver it to another individual after school.[124] The gun was to be used in a gang war.[125] Lopez was charged with violating the Gun-Free School Zones Act.[126] He challenged the Act on the ground that it was beyond the reach of the Commerce Clause.[127] Lopez asserted that possession of a gun within a thousand feet of a school does not substantially affect interstate commerce.[128]

B. The Court's Opinion

The Court applied a two-step analysis to determine whether the regulated activity was within the scope of Congress' Commerce Clause authority. The first step required that the regulated activity be a commercial or economic endeavor.[129] Second, the regulated activity must have a substantial effect on interstate commerce.[130] The Court determined that the Gun-Free School Zones Act failed both steps of the test, concluding (1) that possession of a handgun is not a commercial activity;[131] and (2) that possession of a gun in a school

120. Under the Gun-Free School Zones Act of 1990, it is a federal offense "for any individual knowingly to possess a firearm at a place that the individual knows, or has reasonable cause to believe, is a school zone." *Id.* § 922(q)(1)(A).

121. *See Lopez*, 115 S. Ct. at 1626; *see also* Joseph Calve, *Anatomy of a Landmark*, CONN. L. TRIB., Aug. 14, 1995, at 1 (describing sequence of events that led to *Lopez*'s federal indictment).

122. *See Lopez*, 115 S. Ct. at 1626; *see also* Calve, *supra* note 121, at 1.

123. *See* Calve, *supra* note 121, at 1.

124. *See* Brief for Respondent at 2, *Lopez* (No. 93-1260).

125. *See id.*

126. *See Lopez*, 115 S. Ct. at 1626.

127. *See id.* ("[Lopez] moved to dismiss his federal indictment on the ground that § 922(q) 'is unconstitutional as it is beyond the power of Congress to legislate control over our public schools.'" (quoting Appellant's Petition for Certiorari at 55a)).

128. *See* Brief for Respondent at 8, *Lopez* (No. 93-1260).

129. *See Lopez*, 115 S. Ct. at 1631-32 (concluding that criminal statute in question was not related to any type of economic activity).

130. *See id.* at 1630 ("[T]he proper test requires an analysis of whether the regulated activity 'substantially affects, interstate commerce.").

131. *See id.* at 1631 (finding that criminal statute in question did not regulate activity related to commercial transaction).

zone, even if viewed cumulatively, does not have a substantial effect on interstate commerce.[132]

In determining whether possession of a gun in a school zone substantially affects interstate commerce, the Court considered several factors.[133] For example, the Court indicated that if the statute had required a case-by-case determination of a connection to interstate commerce, the statute would have been a constitutional exercise of the power of Congress to regulate commerce.[134] In addition, the Court searched the statute and its legislative history for congressional findings that possession of guns in school zones affected interstate commerce.[135] The Court found none, noting that no effects on interstate commerce were "visible to the naked eye" nor discernible from the legislative history.[136] Finally, the fact that education and

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132. *See id.* at 1630, 1634 (distinguishing case from prior cases that relied on cumulative effects of regulated activity to establish connection to interstate commerce).

133. *See* Vicki C. Jackson, *Cautioning Congress to Pull Back*, LEGAL TIMES, July 31, 1995, at S31 (suggesting that areas historically left to state to regulate, activities commercial in nature, and legislative findings of interstate commerce all were factors used to determine whether interstate commerce was substantially affected).

134. *See Lopez*, 115 S. Ct. at 1631 (indicating that, had regulation limited its jurisdiction to those instances of gun possession in school zones that affected interstate commerce, it would have been constitutional). *Lopez* raises the question of whether the cumulative effects doctrine is still alive. *See* Kim Cathourn, *Supreme Court Interprets Scope of Congressional Authority Under Interstate Commerce Clause*, HOUSTON LAW., July/Aug. 1995, at 15. *But see* John P. Dwyer, *The Commerce Clause and the Limits of Congressional Authority to Regulate the Environment*, 25 Envtl. L. Rep. (Envtl. L. Inst.) 10,421, 10,423 (1995) (observing that Supreme Court did not overrule "cumulative effects" cases and distinguishing *Lopez* from such cases).

Assuming that the "cumulative effects" doctrine has not been overruled, the regulation of isolated wetlands properly is limited to those wetlands that affect interstate commerce because "[t]raditionally, the Corps has considered on a case-by-case basis whether a wetland has the requisite interstate nexus and is, thus, regulated under Section 404." Sharon M. Mattox, *The Impact of Environmental Law on Real Estate and Other Commercial Transactions*, ALI-ABA COURSE OF STUDY 603, 614 (1995).

135. *See Lopez*, 115 S. Ct. at 1631-32 (stating that Court will consider congressional findings concerning effects on interstate commerce when reviewing constitutionality of utilization of commerce power).

"There is no question that the systematic destruction of the Nation's wetlands is causing serious, permanent ecological damage . . . . The unregulated destruction of these areas is a matter which needs to be corrected and which implementation of section 404 has attempted to achieve." S. REP. NO. 95-370, at 10 (1977), *reprinted in* 1977 U.S.C.C.A.N. 4326, 4336. Although the Act's legislative history does not mention explicitly isolated wetlands, Congress made no attempt to differentiate between the types of wetlands covered by section 404. *See* Jackson & Armitage, *supra* note 63, at 10,372.

It is noteworthy that the Emergency Wetlands Resources Act of 1986 makes express findings of the commercial value of wetlands. *See* 16 U.S.C. § 3901(a)(4) (1994). For instance, the Act states that wetlands "provide significant recreational and commercial benefits, including . . . support for a major portion of the Nation's multimillion dollar annual fur and hide harvest; and fishing, hunting, birdwatching, nature observation and other wetland-related recreational activities that generate billions of dollars annually." *Id.*

136. *See Lopez*, 115 S. Ct. at 1632.

the enforcement of criminal laws traditionally have been areas regulated by states also played a role in the Court's decision.[137]

It is worth noting that the Court was divided in reaching its decision in *Lopez*.[138] The opinion of the Court was written by Chief Justice Rehnquist, joined by Justices Kennedy, O'Connor, Scalia, and Thomas.[139] Justice Kennedy filed a concurring opinion, joined by Justice O'Connor, asserting that the statute infringed on the Tenth Amendment and that states were better suited than the federal government to find the best means to "deter students from carrying guns on school premises."[140] Justice Thomas, in a separate concurrence, applauded the Court's decision to return to the original understanding of the Commerce Clause.[141] Justices Stevens, Souter, and Breyer each filed dissenting opinions.[142] In the longest of the dissents, Justice Breyer, joined by Justices Ginsburg, Souter and Stevens, disagreed with the framing of the issue.[143] He argued that the proper Commerce Clause analysis is not whether there are substantial effects on interstate commerce, but "whether Congress could have had a *rational basis* for finding a significant (or substantial) connection between gun-related school violence and interstate commerce."[144]

C. *Effect of the* Lopez *Decision*

The Supreme Court's opinion in *United States v. Lopez* signaled a new willingness to limit Congress' Commerce Clause authority.[145]

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137. *See id.* (opining that Gun-Free School Zones Act could not be found constitutional without perpetuating notion that there are no limits to Congress' power under Commerce Clause).

The regulation of isolated wetlands under section 404 of the Clean Water Act governs land use. *See* 33 U.S.C. § 1344(g)(1) (1994). Although land use is an area traditionally regulated by the states, federal environmental laws regulating local land use have been upheld by the Supreme Court when the regulated land use affects interstate commerce. *See* Hodel v. Virginia Surface Mining & Reclamation Ass'n, 452 U.S. 264, 281 (1981) (rejecting argument that Surface Mining Control and Reclamation Act "regulates land use, a local activity not affecting interstate commerce"); *see also* Dwyer, *supra* note 134, at 10,429-30 ("It is striking . . . that when the *Lopez* majority identified areas of traditional state concern—education, criminal law, and family law—it made no mention of land use regulations.").

138. *See generally* Charles J. Russo, United States v. Lopez *and the Demise of the Gun-Free School Zones Act: Legislative Over-Reaching or Judicial Nit-Picking?*, 99 WEST'S EDUC. L. REP. 11 (1995) (discussing six different opinions in *Lopez*).

139. *See Lopez*, 115 S. Ct. at 1624.

140. *Id.* at 1640-42 (Kennedy, J., concurring).

141. *See id.* at 1642-43 (Thomas, J., concurring).

142. *See id.* at 1651 (Stevens, J., dissenting); *id.* at 1651, (Souter, J., dissenting); *id.* at 1657 (Breyer, J., dissenting).

143. *See id.* at 1659 (Breyer, J., dissenting).

144. *Id.* (Breyer, J., dissenting).

145. *See* Jackson, *supra* note 133, at 531 ("[F]or the first time since the New Deal, the Court struck down a Federal statute regulating private conduct as exceeding Congress' Commerce

The Court stated that commerce authority should be used only to regulate commercial activities that are related substantially to interstate commerce.[146] As one commentator has observed, however, "we are still a long way from a solid consensus on these matters in the Supreme Court, let alone in the nation."[147] It is difficult, therefore, to predict what long term effects, if any, this case will have on Congress' Commerce Clause authority. In the short term, it is safe to postulate that Congress might not be accorded the same degree of judicial deference.[148] As a result, some environmental regulations based on the Commerce Clause could be in jeopardy.[149]

V. APPLICATION OF *UNITED STATES V. LOPEZ* TO ISOLATED WETLANDS

The Supreme Court's decision in *United States v. Lopez* likely will result in a surge of Commerce Clause challenges.[150] At least one commentator has speculated that some environmental protection laws, including those regulating intrastate activities such as the filling of isolated wetlands, will be attacked.[151] Opponents of federal regulation of isolated wetlands argue that filling an isolated wetland is a local activity not affecting interstate commerce.[152] The following discussion examines the ecological functions and connections to other ecosystems of isolated wetlands and contends that section 404 of the Clean Water Act—as applied to isolated wetlands—is a permissible exercise of congressional authority under the Commerce Clause.

A. Commercial Activity

Lopez set forth a more rigorous Commerce Clause analysis than prior Supreme Court cases.[153] The analysis applied in *Lopez* differs

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Clause power.").

146. *See Lopez*, 115 S. Ct. at 1630.

147. Wilfred M. McClay, *A More Perfect Union? Toward a New Federalism*, 100 COMMENTARY, Sept. 1995, at 28 (noting preponderance of 5-4 decisions in federalism cases).

148. *See The Supreme Court: Attack and Retreat*, THE ECONOMIST, May 6, 1995, at 29 ("*Lopez* may prove to be a new turn in commerce-clause jurisprudence, or it may be merely a one-off. All depends on whether future courts use it to knock down more laws.").

149. *See* Dwyer, *supra* note 134, at 10,421 ("Conceivably, a few statutes, such as the Endangered Species Act . . . and the Safe Drinking Water Act . . . , may now be vulnerable to a Commerce Clause Challenge.") (citations omitted).

150. *See* Biskupic, *supra* note 17, at A3 (speculating that *Lopez* calls into question "a whole body of federal criminal law, federal environmental law, [and] societal policies").

151. *See* Chertok, *supra* note 7, at 1189 n.58 ("The Supreme Court's recent decision in *United States v. Lopez* . . . may presage further litigation challenging jurisdiction over 'isolated' wetlands.").

152. *See supra* notes 9-10 (discussing view that isolated wetlands cannot be regulated under Commerce Clause).

153. *See supra* Parts III and IV (discussing Commerce Clause jurisprudence and Commerce Clause analysis in *Lopez*).

from established doctrine in that it requires the regulated activity to be commercial or economic in nature.[154] Rather than reversing precedent, the Court attempted to distinguish its decision from prior cases in which it upheld the regulation at issue under the cumulative effects doctrine.[155]

First, the Court placed great weight on the fact that the challenged provision of the Gun-Free School Zones Act was not related to any kind of commercial activity.[156] Unfortunately, the Court did not define what constitutes commercial activity.[157] It therefore is difficult to predict what kind of effect, if any, the commercial activity requirement will have on future Commerce Clause challenges.[158] Nevertheless, if the regulated activity in question is related to some sort of economic enterprise, the regulation should clear the first hurdle the Court set forth in *Lopez*.[159] Section 404 of the Clean Water Act regulates the discharge of fill or dredged materials into wetlands.[160] This activity almost always is the direct result of some commercial endeavor.[161] Typically, wetlands are filled in order to convert them into areas more suitable for shopping malls, housing developments, parking lots, and industry.[162] Thus, the regulation

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154. *See* United States v. Lopez, 115 S. Ct. 1624, 1630-31 (1995) (stressing that regulated activities must be connected to or result from commercial activity under Commerce Clause analysis). Justice Breyer, writing for four dissenters, criticized Chief Justice Rehnquist for distinguishing between commercial and non-commercial activities, stating that the distinction is contrary to the precedent established by other Commerce Clause cases. *See id.* at 1663-64 (Breyer, J., dissenting) (asserting that focus of Court has not been "upon the economic nature of the activity regulated . . . [but] upon whether that activity affected interstate or foreign commerce").

155. *See id.* at 1630-31.

156. *See id.* (reasoning that statutes that regulate commercial activity are constitutional, but finding that statute in question did not regulate commercial activity); *see also* Dwyer, *supra* note 134, at 10,423 (observing that Chief Justice Rehnquist distinguished *Lopez* from *Wickard* by concluding that "neither the 1990 firearm statute nor Mr. Lopez's possession of a gun in a school zone was related to interstate commerce").

157. *See* Jackson, *supra* note 133, at S31 (noting whether economic activity will be interpreted narrowly or broadly has yet to be determined).

158. *See The Supreme Court: Attack and Retreat*, *supra* note 148, at 29 ("[T]he *Lopez* precedent gives courts an opportunity to place further restrictions on Congress' power, but it does not require them to do so."). *See generally* Stewart, *supra* note 115, at 46 (suggesting that standard applied in *Lopez* was more demanding than standard usually applied in Commerce Clause cases and that such standard may not be applied in future cases).

159. *See Lopez*, 115 S. Ct. at 1631-32 (requiring activity regulated under commerce Clause to be commercial or economic in nature).

160. *See* 33 U.S.C. § 1344(g)(1) (1994).

161. *See* Dwyer, *supra* note 134, at 10,427 (stating that majority of environmental laws are aimed at commercial activity).

162. *See, e.g.*, United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 124 (1985) (discharging fill materials into wetlands in order to construct housing development); Rueth v. EPA, 13 F.3d 227, 228 (7th Cir. 1993) (discharging fill and dredged materials into wetlands for purpose of residential development); United States v. Pozsgai, 999 F.2d 719, 722 (3d Cir. 1993) (filling wetlands in order to build garage for truck repair business); Hoffman Homes, Inc. v.

of isolated wetlands should satisfy the first prong of the Commerce Clause analysis enunciated in *Lopez*.

Second, the Court stated that the criminal statute at issue in *Lopez* was not "an essential part of a larger regulation of economic activity, in which the regulatory scheme could be undercut unless the intrastate activity were regulated."[163] The Clean Water Act, on the other hand, is an environmental protection statute that regulates commercial activity,[164] and section 404 is an essential part of the greater federal policy of preventing water pollution.[165] Section 404 of the Clean Water Act is further distinguishable from the criminal statute at issue in *Lopez* because the Supreme Court has held the "Commerce Clause [to be] broad enough to permit congressional regulation of activities causing air or water pollution, or other environmental hazards that may have effect in more than one State."[166] Thus, the regulation of isolated wetlands should be upheld if the goals of the Clean Water Act would be undermined without such regulation.[167]

Federal regulations prohibiting the discharge of pollutants into isolated wetlands provide a minimum nationwide standard for clean water.[168] When a seemingly local activity, such as the filling of isolated wetlands, affects more than one state, the Commerce Clause permits the regulation of that activity in order to establish a national

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EPA, 999 F.2d 256, 257-58 (7th Cir. 1993) (discharging fill material to convert wetlands into subdivision); *see also Regulatory Reform Act Hearings/NWF Testimony*, *supra* note 113 (statement of Jan Goldman-Carter, Counsel for Nat'l Wildlife Fed'n) (observing that wetlands have been destroyed in order to build homes, farms, airports, industries, and roads).

163. *Lopez*, 115 S. Ct. at 1631.

164. *See* 33 U.S.C. § 1251; *supra* notes 160-62 and accompanying text (asserting that § 404 regulates commercial activities).

165. *See Lopez*, 115 S. Ct. at 1631; Hodel v. Indiana, 452 U.S. 314, 329 n.17 (1981). The Court in *Hodel* stated:

> A complex regulatory program . . . can survive a Commerce Clause challenge without a showing that every single facet of the program is independently and directly related to a valid congressional goal. It is enough that the challenged provisions are an integral part of the regulatory program and that the regulatory scheme when considered as a whole satisfies this test.

Id.; *see also* S. REP. NO. 95-370, at 75 (1977) ("To limit the jurisdiction of the Federal Water Pollution Control Act with reference to discharges of the pollutants of dredged or fill material would cripple efforts to achieve the act's objectives."), *reprinted in* 1977 U.S.C.C.A.N. 4326, 4400.

166. Hodel v. Virginia Surface Mining & Reclamation Ass'n, 452 U.S. 264, 282 (1981).

167. The primary goal of the Clean Water Act is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." 33 U.S.C. § 1251(a). For a discussion of how isolated wetlands function to improve water quality, see *infra* notes 203-210 and accompanying text.

168. *See* 33 U.S.C. § 1251(a) (indicating that Act's express purpose is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.").

standard.[169] This standard prevents states from engaging in a "race to the bottom," whereby, in the absence of federal regulations, states would institute lax environmental regulations to attract economic development.[170] For instance, if Virginia allowed the discharge of fill and dredged materials on all wetlands, but Maryland regulated this kind of activity, developers likely would prefer Virginia for its absence of regulations. As a result of Virginia's lower standard for clean water, Maryland's economy and efforts to maintain water quality and migratory bird populations would be undermined.[171]

The destruction of isolated wetlands contributes to increased water pollution and other environmental hazards such as flooding and the loss of species.[172] Unfortunately, environmental problems are widespread and usually are not contained within state lines.[173] What appears to be a local activity can have national, if not global, ramifications when the cumulative effects of such activity are factored into the equation.[174] Accordingly, Commerce Clause jurisprudence allows for the regulation of local activities causing environmental problems that "have effect in more than one State."[175]

B. Substantial Effects on Interstate Commerce

The second prong of the Commerce Clause analysis established in *Lopez* requires that the regulated activity substantially affect interstate

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169. *See Hodel*, 452 U.S. at 281 (rejecting argument that Surface Mining Control and Reclamation Act "regulates land use, a local activity not affecting interstate commerce").

170. *See* Dwyer, *supra* note 134, at 10,429 (observing that *Hodel* discussed "race to the bottom" theory and disparity in minimum water quality standards adopted by states as "constitutional basis for federal environmental legislation").

171. See *infra* notes 186-90 and accompanying text (illustrating ecological connections between isolated wetlands and other bodies of water).

172. *See infra* notes 191-217 and accompanying text (describing ecological and commercial functions of isolated wetlands and damage resulting from their destruction).

173. The expansion of international environmental law is evidence that environmental problems are widespread. Edith Brown Weiss found that there are almost 900 international environmental law agreements. *See* EDITH BROWN WEISS ET AL., INTERNATIONAL ENVIRONMENTAL LAW: BASIC INSTRUMENTS AND REFERENCES, at ix (1992).

174. The cumulative effect doctrine apparently was upheld in *Lopez*. *See* 115 S. Ct. at 1628, 1630 (recognizing "cumulative effects" doctrine of *Wickard v. Filburn* as part of Commerce Clause jurisprudence); *see* Dwyer, *supra* note 134, at 10,427 (insisting that "cumulative effects" doctrine survived *Lopez*); Stewart, *supra* note 115, at 46 (observing that Chief Justice Rehnquist's opinion in *Lopez* affirmed cases such as *Wickard v. Filburn* in which "cumulative effects" doctrine was established).

The current system of regulation, however, does not allow for an accurate determination of the cumulative effects of discharging fill materials into wetlands. *See generally* NATALIE R. SEXTON, EFFECTS OF SECTION 404 PERMITS ON WETLANDS IN NORTH DAKOTA 15 (U.S. Dep't of the Interior, Nat'l Biological Survey 1994) (concluding that lack of review of discharges in wetlands below one acre in size makes it difficult to determine cumulative effect that such discharges have on environment).

175. *Hodel*, 452 U.S. at 282; *see supra* Parts III and IV (describing Commerce Clause jurisprudence and its impact on *Lopez* decision).

commerce.[176] Again, the Supreme Court provided few clues as to what constitutes a "substantial effect."[177] The majority opinion reasoned that the connection between gun possession in a school zone and interstate commerce was unsubstantiated.[178] Apparently, a tenuous connection between the regulated activity and interstate commerce no longer will be sufficient to meet the substantial effects standard that the Court articulated in *Lopez*.[179]

Unlike the regulated activity at issue in *Lopez*, however, the widespread destruction of isolated wetlands substantially affects interstate commerce. Although isolated wetlands once were thought to be of little value because they did not perform the same functions as adjacent wetlands,[180] scientific studies have proven this assertion to be false.[181] Scientists generally agree that wetlands—isolated as well as adjacent—serve important ecological functions, including flood control, ground water recharge and purification, water quality improvement, and habitat provision to numerous biologically diverse species.[182] Recently, Congress asked the National Resource Council to form a committee to study scientifically the criteria used to identify wetlands.[183] The committee concluded that "[t]he scientific basis for policies that attribute less importance to . . . isolated wetlands than to other wetlands is weak."[184] This conclusion was based on the finding that isolated wetlands perform the same functions as other wetlands.[185]

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176. *See* United States v. Lopez, 115 S. Ct. 1624, 1630 (1995) ("[T]he proper test requires an analysis of whether the regulated activity 'substantially affects' interstate commerce.").

177. *See id.* at 1631 (stating that Congress "normally is not required to make formal findings as to the substantial burdens that an activity has on interstate commerce" to justify legislation).

178. *See id.* at 1634 (requiring more than inferences to show that regulated activity substantially affects interstate commerce).

179. *See id.* (arguing that relying on such limited connections would "convert congressional authority under the Commerce Clause to a general police power of the sort retained by the states").

180. *See* Hoffman Homes, Inc. v. EPA, 961 F.2d 1310, 1316 (7th Cir. 1992) (attributing functions such as flood control and filtering pollutants from water to adjacent wetlands but not to isolated wetlands).

181. *See* NATIONAL RESEARCH COUNCIL, *supra* note 72, at 156 (recognizing that isolated wetlands perform same functions as other wetlands).

182. *See id.* at 34-40; *see also* WORLD WILDLIFE FUND, *supra* note 46, at 4-6 (listing flood control, water quality, waterfowl habitat, biological diversity, groundwater recharge, erosion and land formation, and recreation as reasons "why wetlands should be protected"); Jon A. Kusler et al., *Wetlands*, SCI. AM., Jan. 1994, at 64B; John G. Mitchell, *Our Disappearing Wetlands*, 182 NAT'L GEOGRAPHIC, Oct. 1992, at 14-15 (comparing biological productivity of wetlands to tropical rainforest).

183. *See* NATIONAL RESEARCH COUNCIL, *supra* note 72, at xiii (stating that Congress asked EPA to direct National Research Council study wetlands).

184. *Id.* at 156.

185. *See id.* (concluding that wetland functions are independent of whether wetland is adjacent to or isolated from body of water).

Indeed, the term "isolated wetlands" is somewhat of a misnomer when basic ecological principles are considered. Some isolated wetlands have subsurface connections to other bodies of water, such as lakes, rivers, or streams;[186] others are ecologically connected to lakes, rivers, streams, tidal areas, and other wetlands that also serve as habitats for migratory birds[187] and other wildlife.[188] The Supreme Court acknowledged these characteristics of wetlands in *Riverside Bayview Homes* when it contemplated how functions such as flood control, water purification, and food chain production further the purpose of the Clean Water Act.[189] Thus, relying solely on the presence of migratory birds on isolated wetlands to establish a connection to interstate commerce ignores the diverse array of functions isolated wetlands serve that also affect interstate commerce.[190]

Both district and appellate courts have recognized that the destruction of isolated wetlands that serve as habitats for migratory birds could have a substantial effect on interstate commerce.[191] As a result of the large number of bird species they support, wetlands often serve as recreational areas for bird-related activities.[192] Each year, Americans spend more than one billion dollars "hunting, trapping, and observing migratory birds."[193]

Wetlands provide a unique habitat, exhibiting both aquatic and terrestrial characteristics, that supports biodiversity.[194] Many isolated

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186. *See id.* (stating that wetland functions such as maintenance of water quality do not depend on whether wetland is adjacent to or isolated from surface waters when isolated wetland has ground water connection with surface waters).

187. *See id.* ("Small, shallow wetlands that are isolated from rivers are frequently important to waterfowl.").

188. Scientific studies have established that black bears rely on isolated wetlands as a food source and for shelter. *See* Thomas Be Vier, *Satellites Will Track Nation's First Global Bear*, GANNETT NEWS SERV., June 13, 1995, *available in* 1995 WL 2899113.

189. *See* United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 134-35 (1985).

190. *See infra* notes 198-217 and accompanying text (describing commercial functions of isolated wetlands).

191. *See* sources cited *supra* note 79 (listing cases finding relationship between migratory birds and interstate commerce). *But see Lopez and the Glancing Birds*, WASH. TIMES, May 3, 1995, at A16 (commenting that migratory bird rule is insufficient nexus to withstand scrutiny of *Lopez* Court).

192. *See* Tom Wharton, *Celebrating the Return of Wetland Birds*, SALT LAKE TRIB., May 7, 1996, at C1 (describing "[a]wesome spectacle" of 340 species of birds that migrate in spring).

193. Hoffman Homes, Inc. v. EPA, 999 F.2d 256, 261 (7th Cir. 1993); *see also Regulatory Reform Act Hearings/EPA Testimony*, *supra* note 81 (statement of Robert Perciasepe, Assistant Adm'r of EPA) (stating that more than $600 million dollars is spent annually on hunting wetland-dependent waterfowl).

194. *See* Kusler et al., *supra* note 182, at 68 (observing that wetlands have characteristics of both aquatic and terrestrial ecosystems, which explains wide variety of species found there). According to Cornell University ecologist Barbara Bedford, wetlands that are wet for only a few weeks each year are among the most biologically diverse. *See* Betsy Carpenter, *In a Murky*

wetlands serve as spawning, breeding, feeding, and nesting grounds for migratory birds, fish, and other wildlife.[195] Shallow isolated wetlands are especially important to migratory birds because they provide the first available supply of food in the spring.[196] The Corps has identified the role of isolated wetlands in supporting biodiversity as a factor in delineating wetlands that are subject to federal regulation.[197]

In addition to providing habitats for migratory birds and promoting biodiversity, isolated wetlands serve commercial purposes that substantially affect interstate commerce.[198] For instance, isolated wetlands can play important roles in flood control, water quality, and water supply.[199] Wetlands prevent $30.9 billion of flood damage from occurring each year due to their ability to absorb great quantities of water.[200] Adjacent wetlands prevent flood damage by soaking up overflow from rivers and streams.[201] Isolated wetlands also contribute to flood control by absorbing rain and storm water runoff.[202]

Moreover, isolated wetlands help to improve the quality of both surface and ground water.[203] This is especially true in farming areas where storm water runoff is saturated with high concentrations of

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Quagmire: The Wetlands Need Protection. But Does that Mean Every Soggy Acre?, U.S. NEWS & WORLD REP., June 3, 1991, at 45. For example, she found "128 species of plants in one 5-by-5 meter square" in a wetland in upstate New York. *Id.* She compares the destruction of wetlands to the destruction of the rainforest because both are habitats "rich in species." *See id.*

195. *See* Kusler et al., *supra* note 182, at 64B (describing functions of wetlands).

196. *See* NATIONAL RESEARCH COUNCIL, *supra* note 72, at 156 (establishing that shallow isolated wetlands thaw earlier than deeper wetlands, allowing for early development of invertebrate populations that are source of food for waterfowl).

197. *See* 51 Fed. Reg. 41,217 (1986) (defining waters covered by the Clean Water Act to include those that provide habitat to migratory birds or "would be used as habitat by endangered species").

198. *See* Kusler et al., *supra* note 182, at 64B (describing wetlands as "nature's kidneys" due to their ability to reduce flood damage and water pollution).

199. *See generally Regulatory Reform Act Hearings/NWF Testimony*, *supra* note 113 (statement of Jan Goldman-Carter, Counsel for Nat'l Wildlife Fed'n) (documenting commercial functions of isolated wetlands).

200. *See id.* Wetlands that are flooded one foot in depth have the ability to store water at a rate of 36,000 gallons per acre temporarily. *See id.*

201. *See* Kusler et al., *supra* note 182, at 64B, 67 (noting that flooding is more severe when wetlands are developed into areas with no natural absorbent capacities).

202. *See Regulatory Reform Act Hearings/NWF Testimony*, *supra* note 113 (statement of Jan Goldman-Carter, Counsel for Nat'l Wildlife Fed'n). "Prairie potholes," small isolated wetlands scattered through the plains, help control flooding by reducing the rate at which runoff moves from highlands to flood plains. *See id.* As prairie potholes have been destroyed to build parking lots, subdivisions, shopping malls, and roads, flooding has increased. *See id.*; *see also A Swamp in the House*, SPORTS ILLUSTRATED, Aug. 28, 1995, at 25 (stating that prairie potholes provide "$150 million worth of free flood control each year").

203. *See* Carpenter, *supra* note 194, at 96 ("Microorganisms in wetland soils transform several pollutants into benign substances. Nitrates from agricultural runoff, for instance, can be converted into nitrogen gas, which escapes harmlessly into the atmosphere.").

phosphorous and nitrogen due to frequent fertilizer use.[204] Heavy rains wash fertilizers away from crops, causing storm water runoff to become laden with nutrients and chemicals present in the fertilizers.[205] This polluted runoff often flows directly into lakes, rivers, and sewer systems.[206] Isolated wetlands can interrupt the flow of this storm water by absorbing the water and filtering out the pollutants.[207] As a result, isolated wetlands drastically reduce the amount of pollution that eventually reaches surface waters and sewer systems.[208] In fact, isolated wetlands have been incorporated into storm water runoff treatment systems because of their natural ability to remove pollutants and sediment while absorbing water.[209] Therefore, isolated wetlands, along with other wetlands, naturally perform the commercial function of improving surface water quality, thereby reducing water treatment costs by as much as seventy billion dollars.[210]

Isolated wetlands also recharge and purify ground water supplies.[211] In the midwest, isolated wetlands have been recognized for their ability to replenish ground water aquifers and to maintain elevated water tables.[212] Furthermore, isolated wetlands have the

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204. *See generally* William T. Peterjohn & David L. Correll, *Nutrient Dynamics in an Agricultural Watershed: Observations on the Role of a Riparian Forest*, 65 ECOLOGY 1466 (1984) (studying levels of nutrient concentrations in agricultural stormwater runoff before moving through riparian forest and levels found in groundwater). Iowa State University botany professor Arnold van der Valk links the loss of 95% of Iowa's wetlands, including isolated wetlands known as prairie potholes, to the dangerously high levels of contamination in Des Moines' drinking water supply. *See* Carpenter, *supra* note 194, at 96.

205. *See generally* Peterjohn & Correll, *supra* note 204, at 1466 (studying nutrient loading of stormwater runoff over agricultural fields and removal of some nutrients from runoff in riparian forest before runoff reaches stream).

206. *See id.* at 1474.

207. *See id.*

208. *See Regulatory Reform Act Hearings/EPA Testimony*, *supra* note 81 (statement of Robert Perciasepe, Assistant Adm'r of EPA) (stating that wetlands naturally function to remove pollutants from waters).

209. *See* Bruce H. McArthur, *The Use of Isolated Wetlands in Florida for Stormwater Treatment*, *in* WETLANDS: CONCERNS AND SUCCESSES 185, 192 (David W. Fisk ed., 1989) (providing developers with low cost alternative to meet water quality standards by incorporating isolated wetlands into storm water runoff treatment system). Isolated wetlands that are used for storm water runoff treatment can contribute to housing developments in other ways as well. If the system is designed and maintained properly, the isolated wetland can provide habitat to wildlife, and thus increase the recreational and aesthetic value of the development. *See id.*

210. *See Regulatory Reform Act Hearings/NWF Testimony*, *supra* note 113 (statement of Jan Goldman-Carter, Counsel for Nat'l Wildlife Fed'n) (noting that constructing water treatment systems is much more costly than allowing wetlands to remove pollutants naturally).

211. *See* WORLD WILDLIFE FUND, *supra* note 46, at 5-6 (noting ability of some wetlands to recharge aquifers that provide drinking water); *Regulatory Reform Act Hearings/NWF Testimony*, *supra* note 113 (statement of Jan Goldman-Carter, Counsel for Nat'l Wildlife Fed'n) (describing role wetlands play in ground water recharge).

212. *See Regulatory Reform Act Hearings/NWF Testimony*, *supra* note 113 (statement of Jan Goldman-Carter, Counsel for Nat'l Wildlife Fed'n) (documenting role prairie potholes have in

natural ability to purify ground water by removing sediment, heavy metals, nitrogen, and phosphorous from water destined for ground water aquifers.[213] In short, wetlands absorb rain water, filtering it as it percolates down to ground water systems.[214] Isolated wetlands thus perform a particularly valuable function in areas that rely on ground water aquifers for drinking water. For example, isolated wetlands in the midwest known as "prairie potholes"[215] absorb nitrogen, making ground water safer to drink.[216] As a result, they substantially improve both the quality and quantity of drinking water that is available for many Americans, thereby furthering the goals of the Clean Water Act.[217]

In sum, by serving commercial functions, such as cleansing water of pollutants, controlling floods, and contributing to groundwater supplies, isolated wetlands have a substantial impact on interstate commerce.[218] In addition, the ecological connections of isolated wetlands to other wetlands and bodies of water substantially affect interstate commerce by contributing to biological diversity and supporting populations of endangered species and migratory

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supplying water for livestock and moisturizing soil, which increases crop production and forage for livestock). Regulation of isolated bodies of water that contribute to crops sold in interstate commerce has been upheld. *See* Utah v. Marsh, 740 F.2d 799, 803 (10th Cir. 1984) (holding that commerce power extends to lake located entirely within state when lake was "used to irrigate crops sold in interstate commerce").

213. A case study in Florida showed that isolated wetlands incorporated into a storm water runoff discharge system were capable of reducing suspended solids by 66%, lead by 73%, zinc by 56%, nitrogen by 21%, organic nitrogen by 23%, ammonia by 54%, and phosphorus by 17%. *See* McArthur, *supra* note 209, at 189.

214. *See* Kusler et al., *supra* note 182, at 68 (describing how bacteria associated with wetlands cleanse waters by transforming pollutants found in water into harmless gases).

215. *See* NATIONAL RESEARCH COUNCIL, *supra* note 72, at 155 (listing prairie potholes as type of isolated wetland).

216. *See* WORLD WILDLIFE FUND, *supra* note 46, at 6 (explaining that plants found in prairie pothole ecosystem absorb nitrogen into their tissue which is, in turn, absorbed by soil). The role isolated wetlands play in absorbing nitrogen is particularly important in light of estimates that "37 percent of the counties in the United States have nitrate contamination due to agricultural activities." *Id.*

217. "Wetlands are part of our Nation's waters and their protection is important to achieving the National goals, set forth in the CWA, of maintaining and restoring the physical, biological and chemical integrity of our Nation's waters." *Regulatory Reform Act Hearings/EPA Testimony*, *supra* note 81 (statement of Robert Perciasepe, Assistant Adm'r of EPA) (insisting that wetlands must be included as waters covered by Clean Water Act because their functions are important in achieving goals set forth by Act); *see also* 33 U.S.C. § 1251(a)(1994) (stating that purpose of Clean Water Act is "[t]o restore and maintain the chemical, physical, and biological integrity of the Nation's waters").

218. *See* Village of Oconomowoc Lake v. Dayton Hudson Corp., 24 F.3d 962, 965 (7th Cir. 1994) (concluding that groundwaters are not covered by Clean Water Act). *But see* Quivira Mining Co. v. EPA, 765 F.2d 126, 130 (finding that subsurface waters can be regulated by Clean Water Act). Replacing the functions that wetlands naturally provide with water treatment plants, drainage ditches, sewer systems, and dams would be extremely costly thereby affecting interstate commerce. *See supra* notes 198-217 and accompanying text.

birds.[219] Although the filling of isolated wetlands may be an intrastate activity, the repercussions of destroying isolated wetlands are not confined to state lines.

VI. RECOMMENDATIONS

Whether an isolated wetland is subject to federal regulation depends on whether the wetland has a substantial connection to interstate commerce. Currently, the Corps and most courts recognize that the presence of migratory birds connects isolated wetlands to interstate commerce. Aside from serving as migratory bird habitat, isolated wetlands can help to improve water quality, to reduce flooding, and to promote biological diversity. These functions also should be recognized as substantial connections to interstate commerce.

Unfortunately, the functions of isolated wetlands often are misunderstood. A Seventh Circuit case concerning federal regulation of isolated wetlands illustrates this point.[220] The court, in an opinion written by Judge Manion, stated that the "protection of [isolated wetlands] would not further the stated policy of the [Clean Water] Act 'to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.'"[221] On the contrary, as a recent scientific study concluded, isolated wetlands perform many of the same functions as other wetlands, including playing an important role in maintaining water quality.[222]

Therefore, when drafting and interpreting environmental protection laws, it is imperative that scientific principles be considered if the policy is to be effective.[223] This is particularly important with regard to the Clean Water Act, which seeks to preserve the "biological integrity of the Nation's waters."[224] Biological integrity "refers to a system's wholeness, including the presence of all appropriate elements

219. *See supra* notes 186-97 and accompanying text.

220. *See* Hoffman Homes, Inc., v. EPA, 961 F.2d 1310, 1322 (7th Cir. 1992), *vacated*, 999 F.2d 256 (7th Cir. 1993). The *Hoffman I* court found that the EPA did not have the authority to regulate isolated wetlands. *See* 961 F.2d at 1316. The *Hoffman II* court upheld the authority of the EPA and the Corps to regulate isolated wetlands. *See* 999 F.2d at 261.

221. 961 F.2d at 1322 (quoting 33 U.S.C. § 1251(a)).

222. *See* NATIONAL RESEARCH COUNCIL, *supra* note 72, at 156.

223. *See generally* Paul L. Angermeier & James R. Karr, *Biological Integrity Versus Biological Diversity as Policy Directives: Protecting Biotic Resources*, 44 BIOSCIENCE 690 (1994), *available in* 1994 WL 13106248 (advocating use of concepts of biological integrity and biological diversity when devising environmental policy).

224. 33 U.S.C. § 1251(a) (1994).

and occurrence of all processes at appropriate rates."[225] Maintaining the "biological integrity" of our nation's waters cannot be accomplished without considering scientific evidence of the ecological functions of isolated wetlands and their connections to neighboring ecosystems.[226] In short, even "isolated" wetlands should not be viewed in isolation.

Courts should apply this "ecosystem" concept when determining whether an activity affecting the environment has a substantial effect on interstate commerce.[227] With respect to the regulation of isolated wetlands, courts also should consider the cumulative effect of destroying isolated wetlands. Accordingly, courts should incorporate ecological principles and scientific evidence into their factual analysis of whether particular isolated wetlands substantially affect interstate commerce.

CONCLUSION

The future regulation and protection of isolated wetlands depends on the actions of courts, Congress, and agencies such as the EPA and the Corps. All three governmental branches should make an effort to ground their decisions on scientifically sound data. As the National Research Council noted in its study on wetlands, "The scientific basis for policies that attribute less importance to headwater areas and isolated wetlands than to other wetlands is weak."[228] Accordingly, scientific evidence that isolated wetlands provide habitat for migratory birds, promote biological diversity, control flooding, improve water quality, and recharge groundwater supplies supports the conclusion that the destruction of isolated wetlands substantially affects interstate commerce.

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225. Angermeier & Karr, *supra* note 223. The House Committee Report defined "integrity" as "a condition in which the natural structure and function of ecosystems is maintained." H. Rep. No. 92-911, at 76 (1972), *reprinted in* 1972 U.S.C.C.A.N. 3776, 3778.

226. *See* Angermeier & Karr, *supra* note 223 ("[B]iological systems are not strictly deterministic but may develop (i.e. be organized) along multiple pathways as a result of different initial conditions, conditions in neighboring systems, and the sequence of influential events.").

227. *See* NATIONAL RESEARCH COUNCIL, *supra* note 72, at 59. The National Research Council notes:

> The ecosystem concept, which is now being invoked widely in the management and regulation of environmental resources, acknowledges the integration of physical, chemical, and biological phenomena in the environment. Attempts to regulate, manage, protect, restore, or even identify wetlands without recognition of this underlying principle are likely to be ineffective.

Id.

228. *Id.* at 156.