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Wetlands Protection: Regulators Need to Give Credit to Mitigation Banking

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[a] horrible desert, the foul damps ascend without ceasing, corrupt the air and render it unfit for respiration.... Never was Rum, that cordial of Life, found more necessary than in this Dirty Place.

—Colonel William Byrd III (1674-1744) describing the Great Dismal Swamp on the Virginia-North Carolina border[1]

[W]hether we are discussing mitigation banking or another aspect of the regulatory program, we must continue to pursue a commitment to preserve our remaining national treasures, [the wetlands].

—Ann Jennings, Staff Scientist, Chesapeake Bay Foundation testifying to a House of Representatives Subcommittee in December 1997[2]

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1. WILLIAM J. MITSCH & JAMES G. GOSSELINK, WETLANDS 12 (2d ed. 1993) (quoting Colonel William Byrd III, *Historie of the Dividing Line Betwixt Virginia and North Carolina*, THE WESTOVER MANUSCRIPTS (E. & J.C. Ruffin, 1841)).

2. 1997 WL 759470 (F.D.C.H.) (Dec. 9, 1997) (Statement of Ann Jennings).

I. Introduction

Wetlands[3] provide a myriad of ecology benefits. Yet, as the above quotes depict, society has not always appreciated wetland values. Appreciation for this natural resource has evolved over the past two decades. Wetland protection programs and loss compensation strategies also have evolved over the past two decades.

Wetland mitigation banking reflects a management strategy that requires developers to compensate for wetland loss or degradation that their projects cause. This article will examine this market-based approach to wetland protection and the lack of participation in this credit market.

Prior to developing a wetland area, one must fulfill the requirements of Section 404 of the Clean Water Act regarding the Permitting Program (or Food Security Act "Swampbuster" provisions, and in some areas, state and local permit programs). Section 404 requires developers to provide compensatory mitigation of wetland areas when they cannot avoid damaging the area. The federal government, through regulatory guidance, has endorsed mitigation banking as an appropriate method to restore, create, enhance (and in exceptional circumstances, preserve) wetlands in order to compensate for "unavoidable wetland losses in advance of development actions."[4]

Mitigation banking entails compensation for a number of independent development projects through the consolidation of small, fragmented wetlands projects. The "bank" represents compensation mitigation in a single, larger off-site wetland instead of mitigating wetlands on-site or adjacent to the development area. Essentially, land developers "need not produce the compensatory

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3. The definition of wetland differs among ecologists, managers, and regulators, resulting in over fifty state and federal definitions. MARK S. DENNISON & JAMES F. BERRY, WETLANDS: GUIDE TO SCIENCE, LAW, AND TECHNOLOGY 4 (1993). However, throughout this article,

> the term 'wetlands' means those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.... generally includ[ing] swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.

Exec. Order No. 11,990, 42 Fed. Reg. 26,961 (1977).

4. Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, 60 Fed. Reg. 58605, 58606 (1995) [hereinafter Mitigation Banking Guidance 1995].

wetland values; instead, the developer can purchase them from another entity that has produced and 'banked' them for this purpose. The banked 'compensation credits' are recognized by the regulatory agency as providing suitable compensation for wetland impacts."[5]

Statistics indicate that the market-based incentive program of mitigation banking has not produced a viable credit transfer program. This article analyzes mitigation banking within the framework of three categories vital for an effective rights transfer program.[6] First, the article explains the problems with "The Nature of the Resource" by discussing wetlands valuation and describes the transition in attitudes and policies towards these natural resource areas—from destruction to protection. Furthermore, this article discusses the economic and ecological values of wetlands as well as valuation methods and barriers to accurate valuation.

Part III follows by analyzing the "Institutional Problems" involved in this program and the regulatory framework in which mitigation banking arises. This section also addresses how administering agencies and the federal government cause most of the institutional problems of mitigation banking.

In Part IV, this article explains "Design and Implementation Problems." This section describes the system, the stakeholders involved, types of mitigation banks, credit measurements, the program's advantages and disadvantages, and built-in design and implementation defects.

Part V of this article argues that the failures in the areas of "The Nature of the Resource," "Institutional Problems," and "Design and Implementation" result from the government administrative setting that "sets the program up for failure." This section of the article reviews inherent credit supply and demand problems and then discusses the difficulties that program administrators cause.[7]

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5. ENVIRONMENTAL LAW INSTITUTE, WETLAND MITIGATION BANKING 1 (1993) [hereinafter ELI Report].

6. In 1989, authors James T.B. Tripp and Daniel J. Dudek set out eight guidelines necessary for an effective rights transfer program. These authors divide the guidelines for success among three areas. Specifically, they describe guidelines for the "institution administering the program", "nature of the resource problem that the program addresses", and "design and implementation of the program". James T.B. Tripp & Daniel Dudek, Comment, *Institutional Guidelines for Designing Successful Transferable Rights Programs*, 6 YALE J. ON REG. 369, 374 (1989). This article applies some of those guidelines to review the problems of mitigation banking as a market-based incentive program.

7. Although many wetland owners raise the Constitutional "takings" issue,

While problems evolve from the nature of the resource itself, the institution, and the program's design and implementation, the administrators actually cause the failure of mitigation banking as a market-based incentive program. The federal government has created a program that politicians may label as a market-based incentive, but government implementation of mitigation banking "nudges" potential participants in other directions. Consequently, the government undermines the success of mitigation banking and its credit market.

In conclusion, I review proposed legislation to determine whether congressional efforts may resolve the problems in the mitigation banking program or whether more pro-property rhetoric is in the works. This article concludes that mitigation banking has gained some participation over the past ten years, but the program cannot succeed without honest efforts from the national government to establish a viable credit program.

II. The Nature of the Resource: Wetlands Valuation

The nature of wetlands as natural resources may cause part of the problem with establishing a successful credit program in mitigation banking. This section describes why and how the policy regarding wetlands as a natural resource has changed from encouraging destruction to encouraging protection through the use of market-based incentives. I review the cultural and policy changes and then describe the values of wetland areas and difficulties involved in valuation methods. Although difficulties due to science and valuation do exist, regulatory agencies can overcome these barriers, as this discussion illustrates.

As this section summarizes, society's appreciation for wetland values and functions has improved over the past 100 years and wetland management and protection policies have also improved. Wetland loss and degradation have decreased.

Scientific knowledge regarding wetlands also has improved, but scientists have not developed a complete understanding of wetlands ecology and functions. Therefore, administrators do not have a "strong scientific footing"[8] on which to enforce the "no net less policy." Scientists and politicians have made progress in

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that legal conflict is beyond the scope of this article. For a discussion of "takings" in the mitigation banking setting see Royal C. Gardner, *Banking on Entrepreneurs: Wetlands, Mitigation Banking, and Takings*, 81 IOWA L. REV. 527 (1996).

8. Tripp & Dudek, *supra* note 6, at 376.

understanding wetlands and policy has moved from wetland destruction to protection.

Another difficulty associated with this resource is wetland valuation. Difficulty exists in measuring wetland values and functions and "ensuring tradeable rights have economic value".[9] Uncertainties in wetland valuation, along with other uncertainties, may stifle incentives for buying and selling of wetland mitigation banking credits. While valuation problems exist, they should not paralyze this credit program.

This section reviews how problems with "strong scientific footing" and ensuring "tradeable rights have economic value" do exist with wetlands as a resource in a rights transfer program. While the nature of this resource does adversely affect mitigation banking success, program administrators or the federal government could overcome these problems, if the government truly dedicated itself to successful implementation of a trading program.

A. *Cultural Dislikes, Changing Behaviors, and Attitudes Towards Wetlands*

> *As long as common property [is] abundant and ha[s] essentially no fiscal value, the illegibility of its tenure [is] no problem. But the moment it be[comes] scarce (when 'nature' be[comes] 'natural resources'), it be[comes] the subject of property rights in law, whether of the state or of the citizens.* [10]

This tenet holds true for wetlands and the appreciation of their economic values. Since the mid-1970s, public perceptions have drastically changed regarding the positive attributes wetlands provide.[11] Technology and the combined efforts of hunters, anglers, scientists, engineers, lawyers, and environmentalists have forced a change in public perceptions and increased understanding of wetland values.[12] Similar to other natural resources, technology and progress in the science of ecology has transformed society's perception of wetland values and correspondingly, regulatory approaches have changed. Our regulatory system generally has mirrored that transition of societal values.

Historically, the public viewed swamps, bogs, and marshes—wetlands—as providing low socio-economic and cultural values, as

9. *Id.*
10. JAMES C. SCOTT, SEEING LIKE A STATE 39 (1998).
11. MITSCH & GOSSELINK, *supra* note 1, at 15.
12. *Id.*

well as few biological and physical contributions. Wetlands represented dark, dank, sinister, foreboding "wastelands," valuable only as mosquito, snake, and disease breeders.[13] Today, many value wetlands for the functions they perform such as water quality improvement, groundwater recharging and discharging, storm and flood protection, erosion reduction, and air quality improvement.[14] Others contend that wetlands also provide wildlife habitats and serve as archeological, educational, recreational, and research sites.[15]

Prior to the 1970s' environmental revolution, many believed that these low-value land areas provided increased economic value with drainage and destruction. Essentially, dredging and filling wetlands reflected progress[16] and only after the public began to appreciate wetland resource values did wetlands become valuable natural resources to be managed and protected. Viewed as health and welfare hazards and development obstacles, societal norms and governmental regulation provided incentives to destroy and degrade these resources. Consequently, entrepreneurs began converting wetland property to uses with greater market value such as agriculture, real estate, and industry.[17]

Additionally, governmental land-use regulation encouraged removing these nuisances and impediments to progress. The governmental reclamation of swamps and other wetland areas reflected, as the U.S. Supreme Court stated in 1900, "[a] fact which may be supposed to be known by everybody . . . that swamps and stagnant waters are the cause of malarial and malignant fevers, and that the police power is never more legitimately exercised than in removing such nuisances."[18] Statutes such as the Swamp Land Acts of 1849, 1850, and 1860 provided incentives to destroy, drain, and fill wetlands.[19] These acts gradually relinquished federal supervision of flood control and drainage to the states on the condition that the states initiate reclamation programs with sale proceeds.[20] Some states sold the reclaimed wetlands to private

13. *Id.* at 9-15.
14. *Id.* at 524-35.
15. *Id.*
16. ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 975 (2d ed. 1996).
17. DENNISON & BERRY, *supra* note 3, at 3.
18. Leovy v. United States, 177 U.S. 621, 636 (1900).
19. DENNISON & BERRY, *supra* note 3, at 70. These acts granted states control over swampland and overflow lands to control floods, transferring federally owned wetlands to the states. *See* MITSCH & GOSSELINK, *supra* note 1, at 544.
20. *See* MITSCH & GOSSELINK, *supra* note 1, at 544; *see also* PAUL F. SCODARI,

owners for minimal amounts. Ironically, the government now pays high prices to buy back these properties for wetland conservation.[21]

Gradually, regulatory programs emerged supporting wetland protection. For example, from 1934 to 1984 the Duck Stamp Act[22] program preserved 3.5 million acres of wetlands by requiring waterfowl hunters to purchase federal migratory-bird hunting and conservation stamps.[23] President Jimmy Carter ensured further protection in 1977 with Executive Order 11990, *Protection of Wetlands*, mandating that federal agencies minimize "the destruction, loss or degradation of wetlands, and ... preserve and enhance the natural and beneficial values of wetlands in carrying out" their responsibilities.[24]

As the government identified societal benefits, more protection evolved and more government regulation ensuring management and protection of both public and private wetlands occurred. These programmatic and economic influences caused wetland loss rates to substantially decrease from 1982-1992.[25] Since 1988, the federal government has sought to fulfill the national policy of "no net loss" to ensure wetland conservation, as well as construction and restoration for unavoidable wetland losses.[26]

By 1993, 27 states had established statutory protection of wetlands, and numerous local governments had passed building codes, development regulations, and zoning ordinances, restricting construction and pollution runoff in wetland areas.[27] The Clinton Administration adopted a policy that supports wetland protection and mitigation banking as a viable regulatory, market-based incentive program to encourage protection while streamlining the permit process.[28]

The transition in wetlands policy and science have been interconnected. Advancements in the science of wetland ecology

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MEASURING THE BENEFITS OF FEDERAL WETLAND PROGRAMS 17 (1997).

21. *See* MITSCH & GOSSELINK, *supra* note 1, at 544.

22. The Duck Stamp Act is also known as the Migratory Bird Hunting Stamp Act and the Hunting and Conservation Stamp Tax. In 1998, designated as the Migratory Bird Hunting and Conservation Stamp Promotion Act. 16 U.S.C. § 718 (1999).

23. *See* MITSCH & GOSSELINK, *supra* note 1, at 15.

24. Exec. Order No. 11,990, 42 Fed. Reg. 26,961 (1977).

25. *See* Ralph Heimlich & Jeanne Melanson, *Wetlands Lost, Wetlands Gained*, NAT'L WETLANDS NEWS L., May-June 1995, at 1.

26. *See* MITSCH & GOSSELINK, *supra* note 1, at 568.

27. DENNISON & BERRY, *supra* note 3, at 71-72.

28. *See* WHITE HOUSE OFFICE ON ENVIRONMENTAL POLICY, PROTECTING AMERICA'S WETLANDS: A FAIR, FLEXIBLE, AND EFFECTIVE APPROACH (August 24, 1993).

and environmental protection indicated that wetland loss and degradation adversely affected societal values and potentially caused public harm. Once the public and the government realized the market and non-market values for society, regulation controlling wetland loss and degradation evolved, regulating and restricting activities on both privately and publicly owned wetlands.[29] Tension between private property rights of landowners, who are interested in developing wetlands to gain monetary value, and the property rights of the government, which is interested in conserving the property to protect societal benefits and prevent public harms, has grown.[30]

In any case, national policy and public opinion have shifted from supporting wetland elimination to wetland conservation and preservation. However, in the interim wetland loss and degradation has occurred throughout the country causing an increase in societal values of the remaining wetlands.

B. Wetland Loss and Degradation

Trends in loss and degradation of wetlands resonate society's gaining appreciation for this natural resource. Between 1780 and 1980, the lower 48 states lost approximately 53% of their original wetlands from 392 million acres of wetlands in 1780,[31] and by 1980 only 103.3 million acres remained.[32] From 1970 to 1980, a net loss exceeding 2.6 million acres of wetlands occurred.[33]

From 1974 to 1984, losses traced to specific causes indicated that agricultural development caused 54% and urban development accounted for another 5%.[34] Ninety percent of historical wetland loss was caused by agricultural development.[35] Although some wetland areas may be restored, depending on their condition,[36] the

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29. DENNISON & BERRY, *supra* note 3, at 13-16.

30. *See id.* at 15.

31. THOMAS E. DAHL, WETLANDS: LOSSES IN THE UNITED STATES 1780S TO 1980S: A REPORT TO CONGRESS 1 (1990).

32. W.E. FRAYER, STATUS AND TRENDS OF WETLANDS AND DEEPWATER HABITATS IN THE CONTERMINOUS UNITED STATES, 1970S TO 1980S 3 (1991). *See also id.* at 5.

33. *Id* at 3.

34. SCODARI, *supra* note 20, at 10.

35. *Id.* at 12.

36. For example, the 346 acre Pridgen Flats Mitigation Bank in North Carolina was once a freshwater scrub/shrub and forested wetlands that was significantly altered for agricultural use, but became a wetlands *restoration* site. *See* L.K. Gantt & David A. Dell, *Two Case Studies in Mitigation Banking: Can We Afford It?*, *in* EFFECTIVE MITIGATION: MITIGATION BANKS AND JOINT PROJECTS IN THE CONTEXT OF WETLAND MANAGEMENT PLANS 180, 181 (Jon A. Kusler &

overall wetland loss and degradation over the past 200 years has been ecologically devastating.

Many factors influenced the loss and degradation of wetlands, including the public's lack of information about the values of these ecosystems. Some researchers attribute loss and degradation to market failures. Conserving wetlands presents low private values and more public or quasi-public benefits, such as aesthetics, recreation, improved water quality.[37] Private benefits usually mean that private owners might gain some monetary value from ownership of their property. However, in the case of wetland ownership the public gains more of the value and wetland owners have a difficult time capturing positive externalities for profit.

For example, wetland areas provide flood and storm damage to adjacent lands and wetland owners typically may not charge others for benefits their property provides to adjacent areas (i.e. flood control).[38] Additionally, wetland owners may find difficulty charging users for on-site services (such as hunting or fishing) because owners may not be able to recover the extensive transaction costs involved in securing and controlling property access without charging an exorbitant user fee.[39] As a result, wetland owners seeking more highly valued uses for their property tend to convert their property to agricultural use or sell it to developers.[40] Market distortions (such as subsidy programs and tax benefits for wetland development), along with public management problems (from institutional and political biases causing the favoring of commodity production), and information deficiencies about wetland values also have induced wetland loss and degradation.[41]

C. *Economic (Market) and Ecological Values (Non-market Values)*

Remaining wetlands have increased in public value due to the extensive loss and degradation. Changed environmental policies and societal perceptions also reflect increased interest and appreciation for wetland values. In order to establish a successful

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Cindy Lassonde eds., 1992). The Fish and Wildlife Services acquired a perpetual conservation easement on the area and assigned the site to a national wildlife refuge for management and administration. *Id.* at 181.

37. SCODARI, *supra* note 20, at 14.
38. *Id.*
39. *Id.*
40. *See id.*
41. *Id.* at 14-17.

credit-trading program for any natural resource, we must place a value on that resource. However, valuing any natural resource, such as air or water, may be a difficult task. Some may contend that the flaws in the mitigation banking credit program result from the problems with establishing a valuation system for this natural resource. Environmentalists may criticize the credit program for failing to account for all wetland values and functions. In any case, governmental agencies administering the mitigation banking program could resolve measurement problems inherent in mitigation banking by providing a *consistent* valuation program that accounts for both market and non-market values. Currently, federal guidance merely *suggests* a functional valuation approach.

So, what market and non-market values do swamps, bogs, and marshes offer? Values or functions of wetlands differ depending on the season as well as the characteristics of the soil, water, climate, vegetation, and topography. One may place a monetary value on some wetlands commodities, such as peat, cranberries, hay, timber and services, (like water treatment). However, similar to other natural resources, wetlands also provide non-market public values (i.e. aesthetics). These values and functions are interrelated and difficult to discern since the ecological services (i.e. providing nutrients for many species) relate to the economic values (i.e. commodities produced).

The Environmental Protection Agency (EPA) advises that wetlands produce different resources and commodities depending on their location and type (i.e. marsh, bog, fen), but most wetlands yield fish, provide recreational opportunities, improve water quality, and assist flood control.[42] The Agency asserts that 71% of the $3.3 billion dockside fish value (the basis of the $26.8 billion fishery processing and sales industry) directly or indirectly depend on coastal wetlands.[43] Over 95% of the commercially harvested fish and shellfish in the United States, including shrimp, blue crab, oyster, striped bass, and catfish depend on wetlands either as temporary or permanent habitats.[44] Wetland areas may serve as sites for spawning during flood season or as nurseries until the fish mature and move offshore.[45] Some commercial fish indirectly use wetlands by feeding off recreational fish that use wetlands for

42. *See* Envtl. PROTECTION AGENCY, WETLANDS FACT SHEETS: ECONOMIC BENEFITS OF WETLANDS 1 (1999) [hereinafter EPA Factsheet No. 4] *available at* <http://www.epa.gov/OWOW/wetlands/wetland1.html>.

43. *See id.*

44. MITSCH & GOSSELINK, *supra* note 1, at 568.

45. *Id.* at 514.

survival.[46] Essentially, wetlands provide important resources for our commercial fishing industry.[47]

These areas also contain natural food and fiber, creating wildlife habitats.[48] Consequently, wetlands also offer recreation areas for hunting, fishing, birdwatching, or wildlife photography—activities that added $59.5 million to the 1991 national economy.[49] Recreational opportunities near wetlands fill a vital personal and societal need for physical exercise, self-expression, and leisure.[50]

Wetlands improve water quality, recharge and discharge groundwater, mitigate flood damage, and dissipate erosive forces. Wetlands perform costly water treatment operations by filtering and removing sediments, toxic substances, and excess nutrients.[51] For example, in 1991, the EPA estimated that it would cost $5 million dollars to construct a water treatment plant to perform the functions that the wetland area of the Congaree Bottomland Hardwood Swamp in South Carolina performs, not including plant operational and maintenance costs.[52]

Some wetland areas replenish domestic, agricultural, and industrial water supplies by recharging groundwater; they may also discharge groundwater maintaining soil moisture for nearby agricultural areas.[53] Wetlands hold storm waters and control flooding and the Minnesota Department of Natural Resources has estimated that each acre-foot of flood water storage costs $300 to replace (in 1991 dollars).[54] Moreover, if one acre of wetland that holds 12 inches of storm or flood water is eliminated, the cost to replace that area would be $300.[55] Wetland vegetation stabilizes the soil at the edge of the shoreline, thus dissipating erosion, anchoring the shoreline, and diminishing the impact of waves, currents and water level fluctuations.[56]

Other researchers indicate that commodities such as hay, peat, timber, cranberries, pelts, and phosphate may be harvested from

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46. *Id.*
47. *See* RICHARD T. REPPERT, ET AL., WETLAND VALUES: CONCEPTS AND METHODS FOR WETLANDS EVALUATION 47 (1979).
48. *See id.* at 50.
49. EPA Factsheet No. 4, *supra* note 42.
50. *See* REPPERT, *supra* note 47, at 50.
51. EPA Factsheet No. 4, *supra* note 42.
52. *See id.*
53. PAUL F. SCODARI, WETLANDS PROTECTION: THE ROLE OF ECONOMICS 12 (1990).
54. EPA Factsheet No. 4, *supra* note 42.
55. *Id.*
56. SCODARI, *supra* note 53, at 12.

wetland areas.[57] Some reports estimate that existing wetlands are valued for commercial marine harvest at $10 billion; fur harvest at $300-400 million; and recreation at $10 billion.[58]

Scientists and researchers also credit wetlands for furnishing non-market values. Ecologically, the abundant processes of wetland sites feed and shelter an extensive array of species and are vital to species survival.[59] Generally, wetlands provide archeological, educational, and research sites.[60] Furthermore, the distinctive landscapes of wetlands add to our nation's aesthetics and global air quality.[61]

D. Valuation Methods

Quantifying the many functions and values wetlands offer proves difficult and disagreements arise regarding the accuracy of each method. However, state, local, and federal wetland protection or management programs require some evaluation of wetland areas impacted, both before and after alteration. Choice of wetland valuation method largely depends on individual circumstances and program requirements.[62]

For example, the National Environmental Policy Act requires environmental impact statements that include both ecological and economic evaluation of wetland areas.[63] Some states have similar state statutory requirements. Wetland development projects also require wetland evaluation techniques.[64] Politicians, wetland managers, and scientists frequently use wetland evaluation methods

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57. *See* SCODARI, *supra* note 20, at 50.

58. Robert E. Beck, *The Movement in the United States to Restoration and creation of Wetlands*, 34 NAT. RESOURCES J. 782, 789, n.44 (1994).

59. *See* ENVTL. PROTECTION AGENCY, WETLANDS FACT SHEETS: VALUES AND FUNCTIONS OF WETLANDS 1 (1999) [hereinafter EPA Factsheet No. 2] *available at* <http://www.epa.gov/OWOW/wetlands/wetland1.html>. As wetland leaves and stems breakdown into the water, they produce "detritus," an enriched material providing nutrients for plants and algae, and food for fish and insects. *Id.*

60. *See* MITSCH & GOSSELINK, *supra* note 1, at 524.

61. *See id.* at 524-35. *See also* REPPERT, *supra* note 47, at 50.

62. *See* MITSCH & GOSSELINK, *supra* note 1, at 527-540. *See also* U.S. ARMY CORPS OF ENGINEERS, WETLANDS RESEARCH PROGRAM, WRP TECH. NOTE WG-EV-2.2, METHODS FOR EVALUATING WETLANDS FUNCTIONS (1994) *available at* <http://www.wes.army.mil/el/wftc/wrp/tnotes/wgev2-2.pdf>.

63. *See id.* at 527. *See also* 42 U.S.C. §§ 4321-4370d (1999); 40 C.F.R. Parts 1500-1508, Council on Environmental Quality, Forty Most Asked Questions Concerning National Environmental Policy Act Regulations, 46 Fed. Reg. 18,026 (1981); Exec. Order No. 11,514, Protection and Enhancement of Environmental Quality (1970).

64. *See* MITSCH & GOSSELINK, *supra* note 1, at 530-31.

to analyze wetland protection benefits resulting from program and policy changes.[65]

Mitigation banking accounting procedures (credit and debiting) rely on designated units of trade (currency). Mitigation banks determine their "currency" based on the wetland valuation method that mitigation banking agreement signatories select. The Army Corps of Engineers and the EPA's federal guidance regarding mitigation banking does not require use of a specific valuation method. The federal program merely recommends using *functional* assessments, as opposed to an acreage assessment (both are described below). The federal guidance leaves assessment methods up to the mitigation banking agreement signatories that will agree on valuation methods that parties will use to assess wetland impacts and bank credits.[66]

Without a set valuation method, potential mitigation bankers who want to participate in a wetland credit trading program suffer from uncertainty in determining what their rights will be worth and incentives to buy and sell such rights are stifled. Also, wetland valuation methods for individual project compensatory mitigation may be different than for a bank and this may place bankers at a perceived or actual disadvantage. The fact that many methods to assess wetland values and functions exist also may cause uncertainty and unpredictability in determining the economic value that wetland mitigation banking credits hold.

1. Valuation methods generally—Scientists and wetland managers have created hundreds of methods to appraise wetlands[67] to accommodate the diverse types and locations of this environmental resource. Assessment systems attempt to evaluate the very different types and complexities of wetlands such as a San Francisco Bay salt marsh, a Cape Cod cranberry bog, and a Nebraska sandhill.

Due to the diversity of wetland functions and values, accurate valuation of this natural resource requires an interdisciplinary approach that accounts for benefits, services, and functions supporting what *Ecological Economics* calls "nature's 'household' (ecology) and mankind's 'household' (economics)."[68] Assessment methods attempt to quantify the societal values wetlands provide.

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65. SCODARI, *supra* note 20, at 39-50.
66. *See* Mitigation Banking Guidance 1995, *supra* note 4, at 58,612.
67. *See* ELI Report, *supra* note 5, at 77.
68. CAROLLYNE HUTTER, GUIDE TO THE FIELD OF ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS 6 (2d ed. 1996) (quoting *Ecological Economics*).

Many wetland valuation methods do not reflect the combined values accounting for ecology and economics. For example, valuation methods may use simple indices such as acreage (i.e. conducting an inventory of wetland areas by types) or production/diversity measures (i.e. species richness or flood water volume).[69] Other evaluation methods determine a wetland's worth based on the best professional judgment of experts, a subjective approach that relies on consistency and documentation.[70]

2. *Site-specific and function-specific approaches*—Rather than these appraisal approaches, mitigation bankers and agreement signatories may choose to use a narrowly-tailored method eliciting site-specific and function-specific appraisals, such as the Fish and Wildlife Services (FWS) technique, the Habitat Evaluation Procedure (HEP). Narrowly-tailored valuation methods such as HEP focus on a specific wetland function or service.[71] The FWS developed this technique specifically to evaluate the fish and wildlife habitat function of a natural environment such as a wetland. This procedure *quantifies fish and wildlife habitat*; once evaluators determine the study area (delineating land covers), they must select an evaluation species based on public interest and/or economic value.[72] Evaluators then calculate the wetland's suitability for habitat using the Habitat Suitability Index (HSI) models (less than 200 to chose from) for each species selected; the HSI for each species will indicate "the percentage of the optimum habitat support" the land cover in question provides.[73] Evaluators then calculate Habitat Units (HUs) by multiplying the HSI "by the number of acres that fall within a distinct vegetation cover type."[74] The federal guidance regarding mitigation banking projects suggests HEP as a viable functional assessment method.

3. *Broadly-tailored assessments*—Bankers and signatories may select a broadly-tailored method that assesses a wide spectrum of wetland functions, such as the procedure that the Army Corps of

69. *See* ELI Report, *supra* note 5, at 78-79; LEONARD SHABMAN, ET AL., NATIONAL WETLAND MITIGATION BANKING STUDY: EXPANDING OPPORTUNITIES FOR SUCCESSFUL MITIGATION: THE PRIVATE CREDIT MARKET ALTERNATIVE 52 (Institute for Water Resources Report 94-WMB-3, 1994).

70. *See id.*

71. *See* ELI Report, *supra* note 5, at 81. *See also* U.S. ARMY CORPS OF ENGINEERS, WETLANDS RESEARCH PROGRAM, WRP TECH. NOTE WG-EV-2.2, METHODS FOR EVALUATING WETLANDS FUNCTIONS (1994) *available at* <http://www.wes.army.mil/el/wftc/wrp/tnotes/wgev2-2.pdf>.

72. ELI Report, *supra* note 5, at 78.

73. *Id.* at 81.

74. *Id.* at 82.

Engineers, Federal Highway Administration, and the EPA developed called the Wetland Evaluation Technique (WET). Unlike HEP, WET attempts to include wetland goods and services other than animal and plant life.[75] Although different versions of WET exist, under the initial design, analysts gather information regarding 80 wetland characteristics (indicators, such as soils and land cover), and then "combine[ ] the indicators into three ratings [low, moderate, high] for each of eleven wetland functions", such as groundwater recharge and discharge, and floodwater storage.[76] Analysts must qualitatively rate each function for "effectiveness" (ability to perform the function), "opportunity" (opportunity to be effective), and "social significance" (importance of the function to society).[77] Broadly-tailored methods such as WET generally provide qualitative ratings, but most banks that use these evaluation methods convert their ratings into quantitative values.[78] Some banks use methodologies that combine approaches,

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75. *See* MITSCH & GOSSELINK, *supra* note 1, at 531. The 1987 WET has been followed by the Environmental Monitoring and Assessment Program and the Hydrogeomorphic Approach (HGM). *See* Michael J. Mortimer, *Irregular Regulation Under Section 404 of the Clean Water Act: Is the Congress or the Army Corps of Engineers to Blame?*, 13 J. ENVTL. L. & LITIG. 445 (1998). In 1997, the EPA, DOT, FWS, DOD, DA and other federal agencies announced the National Action Plan to Implement the Hydrogeomorphic Approach to Assessing Wetland Functions. *See* 62 Fed. Reg. 33,607 (1997). The agencies announced that the HGM methodology would be used as a tool for assessing wetland functions and the Plan indicated the strategies that these agencies would follow in developing regional HGM guidebooks. *See id.* at 33,608.

The HGM approach was described as a "tool to be used in making regulatory decisions, at a Federal, state or local level... also [as useful] in the decision making process for applications such as mitigation banking...." *Id.* The HGM, primarily intended for use by the U.S. Corps of Engineers, is a functional assessment used to determine a proposed project's impact on wetland functions. SMITH, R.D., ET.AL., U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION, AN APPROACH FOR ASSESSING WETLAND FUNCTIONS USING HYDROGEOMORPHIC CLASSIFICATION, REFERENCE WETLANDS, AND FUNCTIONAL INDICES, TECH. RPT. WRP-DE-9 1 (1995) *available at* <http://www.wes.army.mil/el/wetlands/wlpubs.html>. The HGM entails "first, classif[ying] wetlands based on their hydrogeomorphic characteristics (i.e., landscape setting, water source, hydrodynamics), second it uses reference to establish the range of functioning of the wetland, and third it uses a relative index of function calibrated to *reference* wetlands, to assess wetland functions." 62 Fed. Reg. 33,607, 33,609 (1997). *See also* R. Daniel Smith, "Hydrogeomorphic Approach to Assessing Wetland Functions Developed Under Corps' Research Program, The Wetlands Research Program Bulletin (Oct. 1994) *available at* <http://www.wes.army.mil/el/wrtc/wrp/bulletins/v4n3/article1/v4n3a1.html>.

76. ELI Report, *supra* note 5, at 85.

77. *Id.*

78. *See id.*

accounting for wetland production and diversity as well as wetland functions.[79]

4. Economic evaluations—As of 1993, no wetland mitigation banks used economic analysis as their assessment method.[80] Federal guidance does not prohibit mitigation bankers and signatories from using economic valuation methods to estimate the monetary value of services that wetland functions provide.[81] Since society does not trade most wetland outputs in organized markets and price data is unavailable, economic techniques have developed to determine the dollar value (the amount the public is willing to pay for the wetland product or service (WTP)) of non-market wetland outputs.[82]

Some economic valuation methodologies assess wetland goods by determining what amounts producers of wetland commercial goods, such as fish or small animal pelts, would be willing to pay to use a wetland good as a fixed factor of production, above what they actually pay.[83] An economic valuation method may also assess the final wetland goods value using the public's aggregate net WTP for recreational opportunities and aesthetics.[84] Valuation methods include the Travel Cost Method (assessing a wetland based on travel and other expenditures incurred to visit a recreational site) and Contingent Valuation Method (surveying consumers regarding their valuation).[85]

Other economic valuation approaches do not use WTP, but assess intermediate wetland services, such as water damage prevention outputs, by estimating costs for alternatives to wetland services.[86] The Replacement Cost Method (cost of a technological substitute) and Damage Cost Method (value of service based on the cost of damage if service is lost) are examples of this type of valuation approach.[87]

5. Evaluation methods selected by banks—Many mitigation banks seem to select an acreage method or some form of the HEP

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79. *See id.* at 88.
80. *Id.* at 89.
81. *See id.*
82. SCODARI, *supra* note 53, at 23; *see also* U.S. ARMY CORPS OF ENGINEERS, WETLANDS RESEARCH PROGRAM, WRP TECH. NOTE WG-EV-2.1, PROCEDURES FOR EVALUATING WETLANDS NON-MARKET VALUES & FUNCTIONS (1994) *available at* <http://www.wes.army.mil/el/wftc/wrp/tnotes/tnotes.html>.
83. SCODARI, *supra* note 53, at 32.
84. *Id.*
85. *Id.* at 32-34.
86. *Id.* at 39-42.
87. *Id.*

method.[88] Their choice may be based on simplicity since these methods result in a specific, easily identifiable number. A few banks use WET, but that technique generally provides qualitative results. The HEP method provides function-specific results, focusing on a wetland's fish and habitat function. The WET method assesses a number of wetland functions, but was created to provide qualitative results. Banks may prefer quantifiable results to make accounting (debiting credits) easier.

E. Barriers to Accurate Valuation Exist, but Regulatory Agencies Could Overcome These

The mitigation banking credit system suffers from valuation problems due to science, selection, and oversight. Scientists find it difficult to predict wetland functions. Potential bankers face a problem selecting a method that benefits the bank and obtaining agreement from all signatories. While most valuation methods have some flaws, regulators could overcome this hurdle by mandating a specific valuation system that combines ecological and economic wetland values and functions. Activities of scientists, bankers, and regulators add to the systems flaws, but regulators could overcome valuation drawbacks.

Scientists have the ability to identify wetland functions present and consequently, specific wetland goods produced, by observing wetland biological and physical characteristics.[89] Scientists and researchers experience difficulty quantifying wetland characteristics, functions, and benefits and linking quality and quantity of observed (pre-development) and predicted (post-development) goods and services these areas produce.[90]

Accurately assessing wetland functions requires scientists, developers, and regulators to predict effects of human activities on wetland components and properties (for both the site affected and the created or restored site) and relate their predictions to changes in the surrounding ecosystem.[91] Researchers contend that incomplete and uncertain information exists regarding wetlands and how their ecosystems operate, how they fulfill diverse functions, and how these should be measured.[92]

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88. By 1993, 15 of 46 existing banks used an acreage-type assessment method, 13 banks used some form of HEP, 4 banks used WET or WET combined with best judgment. *See* ELI Report, *supra* note 5, at Appendix B.

89. SCODARI, *supra* note 53, at 17.

90. *Id.* at 18.

91. SHABMAN, *supra* note 69, at 11.

92. *See id.* (citing the Conservation Foundation).

Many wetland scientists complain that assessment tools fail to account for each wetland's relation to surrounding landscapes and ecosystems, especially when performing habitat support functions; they assert that wetland valuation methods should consider wetland characteristics such as density and connectivity.[93] In any case, the measurement problems inherent in the mitigation banking system of credits and debits valuation reflect the difficulties in accurate wetland valuation.

Problems exist regarding wetland mitigation bank credit trading units due to both the many assessment systems available and the regulatory failure to mandate a specific assessment method. Since regulators have so many valuation methodologies to chose from, they should select the procedure or combination that provides the most accurate valuation and accounts for the many different wetland types and functions. Regulators understand that for a successful credit system a mitigation bank currency "must be (1) simple to determine and to monitor, and 2) able to represent a sufficient range of values and functions."[94] Yet, regulators do not mandate using a specific valuation method that could provide these two keys to success.

Regulators have not established consistent standards for bankers and the absence of a consistent currency may cause perceived inequities both among banks and between banks and individual projects. The absence of consistent currency may also cause bankers to be uncertain about the economic value of their credits. As a result, incentives for creating and buying credits are lessened and fewer potential participants will risk investing in mitigation banking.

III. Institutional Problems: A Murky Statutory and Regulatory Framework

With the increased interest in protecting wetlands as a natural resource, many wetland valuation methods have developed causing inconsistency among evaluators, scientists, and policymakers. The regulatory scheme established to protect wetlands also reflects a "murky" framework for prospective wetland developers. The regulatory framework of protection is expensive, extensive, complicated, cumbersome and in some cases, causes conflict between federal, state, and local government requirements.[95]

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93. *Id.*
94. ELI Report, *supra* note 5, at 91.
95. *See* DENNISON & BERRY, *supra* note 3, at 213.

Some might contend that such a confusing system would result in a great demand for mitigation bankers who could provide developers with wetland credits for a fee and developers could obtain a permit with more ease. Developers could avoid the "red tape" of the permit process by purchasing bank credits and they also could transfer responsibility for maintaining and monitoring their compensation sites.

Two circumstances minimize credit purchase as an option for developers. First, regulators make permits easy to obtain and thus, fewer incentives for purchasing a mitigation bank's credit exist.[96] Second, due to the regulatory "red tape" involved in the mitigation banking process itself, developers may find that credits are not available to purchase.[97]

This section of the article describes the somewhat burdensome process involved in establishing a mitigation bank and the institutional problems that minimize the wetland mitigation banking option.

A. Clean Water Act 404 Permitting Process

Although other environmental statutes may affect wetlands, the federal setting for wetland protection has evolved from the Clean Water Act's Section 404 prohibiting "discharge of dredged or fill material" into "navigable waters" without a permit.[98] States may assume control over the permitting process for "nonnavigable waters,"[99] or may require additional state permitting.[100] The EPA sets criteria for permit applications while the Army Corps of

96. Many projects may fall into a general permit category providing blanket authorization for certain regional or national activities. H. Michael Keller, *Wetlands and Section 404 Permitting*, 9 UTAH B.J. 8, 10 (June/Jul 1996). In 1994, 82% of all applicants were covered by general permitting (40,000 applicants) and the other individual applicants obtained approval. PERCIVAL, *supra* note 16, at 976. In 1994 only 0.7% of permit applications were denied. *Id.* Some environmentalists who analyze the 404 permitting process point to the high approval rate as well. Alyson C. Flournoy, *Preserving Dynamic Systems: Wetlands, Ecology and Law*, 7 DUKE ENVTL. L. & POL'Y F. 105, 126 (1996).

97. *See infra* notes 107-132 and accompanying text discussing the regulatory process.

98. 33 U.S.C. §1344 (a) (1999); *see* Keller, *supra* note 96, at 8.

99. ENVTL. PROTECTION AGENCY, WETLANDS FACT SHEETS: STATE OR TRIBAL ASSUMPTION OF THE SECTION 404 PERMIT PROGRAM 1-2 (1999) *available at* <http://www.epa.gov/OWOW/wetlands/facts/fact23.html>.

100. *See* MITSCH & GOSSELINK, *supra* note 1, at 569. New Jersey and Michigan have assumed control over the federal Section 404 permitting process for nonnavigable waters. William W. Sapp, *Mitigation Banking: Panacea or Poison for Wetlands Protection*, 1 ENVTL. LAW 99, 102 (1994).

Engineers administers the permit program.[101] The EPA has established specific requirements and guidelines for both the permitting process and mitigation banking.[102] Mitigation banking provides a market-incentive approach for applicants who must compensate for the wetlands losses that their developments cause.

Although Section 404 of the Clean Water Act does not explicitly mention "wetlands," these areas are subject to the statute's permit requirement, as "waters of the United States."[103] Prior to discharging dredge or fill material into a wetland, developers must obtain a permit from the Army Corps of Engineers.[104] The 36 district offices of the Corps review projects to determine whether the applicant complies with the EPA guidelines[105] and the district engineer decides whether to grant the permit, taking into consideration "conservation, economics, aesthetics," along with other factors.[106] In support of the "no net loss" policy, the guidelines require applicants to *mitigate* the project's impacts by taking "appropriate and practicable steps" that "will minimize potential adverse impacts . . . on the aquatic ecosystem."[107]

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101. *See* ENVTL. PROTECTION AGENCY, WETLANDS FACT SHEETS: SECTION 404 OF THE CLEAN WATER ACT: AN OVERVIEW (1999) *available at* <http://www.epa.gov /OWOW/wetlands/wet10.html> [hereinafter EPA Factsheet No. 10].

102. *See* 60 Fed. Reg. 58,605 (1995).

103. *See* PERCIVAL, ET AL., *supra* note 16, at 977; Natural Resources Defense Council v. Calloway, 392 F. Supp. 685 (D.D.C. 1975); U.S. v. Riverside Bayview Homes, Inc., 474 U.S. 121 (1985).

104. The EPA has veto authority. *See* Sapp, *supra* note 100; MITSCH & GOSSELINK, *supra* note 1, at 568. Discharges of dredged or fill material associated with normal, ongoing, established farming, forestry, and ranching activities are exempt from the permit requirement. EPA Factsheet No. 10, *supra* note 101; ENVTL. PROTECTION AGENCY, WETLANDS FACT SHEETS: EXEMPTIONS TO SECTION 404 PERMIT REQUIREMENTS 1-2 (1999) *available at* <http://www.epa.gov/OWOW /wetlands/facts/fact15.html>; *see also,* Jason Perdion, Comment, *Protecting Wetlands Through the Clean Water Act and the 1985 and 1990 Farm Bills: A Winning Trio*, 28 U. TOL. L. REV. 867, 874 (1997); Anthony P. Farrell, Comments and Casenotes, *Agricultural Non-Point Source Pollution and Wetlands: A Sensible Approach*, 1 MO. ENVTL. L. & POL'Y REV. 74, 76-77 (1993).

105. *See* Keller, *supra* note 96; *see also* 40 C.F.R. §§230-230.80 (2000) for the EPA's Guidelines. In accordance with 40 C.F.R. §230.10(a), the Corps may only grant the permit if no "practicable alternatives" (not involving a discharge into the wetlands) exist that have a less adverse environmental impact. *Id. See also*, Shirley Jeanne Whitsitt, *Wetlands Mitigation Banking*, 3 ENVTL. LAW. 441, 450 (1997).

106. MITSCH & GOSSELINK, *supra* note 1, at 569.

107. 40 C.F.R. § 230.10 (d) (2000).

B. *The Environmental Protection Agency and Department of the Army Agreement Concerning the Determination of Mitigation Under the Clean Water Act 404 Guidelines*[108]

Differing agency views evolved regarding the mitigation requirement.[109] To clarify policy and resolve conflicts, a 1990 memorandum of agreement between the EPA and the Army Corps of Engineers supplemented the EPA guidelines regarding "the level of mitigation necessary" by requiring a "sequencing" process.[110]

The EPA sequencing requirement mandates that applicants show that they have "taken steps to avoid wetland impacts where practicable"; "minimized potential impacts to wetlands"; and "provided compensation for any remaining unavoidable impacts through activities to restore or create wetlands."[111] "Sequencing" requires applicants to avoid adverse wetland impacts first, then alter their plans to mitigate unavoidable impacts, and finally, to compensate for wetland losses using compensatory mitigation.[112] This can be a tedious requirement for applicants with subjective agency enforcement standards. One regional agency representative may require major plan modifications while another may automatically authorize the wetland impact.

The 1990 agreement also included a requirement for sequencing the *type* of compensatory mitigation: on-site when practicable, then off-site in the same geographic area if practicable; and in-kind preferred over out-of-kind.[113] By requiring sequencing, federal agencies ensure that developers do not cause avoidable damage to wetlands with the intent to provide compensatory mitigation.

Developers and bankers complain that the sequencing process represents a major obstacle to the mitigation banking program's success. This process presents a subjective system of "determining

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108. Memorandum of Agreement (MOA) Between the Environmental Protection Agency (EPA) and the Department of the Army (DA), Concerning the Determination of Mitigation Under the Clean Water Act §404 (b) (1) Guidelines, 55 Fed. Reg. 9,210 (1990) <http://www.epa.gov/OWOW/wetlands/regs/mitigate.html>; [hereinafter 1990 MOA].

109. *See* William L. Want, *The Army-EPA Agreement on Wetlands Mitigation*, 20 ENVTL. L. REP. 10,209 (1990).

110. 1990 MOA, *supra* note 108.

111. EPA Factsheet No. 10, *supra* note 101.

112. *See* Keller, *supra* note 96, at 10.

113. *See* 1990 MOA, *supra* note 108, at 9,212.

whether proposed wetland impacts should be authorized and whether permitted impacts would be better mitigated for in a bank or on-site."[114] Applicants cannot enjoy the benefits of a mitigation bank if they must complete a tedious sequencing process prior to purchasing credits. Applicants may find that banks do not offer any advantages for them since they must fulfill sequencing requirements anyway. Once again, federal regulators could eliminate the unpredictability that sequencing causes.

If potential bankers could depend on agency consistency in sequencing standards, another uncertainty of mitigation banking would no longer exist. Pursuant to the "on-site and in-kind" requirements, regulators usually require banking to occur in the same watershed as the impacted wetland area, drastically decreasing the service area.[115] The sequencing and preference requirements also adversely affect the demand for commercial credits by limiting the credit sales geographical service area and thereby reducing credit suppliers to compete in the same market.[116] Regulators provide an inflexible system and by including such requirements, ensure failure of a viable mitigation banking credit-trading program.[117]

C. *Federal Guidance for the Establishment, Use and Operation of Mitigation Banks*[118]

The mitigation banking system gradually developed as an option for permit applicants to streamline the permit process and compensate for adverse impacts to wetlands. By 1995, nine agencies involved (including the EPA, the Corps, and FWS) published guidance regarding the operation of mitigation banks, "to assist Federal personnel, bank sponsors, and others in meeting" Section 404 requirements.[119] The federal guidance requires bankers to:

> enter into a binding agreement with the Mitigation Bank Review Team . . . that specifies the location and amount of wetlands . . . to be restored; provides a timetable for

114. 1996 WL 119879 (F.D.C.H.) (Mar. 14, 1996) (Statement of John H. Ryan, Land and Water Resources, Inc.).

115. Whitsitt, *supra* note 105, at 468.

116. *Id.*

117. *See infra* notes 200-207 and accompanying text discussing the inflexibility, inconsistency, and uncertainty involved in the mitigation banking system.

118. *See* 1990 MOA *supra* note 108; Mitigation Banking Guidance 1995, *supra* note 4.

119. Mitigation Banking Guidance 1995, *supra* note 4, at 58,606.

> implementation of the restoration plan; requires the banker to account for the wetland impacts mitigated at the site; establishes suitable financial assurances that mitigation will occur; and requires monitoring of the site to demonstrate success.[120]

By publishing this guidance, federal agencies attempted to ensure that mitigation banks (especially commercial ventures) represent viable arrangements, economically efficient ventures, and flexible mitigation opportunities for permit applicants.[121] The guidance provides prospective mitigation bankers with a framework for goal setting, site selection, technical feasibility, plan requirements, and limitations on credits involving preservation and upland areas.[122] The agencies require a prospective bank sponsor to submit a prospectus that will serve as the basis for the banking instrument, describing details on physical, legal, operational, and accounting characteristics.[123]

Prior to establishing a mitigation bank, signatories form a Mitigation Bank Review Team comprised of agency representatives (EPA, Corps, FWS, state, local and others depending on the project's use) and the team facilitates the drafting of the banking instrument.[124] Agencies become signatories to the banking-enabling instrument. Federal guidance advises that prospective bankers should not begin constructing the bank without a banking instrument.[125]

The 1995 guidance still requires applicants to avoid, then minimize impacts before the agencies will authorize them to use a particular bank.[126] Therefore, applicants (potential credit buyers) must experience the subjective sequencing evaluations prior to buying bank credits. This lessens the attractiveness of the bank credit alternative because applicants do not avoid all the Section 404 permit processing hassles.

D. Administering Agencies and the Federal Government Cause These Institutional Problems

Any administering agency responsible for a natural resource credit-trading program should have explicit legal authority,

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120. 1997 WL 760727 (F.D.C.H.) (Dec. 9, 1997) (Statement of Jim Sutliff, Ohio Wetlands Foundation).
121. *See* Mitigation Banking Guidance 1995, *supra* note 4, at 58,606.
122. *See id.* at 58,608.
123. *See id.* at 58,609.
124. *See id.* at 58,610.
125. *See id.*
126. *See* Mitigation Banking Guidance 1995, *supra* note 4, at 58,611.

exclusive control, and technical capability. [127] The mitigation banking program lacks at least the first two and some would contend all three. No statutory authority exists for this program and establishing a bank requires many agencies to approve. Due to questionable legal authority and many agency participants, unpredictability turns many potential participants away. Many fear that their banks will not obtain approval because so many agencies have review authority and may delay the process.[128] Others fear that the federal agencies will never authorize their credit sales.[129]

All parties involved suffer from the uncertainties of this program. The Director of the EPA's Office of Wetlands admitted that prior to the 1995 policy, "there was increasing interest in commercial banking, a feeling of uncertainty by potential investors, due to the absence of a national or regional policy, greatly impeded implementation."[130] Even with federal guidance promulgated in 1995 regarding mitigation banking, program proponents contend that legislative assurances that mitigation banking is founded on a stable regulatory environment are necessary. As one proponent stated:

> legislation directing the use of mitigation banks as an equal alternative to on-site, often isolated mitigation sites, [would] quickly produce the establishment of large, function wetland habitats... [and] [a] legislative endorsement, with specific mandates, not merely guidance, will truly open the floodgates for those seeking the assurance that if they invest time and money into mitigation bank, the 'rule of the game' will not later change making the investment worthless.[131]

The federal government could resolve these issues by codifying the authority for mitigation banking and assigning one agency authority to lead, approve, and control banks.

Agency critics also contend that the Corps and EPA suffer a lack of technical capability and from "[u]nderstaffed districts,

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127. *See* Tripp & Dudek, *supra* note 6, at 375.

128. *See supra* notes 118-124 and accompanying text discussing the process for obtaining enabling document approval.

129. *See infra* notes 203-206 and accompanying text discussing the fears of potential bankers caused by uncertainty in the value of property rights (credits).

130. 1997 WL 351874 (F.D.C.H.) (June 26, 1997) (Statement of Robert H. Wayland, III).

131. 1996 WL 119884 (F.D.C.H.) (Mar. 14, 1996) (Statement of Robert D. Sokolove). At the time of this testimony before the Senate Committee on Environment and Public Works, Sokolove was the President of U.S. Wetland Services, Inc., a company that "designs, gains approval for, constructs, maintains and monitors wetland mitigation sites and banks on a national basis." *Id.*

inadequate staff training to promote uniform submittal reviews duplicate regulations with a variety of regulatory agencies and inadequate knowledge of the benefits of mitigation banking . . . ."[132] Program participants may have differing opinions regarding whether the agencies possess adequate technical capability.

IV. Mitigation Banking Intricacies: Design and Implementation Problems

A wetland mitigation bank offers private property owners and other applicants the attractive alternative of paying experts to mitigate their project's impact on wetlands.[133] According to the federal implementing agencies, the overall goal of a "mitigation bank is to provide economically efficient and flexible mitigation opportunities, while fully compensating for wetland and other aquatic resource losses in a manner that contributes to the long-term ecological functioning of the watershed within which the bank is to be located."[134] The mitigation banking program has a noble goal, but its design and implementation add to the institutional problems discussed above and the current program does not reflect economic, efficient, or flexible opportunities for potential bankers or credit buyers. The following sections will describe the program and then address the program's design and implementation flaws.

A. Description of the Program

By using a mitigation bank, applicants transfer responsibilities to experts who assist applicants to meet Section 404 requirements and obtain the required permit. Ideally, applicants transfer responsibilities and bankers establish mechanisms to streamline the Section 404 permitting process. Both could take advantage of that streamlining. The bankers and their experts could work with the regulators and set aside and restore banks of land for mitigation.[135]

1. Stakeholders and banking functions—Mitigation banks involve six key stakeholders who participate in these projects for various reasons. Each fulfill at least one specific function and some stakeholders may perform more than one function.

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132. 1996 WL 119879 (F.D.C.H.) (Mar. 14, 1996) (Statement of John H. Ryan, Land and Water Resources, Inc.).

133. *See* 1997 WL 757518 (F.D.C.H.) (Dec. 9, 1997) (Statement of Rep. Walter B. Jones).

134. Mitigation Banking Guidance 1995, *supra* note 4, at 58,608.

135. *See* 1997 WL 757518 (F.D.C.H.) (Dec. 9, 1997) (Statement of Rep. Walter B. Jones).

Stakeholders include a permit applicant (client) who provides the credit demand.[136] Some applicants may establish their own banks, while others merely will purchase compensatory mitigation credits. A client wants to obtain a Section 404 permit with the least amount of transactions costs. Banks offer clients the opportunity to streamline the process and transfer legal, financial, monitoring, and maintenance responsibilities. By purchasing credits from a bank, individual permit applicants avoid the problems of locating a suitable mitigation site, developing mitigation plans, and implementing and monitoring their mitigation site. Similar to all customers, permit applicants seek the lowest priced credits.

Another stakeholder that creates the demands for permits, and thereby the compensatory credit market, is the government regulatory agency. Government regulation creates the demand for permits by identifying wetlands and requiring permits for development in those areas.[137] The governmental fines and criminal penalties for failure to obtain permits also create incentives to obtain the required permits. The regulatory agencies also conduct quality control—otherwise credit sellers might provide inexpensive, but ecologically unsuccessful mitigation.[138]

The government gains from mitigation banks because bankers may complete the compensatory mitigation prior to the actual authorized impacts. The regulatory agencies maintain control and may evaluate and ensure that the banks produce on-site, in-kind mitigation. The government may also provide a bank site by contracting out the use of public lands as sites for commercial banks and the commercial banks would pay a fee for use of the public lands.[139]

The client will transfer legal, financial, monitoring, and maintenance responsibilities to the bank "sponsor" or "credit producer," another stakeholder involved in the process.[140] The producer creates, constructs, and develops the site using enhancement, restoration, or creation, and may hold "fee title, conservation easement, or other right of entry."[141]

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136. ELI Report, *supra* note 5, at 40.

137. PAUL SCODARI, ET AL., NATIONAL WETLAND MITIGATION BANKING STUDY: COMMERCIAL WETLAND MITIGATION CREDIT MARKETS: THEORY AND PRACTICE 2 (Institute for Water Resources Report 95-WMB-7, 1995).

138. *Id.*

139. *See* Mitigation Banking Guidance 1995, *supra* note 4, at 58,606.

140. *Id.*

141. ELI Report, *supra* note 5, at 40-41.

If another party owns the property besides the above stakeholders, then the long-term property owner will also hold a stake in the mitigation bank project. The property owner, sometimes a non-profit or natural resource organization, will exclude all uses except dedicated wetland functions.[142]

Another stakeholder, the credit evaluator who determines the credit value "proffer[ed] to and impacts mitigated by the bank", usually works for the permitting agency or a third party wetland appraiser (consultant or another resource agency).[143] This stakeholder must provide neutrality and consistency.

The bank manager (either the permitting agency, client, or independent individual, board, or trustee) conducts the operational requirements such as fund management, transaction recording, and "determining whether produced credits and proposed debiting projects meet" mitigation banking conditions.[144]

2. *Mitigation banking framework*—The type of bank that stakeholders select depends on how the banking enabling agreement divides the duties described above. Prospective mitigation bankers may establish a single-user bank where the bank provides credits for one client, public or private, for one or more projects.[145] For example, a state Department of Transportation may establish a bank to compensate for impacts on wetlands due to highway projects. Public or private organizations may establish commercial multi-user banks where the organization itself may be the primary client who sells remaining credits. A private or public multi-user banker may establish a bank to sell all credits earned to other activities in hopes of receiving a profit in this money-making venture.

The mitigation banking system has drawn participation from government agencies for their own mitigation (single-client banks), but few private commercial entrepreneurs have joined the mitigation credit market. A 1993 report indicated that almost half the existing banks were state departments of transportation operations and only one bank had formed to offer credits for commercial sale.[146]

Few nonprofit agencies have engaged in mitigation credit sales. The same report noted that only one nonprofit agency owned bank

142. *Id.* at 41.
143. *Id.* at 42.
144. *Id.*
145. *See* SHABMAN, *supra* note 69, at 13.
146. *See* ELI Report, *supra* note 5, at 5.

offered credits for general sale.[147] Nonprofit agencies could establish a mitigation bank not to make money but to ensure better wetland protection. Whatever the motive for establishing a bank, nonprofit agencies still would require regulatory and assessment certainty that the mitigation program does not provide. The absence of such certainty may dampen their participation. Some environmental groups, such as the National Wildlife Federation and the Natural Resources Defense Council, do not support banking for fear that bank failures could result in more natural wetland functions lost.[148]

3. Compensatory mitigation restrictions and techniques— Selection of the banking framework depends on organizational goals. Additionally, the federal regulatory agencies have limited mitigation banking opportunities through their published guidance. The 1995 federal mitigation banking guidance binds applicants to the mitigation sequencing rules (avoid, minimize, then mitigate impacts). The guidance also reinforces the federal government's preference for on-site and in-kind (functional wetland replacement) compensatory mitigation instead of off-site or out-of-kind mitigation banking unless no practicable opportunity exists or a bank is "environmentally preferable".[149]

Banks may either restore, create, enhance, and in some cases preserve a wetland site to provide compensatory mitigation credits. *Restoration* involves reestablishing a wetland area where the wetland functions have either ceased or have been substantially degraded.[150] Mitigation bankers may restore a site previously degraded from such activities as farming, ranching, or forestry. For example, Disney established and restored Disney Wilderness Preserve (although not a bank), a 3400-acre wetland seriously altered by cattle ranching, to mitigate for permits associated with their extension plans.[151]

Bankers may also establish or *create* a new wetland or *enhance* an existing wetland and increase aquatic functions. However, the federal guidance states that to take advantage of the increased likelihood of success, "restoration should be the first option considered when siting a bank."[152] This means that banks should

147. *See id.*
148. *See* 1996 WL 119902 (F.D.C.H.) (Mar. 14, 1996) (Statement of Jan Goldman-Carter, National Wildlife Federation).
149. Mitigation Banking Guidance 1995, *supra* note 4, at 59,611.
150. *See id.* at 58,614.
151. Flournoy, *supra* note 96, at 120.
152. Mitigation Banking Guidance 1995, *supra* note 4, at 58,608.

consider restoring "historic or substantially-degraded wetlands and/or other aquatic resources (e.g., prior-converted cropland, farmed wetlands)...."[153] Once again, regulatory agencies have limited the options for potential mitigation bankers.

B. Measurements

1. Credit valuation—Evaluation methods define a bank's currency and form the basis for replacement ratios.[154] The mitigation banking enabling document designates currency based on a type of valuation method. Federal guidance requires signatories to the mitigation bank enabling document to select an appropriate *functional* assessment method unless a functional approach would be impractical, then the parties may use an acreage valuation technique.[155] In any case, parties must decide what valuation method to use. In any method, "[c]redits represent the accrual or attainment of aquatic functions at a bank" and debits denote "the loss of aquatic functions at an impact or project site."[156]

A bank may restore, create, or enhance (and in some cases preserve) a wetland site, but generally must meet the established level of aquatic functions (determined by applying performance standards) in order for credits to be available for withdrawal (debiting).[157] On a case-by-case basis, the federal agencies may allow bankers to sell credit before a bank's maturity in order "to best reflect the particular ecological and economic circumstances of each bank."[158] This requirement places more risk on the prospective mitigation banker, who must invest in, establish, create, construct, develop, monitor, and maintain a site prior to credit sales.

2. Trading ratios (credits for impacts)—Potential bankers also may find difficulty accepting the trading ratio a regulating agency requires. Regulators who determine the trading ratio or compensation ratio (credits for impacts) seek to fulfill the "no net loss" policy. The functional units that compensate for the wetlands lost or impacted may be 1:1 or more. Regulators may increase the ratio, requiring more units as compensation in order to account for potential mitigation failure or to make up for wetland functions

153. *Id.*
154. *See* ELI Report, *supra* note 5, at 77.
155. *See* Mitigation Banking Guidance 1995, *supra* note 4, at 58,611. *See supra* notes 62-87 and accompanying text describing valuation methods.
156. Mitigation Banking Guidance 1995, *supra* note 4, at 58,612.
157. *See id.* at 58,611.
158. *Id.* at 58,606.

temporally lost during the time between credit trade (less than equivalent functional value of bank wetlands) and the time the bank wetlands reach functional maturity.[159] Regulators may also increase trading ratios to ensure that compensation accounts for no net loss in both wetland acreage and wetland functions.[160] Regulators may decide to increase compensation requirements to adjust for the values lost at the bank site especially at restoration sites where the land already had some wetland value.[161]

C. *Ecological Effects of Mitigation Banking*

Despite operational difficulties, wetland mitigation banking proponents applaud the positive effects the program has on wetlands' loss and degradation. However, mitigation banks vary with location, climate, and conditions and their environmental benefits also may be difficult to predict.

1. Advantages—Many commentators, researchers, scientists, politicians, and bankers, contend that mitigation banks provide ecologically more successful wetlands sites than on-site mitigation. Representative Walter Jones (R-NC), sponsor of recent legislation regarding mitigation banking, contends that not only is "traditional mitigation . . . too expensive, time consuming and ineffective [but] approximately 90% of on-site mitigation is unsuccessful."[162] Generally, the success of wetland mitigation banks seems due to the regulatory requirements and the oversight by many agencies. Agencies review and assist bankers in establishing feasible wetland designs and plans, in addition to requiring financial assurances. Prospective mitigation bankers enter the credit market with the intent to ecologically and financially succeed.

Mitigation bank site selection may enhance ecological success. Banks usually involve large, more self-sustaining sites providing habitat for more species and are potentially more environmentally beneficial.[163] Banks established on large parcels improve the chances of maintaining wetland functions over the long term. Bank sites may be chosen "for their connection to a matrix of preserved habitats, drawing on the insights provided by patch dynamics.

159. SHABMAN, *supra* note 69, at 54.
160. *Id.*
161. *See* ELI Report, *supra* note 5, at 94.
162. 1997 WL 757518 (F.D.C.H.) (Dec. 9, 1997) (Statement of Rep. Walter B. Jones).
163. *See* 1997 WL 759473 (F.D.C.H.) (Dec. 9, 1997) (Joint statement of Michael L. Davis, Deputy Asst. Sec. of the Army for Civil Works & Robert H. Wayland III, EPA).

[And] . . . problems of fragmentation of habitat, resilience of the relevant systems and the need for long-term management of the site . . . can be better addressed."[164]

To ensure success and environmental benefits, mitigation banks offer stakeholders greater latitude with off-site selection that more than likely will produce a "well-functioning" replacement wetland that meets regional ecological goals.[165] Additionally, unlike individual project mitigation, banks must fulfill regulatory design, performance, and maintenance requirements that may improve reliability of the applicant's restoration, creation, or enhancement efforts and ensure long-term success.[166]

Overall, mitigation banks may be ecologically more successful because banks involve scientific expertise, financial commitment, and a focus on wetland ecology and success. In contrast, project-specific compensation may involve future developers anxious to obtain a permit and less interested in ecological success at the compensation site. As regulatory agencies point out mitigation banking combines financial resources with planning and scientific expertise for a greater likelihood of success.[167]

Many banking proponents point to the fact that agencies may *require* banks to attain specific success standards while project-specific compensation may not be effective or may never occur.[168] Mitigation banks must ensure successful mitigation *prior* to development and wetland impacts, thereby avoiding temporary wetlands losses and uncertainty about compensation site success.[169]

2. Disadvantages—Critics contend that the environment might suffer from this mitigation option due to problems accurately assessing "in-kind" values and functions of wetlands lost. Environmentalists fear that with credits available, developers and regulators may neglect potential wetland impacts and rely on available credits.[170] By accepting mitigation banks as an option,

164. Flournoy, *supra* note 96, at 130.
165. Whitsitt, *supra* note 105, at 460.
166. *See* Mitigation Banking Guidance 1995, *supra* note 4, at 58,607.
167. *See id.*
168. One report found that most mitigation projects were ineffective and 34% were never undertaken. *See,* Flournoy, *supra* note 96, at 126.
169. *See* Mitigation Banking Guidance, *supra* note 4, at 58,607.
170. Laura Kelley, *A Review of Mitigation Banking, in* EFFECTIVE MITIGATION: MITIGATION BANKS AND JOINT PROJECTS IN THE CONTEXT OF WETLAND MANAGEMENT PLANS 24, 27 (Jon A. Kusler & Cindy Lassonde, eds., 1992). This argument is similar to the moral hazard argument discussed in Section IV. D. 2., *infra.*

opponents claim we anticipate and accept future wetland losses.[171] Skeptics also point to the potential harm that banking may cause when we lose small isolated wetlands with unique functions that large wetlands cannot replicate.[172] Also, wetland banks depend on experimental creation and restoration techniques and results may be unpredictable.[173]

D. Administrative Effects of Mitigation Banking

1. Advantages—Regulatory agencies involved in the permitting process contend that wetland mitigation banking provides many advantages. Mitigation banks may conserve agency resources expended for monitoring and enforcement because agencies will have fewer sites to control.[174] Generally, individual compensation projects are fragmented, isolated, and diverse and use more agency resources to monitor. Overall, mitigation banking could make the permitting process work more efficiently and agencies could act more effectively. Developers could gain the benefit of expedited processing times and reduced costs and delays.[175] When clearly structured, mitigation banking provides predictability to developers who will be more likely to fulfill regulatory requirements.

2. Disadvantages—One disadvantage some regulators may fear is the public perception that developers will now have the opportunity to "buy a permit." This criticism revolves around the theory that property based market-incentive approaches result in a moral hazard. Like other polluters, skeptics worry that permit applicants will not do their best to avoid wetland loss and degradation, but will continue to cause environmental damage "if they simply purchase the right to do so."[176] The sequencing requirement within the permitting process may alleviate some of this hazard because applicants must avoid wetland impacts before the federal agencies will accept compensation. Since sequencing adversely affects mitigation banking participation, some assert that the sequencing requirement may be abandoned.[177]

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171. *See id.*
172. *See* Sapp, *supra* note 100, at 118.
173. *See id.*
174. *See* Mitigation Banking Guidance 1995, *supra* note 4, at 58,607.
175. *See id.*
176. Carol M. Rose, *Environmental Lessons*, 27 LOY. L.A. L. REV. 1023, 1030 (1994).
177. *See* Sapp, *supra* note 100, at 117.

E. Built-in Design and Implementation Defects

Whatever the disadvantages of the program, regulators continue to describe mitigation banking as "an innovative, market-based alternative for landowners to effectively and efficiently compensate for wetland impacts . . . ."[178] However, regulators have established the mitigation banking system with built-in design and implementation flaws and have set this credit trading program up for failure. The program does not reflect economic benefits for potential bankers. Regulators have constructed a program with many inefficiencies and restrictions. The program does not have "an equitable and administratively simple method for allocating tradeable rights" and the bankers (credit sellers) face extensive transaction costs in establishing a bank.[179] While the program's underlining concept appears easy to grasp, bankers face a number of hurdles before they can begin selling credits.

First, they face administrative "red tape" involved with obtaining approval and review from several local, state, and federal agencies that comprise the Mitigation Banking Review Team.

Many bankers may find the "consensus-oriented planning" process of negotiating to obtain agreement from so many parties is burdensome and postpones action.[180]

Besides the time-consuming negotiation process, potential bankers face a system wrought with cost and uncertainty. Bankers must develop a workable agreement with many parties and either concurrently or subsequently pay money up front to physically construct the bank and maintain enough financial security to gain regulatory agency support. Replacing complex ecological functions can prove very costly "as the cost of the functional assessment, purchase of interests in land and perhaps water, construction, planting, maintenance and monitoring" may add up.[181] Potential bankers may not want to deal with the costs when a lot of uncertainty exists regarding when or if their credits will be sold.[182] Additionally, the bank must meet success standards prior to selling credits. Moreover, the costs associated with establishing a bank may not outweigh the benefits of administering a bank. The

178. 1997 WL 759473 (F.D.C.H.) (Dec. 9, 1997) (Joint statement of Michael Davis, Deputy Asst. Sec. of the Army for Civil Works & Robert H. Wayland III, EPA).

179. Tripp & Dudek, *supra* note 6, at 376-377.

180. Kelley, *supra* note 170, at 26.

181. ELI Report, *supra* note 5, at 23.

182. *See id.*

program appears to offer advantages to stakeholders involved, but the program's design and regulatory implementation may seem too tedious and onerous to overcome.

Furthermore, federal guidance advises applicants that they should not expect "that establishment of, or purchasing credits from, a mitigation bank will necessarily lead to a determination" that applicants have met Section 404 mitigation requirements.[183] As a result, more uncertainty exists. This comment in the guidance may extinguish any incentive buyers have in using banks to avoid Section 404 permitting problems because potential buyers cannot be certain what a bank can provide for them.

V. The Real Problem: Illusory Property Regime Rhetoric

Regulators sought to create a market-based incentive program to encourage wetland protection by offering the mitigation banking option. Federal actions endorsing mitigation banking, however, represent motion not action. Similar to other areas of environmental regulation, policies regarding wetland protection have "turn[ed] from the stick of mandatory technology to the carrot of economic incentives."[184] Theoretically, research indicated that efficient markets could control negative externalities and "by creating markets in pollution rights, the government could achieve any specific level of environmental quality at the lowest aggregate cost."[185] Policymakers and regulators have used the economic strategy of mitigation banking to encourage the public perception that the federal government is taking action and making progress in wetland protection.

However, similar to the acid rain program of tradeable emission rights,[186] mitigation banking suffers from a few defects. First and foremost, regulators seem to pay "lip service" to banking as a viable market-based incentive program.[187] In reality, the system

183. Mitigation Banking Guidance 1995, *supra* note 4, at 58,611.

184. Rose, *supra* note 176, at 1029.

185. Robert W. Hahn & Gordon L. Hester, *Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program*, 6 YALE J. ON REG. 109, 110-11 (1989).

186. *See id.*

187. *See* 1997 WL 759473 (F.D.C.H.) (Dec. 9, 1997) (Joint statement of Michael L. Davis, Deputy Asst. Sec. of the Army for Civil Works & Robert H. Wayland III, EPA) (describing mitigation banking as "an innovative, market-based alternative for landowners to effectively and efficiently compensate for wetland impacts . . . an important mechanism for achieving a streamlined wetlands permitting program . . . based in good science and sound judgment, increased cooperation with private participation by States, Tribes, local governments and the

and the regulatory agencies implementing the program limit bankers' abilities to efficiently, effectively, and economically engage in credit banking and trading. This portion of the article, will describe how the federal government nudges the public in a certain direction and undermines the market base.[188] The difficulties using wetlands in a natural resource credit transfer program combine with the institutional, design, and implementation problems that the federal government itself causes.

A. Property Rights Regimes at Work . . . Or Not?

Property rights regimes establish the framework for distributing and exercising property rights — the bundle of entitlements that define the rights and duties of owners.[189] Property regimes depend on types of ownership, signifying not only who has the right to control (limit access) and transfer the land (as well as the duties to manage and maintain), but also who has the right to use it.[190]

Mitigation banks may be locally, state, or federally owned (state or government property regimes)[191] or privately owned (private property regimes).[192] Mitigation banking also represents a private property regime with individuals or corporations controlling access and possessing the right to use the wetlands (and sell mitigation credits), subject to some governmental restrictions.[193] Essentially, private commercial banks represent a private property regime with individuals and corporations in the position to distribute or sell rights (credits) to others (permit applicants).

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public in wetlands protection.") *Id.*

188. This may be similar to the federal government's influence or undermining of a successful emissions trading program. *See* Lisa Heinzerling, *Selling Pollution, Forcing Democracy*, 14 STAN. ENVTL. L.J. 300, 335 (1995) (contending that the federal government also undermines the chance of a successful emissions trading program by influencing the market).

189. Susan Hanna, et al., *Property Rights and Environmental Resources*, *in* PROPERTY RIGHTS AND THE ENVIRONMENT: SOCIAL AND ECOLOGICAL ISSUES 15, 17 (Susan Hanna & Mohan Munasinghe, eds., 1995).

190. HUTTER, *supra* note 68, at 20.

191. Some researchers differentiate public property regimes (where the state holds property in trust for citizens, who have access (i.e. national parks)) from state property regimes (where the state exclusively holds the property and does not allow the general public access). *Id.* at 21.

192. State property regimes involve government ownership and control of wetland areas, but the government may grant companies and individuals the right to use or take the natural resource. *Id.* at 20-21.

193. *See id.* at 20; *see also* Hanna, *supra* note 189, at 18.

Parties who possess the property rights must limit use, coordinate users, maintain the property, and respond to changing environmental conditions—with transaction costs from "coordination, information gathering, monitoring, and enforcement."[194] Through the banking program, the government merely extends opportunities for parties who possess property rights.

Banks restore, create, or enhance a wetland site. Based on the banking agreement, the site will be assessed to determine how many credits (property rights) that bank possesses to sell. Landowners and other permit applicants may purchase property rights from a bank. The banks will retain responsibility to monitor the wetland credit sites, but landowners purchase the right to use those wetland areas (credits) to offset for wetland impacts that their projects may cause.[195]

While the permitting requirement represents some overall government control, the mitigation banking credit system reflects a market-based incentive program that uses a property regime. Ideally, a credit market for wetland mitigation would provide permit applicants with lower prices and more choices. A competitive market may raise mitigation quality, encourage innovation in creation and restoration approaches, and offer regulators and applicants a choice of various wetland types, locations, and functions.[196] However, inherent supply and demand problems exist in addition to the institutional and design problems previously addressed that minimize any potential success for mitigation banking.

B. Credit Supply and Demand Problems Inherent in the Program

Two uncertainties inherent in mitigation banking adversely affect the credit supply and demand. First, prospective mitigation bankers may find it difficult to identify where supply and demand for mitigation credit exists. They cannot predict locations where they should establish their commercial ventures to ensure financial success since they cannot predict what wetland types are in demand

194. Hanna, *supra* note 189, at 18.

195. Some landowners may also benefit when banks want to purchase their property to restore or enhance a wetland area already existing on their property. As a side benefit, the private property regime of mitigation banking may resolve wetland regulatory takings issues because the regulation may not deprive landowners of "all economically beneficial use." Whitsitt, *supra* note 105, at 451.

196. SCODARI, *supra* note 137, at 3.

for compensation and where certain mitigation banks would succeed.[197]

Second, entrepreneurs still suffer from uncertainty regarding wetland creation, restoration costs and time required which determines the mitigation credit supply.[198] The corresponding wetland development profit-potential which determines mitigation credit demand is also uncertain. Consequently, potential bankers cannot assess "when and where mitigation banks can succeed without government subsidies."[199]

Mitigation banks do offer the advantage of lower costs for "planning, implementation, monitoring, and management of mitigation projects" with the increase in acres.[200] Developers with a number of projects may have an incentive to produce a bank with credits for later use, since it would be less expensive to establish one big wetland site as opposed to many little sites.

C. Problems that Regulators or Regulations Cause

In addition to the inherent supply and demand problems, regulators and their regulations adversely affect both the supply and demand of mitigation credits. Inflexibility, inconsistency, and uncertainty plague this program.

The inflexible and subjective processes present obstacles to authorization for proposed adverse wetland impacts. Specifically, many critics contend that the regulatory context provides an inflexible approach, due to "sequencing" requirements and in-kind/on-site preferences.[201] By enforcing "on-site," "in-kind," and "restoration preferred" requirements, regulators limit the credit trading area. Others contend that regulators should not restrict the service areas for banks because it restricts available opportunities.[202] These regulatory requirements also may minimize buyer participation because purchasing bank credits do not streamline the process as much as the regulators could allow. Sequencing and

197. Dennis M. King, *Avoiding Another Taxpayer Bailout*, NAT'L WETLANDS NEWSL., Jan.-Feb. 1992, at 11.

198. *Id.*

199. *Id.*

200. Mitigation Banking Guidance 1995, *supra* note 4, at 58,606; *see also* Sapp, *supra* note 100, at 973 discussing cost-effectiveness of mitigation on larger scales.

201. *See* Lindell L. Marsh & Dennis R. Acker, *Mitigation Banking on a Wider Plane*, NAT'L WETLANDS NEWSL., Jan.-Feb. 1992, at 8.

202. *See* 1997 WL 760727 (F.D.C.H.) (Dec. 9, 1997) (Statement of Jim Sutliff, Ohio Wetlands Foundation).

preference procedures may be tedious and as stated previously, agencies may apply the standards inconsistently.

Uncertainty also exists due to the lack of statutory authority for this program. Despite the 1995 federal guidance regarding mitigation banking, many commentators contend that investors need more certainty to invest.[203] While this does not reflect a regulatory flaw, this criticism merely appears to be a cry for statutory support that codifies mitigation banks as an option. Potential bankers may not want to risk investing if regulating agencies have the opportunity to modify or eliminate the program.

The negotiation process involved in obtaining a mitigation banking agreement also represents uncertainty. The federal guidelines require many agencies to approve or review mitigation banking enabling instruments resulting in delay awaiting consensus and magnifying uncertainty.[204] Any one organization—local, state, or federal—could delay, deny, or modify the plans of a prospective banker.

Many bankers and researchers complain that requiring prospective bankers to complete and measure enhancement or restoration before authorizing credit sales may cause feelings of uncertainty and risk. Consequently, "few have been willing to make the investment to establish a bank and take the risk that adequate credit will be provided to justify the investment—prospective bank operators are fearful that once mitigation is successfully established there will be little incentive for agencies, with a bird in the hand, to provide credit for development elsewhere."[205]

Prospective bankers bear a heavy risk and may feel uncertain about the economic value of property rights they acquire in creating or restoring a wetland (the credits). Requiring total success before credit sales means credit suppliers must bear all mitigation failure costs and risks and these costs and risks are too high to ensure a competitive investment return.[206]

Prospective bankers also may fear inconsistent treatment between banks and individual project mitigation. The credit market may lack consistent quality control between banks and

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203. *See id.*
204. *Id.*
205. Marsh & Acker, *supra* note 201, at 8.
206. *See* Urban Lands Institute Wetlands Task Force, *Special Report: Response to President Clinton's Wetlands Initiative and Legislation Proposed in Congress*, URB. LAND 4 (Oct. 1993).

individual applicants (compensating with on-site wetlands).[207] The lack of a consistent valuation method and trading ratios also may reflect unpredictability for investors. Inflexibility, inconsistency, and unpredictability lead to uncertainties in property rights' (credits) values. Bankers cannot be certain what value the credits will have once they are created.

These problems combined with the high transaction costs involved in mitigation banking to potential bankers and buyers discourage them from participating. Transaction costs include initial costs to establish the bank and the time and money involved in gaining agency approval. Generally, instead of a streamlined permitting process, prospective bankers face additional "red-tape."

D. What Regulators Could Do to Create a Viable Mitigation Banking Credit Market

Despite supply, demand, and regulatory problems, after sellers and applicants bargain over price and one or more banks sell credits to one or more applicants, a wetland mitigation credit market evolves.[208] Competition among sellers must arise to ensure a rigorous market and success for this market-based incentive program.[209] However, the federal government and regulators stand in the way of the program's success.

Since regulators create demand by enforcing permit requirements, they could stimulate demand by relaxing sequencing and in-kind mitigation preference.[210] Regulators also could stimulate supply by establishing confidence in the federal program with strong agency endorsements and state authorizations.[211]

The federal government could codify authorization for mitigation banking and place one agency in charge. This would provide certainty that regulations would not eliminate the system. Additionally, negotiating a bank's enabling agreement would be less tedious if one agency controlled the approval process. Regulators could add further certainty and predictability to the program by supporting a specific valuation method and publishing comments regarding trading ratios.

Regulators should loosen the requirements for credit sales and allow some sales prior to confirmed, successful wetland areas.

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207. *See* SCODARI, *supra* note 137, at 3.
208. *Id.* at 2.
209. *Id.* at 3.
210. Sapp, *supra* note 100, at 986-990.
211. *Id.* at 990-991.

Restoring and creating wetland areas may take extensive periods of time. A successful market-based trading system requires that suppliers may sell mitigation site credits that are immature and not yet self-sustaining, thus shifting some element of risk to the "regulatory side of the equation."[212]

Regulators should assist by reducing transaction costs for potential bankers. The mitigation bank credit market would meet market level success if banks provide ecologically successful outputs and can meet area credit demand, "at prices that recover production costs."[213]

E. Regulators Stuck Between a Rock and a Hard Place

The mitigation banking program faces common problems reflected in other environmental policies. The Clean Air Act's emissions trading program suffers from many of the same obstacles, such as property rights uncertainties (regarding the value of credits), regulatory uncertainty, and high transaction costs.[214] Regulators of both the mitigation banking and emissions trading programs must respond to pressure from environmentalists, developers, interest groups, and politicians. In the case of emissions trading, regulators addressed the "moral cost" concerns of environmentalists "by designing a system in which trades are approved only if they can be shown to have a benign impact on environmental quality."[215]

Similarly, administrators of the mitigation banking program have responded to environmentalists who may think that mitigation banking entails selling the right to pollute and that producing "big wetland banks" can never replace the many isolated wetlands and their special ecological contributions. Politicians have also become interested in the potential of this innovative market-based incentive program because the potential exists to protect wetlands by using a property-rights regime based on credits.[216] Developers pressure regulatory agencies to expedite the permit process.

To keep the public and politicians happy, regulators spout pro-property illusory rhetoric to give the impression that agencies are using modern strategies to protect valuable natural resources. To

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212. Urban Lands Institute Wetlands Task Force, *supra* note 206.
213. SCODARI, *supra* note 137, at 2.
214. *See* Hahn & Hester, *supra* note 185.
215. *Id.* at 143.
216. *See infra* notes 217-222 and accompanying text discussing proposed legislative regarding mitigation banking.

deflect complaints from environmentalists, regulators inflict institutional, design, and implementation impediments including building in inflexible regulatory requirements (i.e. sequencing and preferences), uncertainties (i.e. regulatory guidance that is subject to change and involvement from numerous agencies), and inconsistency (i.e. valuation methods and trading ratios). Due to the obstacles that regulators impose, transaction costs and risks remain high causing uncertainties in property rights values and low credit supply. Meanwhile, regulators keep developers happy by raising the number of permit approvals. Self-imposed constraints on mitigation banking allows regulators to "talk the talk" of supporting market-based incentive programs in environmental protection while running a command and control program.

F. Legislation: More "Pro-Property" Propaganda?

Congress discussed legislation regarding mitigation banking during Senate Committee (March 1996) and House Subcommittee (December 1997) hearings. Through legislation, politicians hope to address the regulatory problems inherent in wetland mitigation banking while increasing incentives to develop a private credit market to make mitigation banking an attractive option for potential bankers and credit buyers.

While reflecting public and political interest, legislation does not answer the mail. The Transportation Equity Act For the 21st Century enacted in June 1998 merely indicated a preference for mitigation banking when federal highway funds are used to mitigate wetland effects for highway projects if the project impacts occur within a mitigation bank's service area.[217] This is a very limited corrective action and does not respond to the inflexibility, inconsistency, and uncertainty associated with the mitigation banking program.

In 1997, Congress proposed the "Wetlands Restoration and Improvement Act of 1997" and reintroduced this legislation in 1999 as the "American Wetland Restoration Act." [218] This proposal

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217. 23 U.S.C.S. § 103(b)(M) (1999); 1997 WL 760727 (F.D.C.H.) (Dec. 9, 1997) (Statement of Jim Sutliff, President of Ohio Wetlands Foundation). *See also* Mitigation of Impacts to Wetlands and Natural Habitat, 64 Fed. Reg. 16,870, 16,871 (1999).

218. H.R. 1290, 105th Cong. (1997) reintroduced as H.R. 1290, 106th Cong. (1999). Representative Walter Jones (R-NC) sponsored both bills. The 1997 proposed legislation died in the House Committee on Transportation and Infrastructure in June 1998, while the 1999 proposed legislation was referred to the same committee in March 1999.

codifies an evaluation and approval process for mitigation banks, requires financial and legal assurances of success,[219] but does not authorize credit sales until the Corps issues the bank its charter.[220] This bill would provide mitigation bankers with the enabling act and federal authorization they have requested and additional certainty for their "risky business."

The "Wetlands and Watershed Management Act of 1997" would have codified mitigation banking, but critics contended that it outlined an "overly prescriptive" and "burdensome" system that would "very likely ... discourage private wetlands mitigation banking."[221] The effect of this legislation is to limit pre-sale of credits to 20% of the total number of projected bank credits if all signatories agree on success measurements and pre-sale.[222]

None of the legislation proposed would resolve the inflexibility, inconsistency, and uncertainty without the support of regulators who enforce statutes. While legislation may provide statutory support of the wetland mitigation banking program, regulators will still have the power to make or break the credit program.

VI. Conclusion

The mitigation banking credit program has a long way to go before success.[223] Gradually, interest has increased in mitigation banks. The number of wetland mitigation banks has increased exponentially since 1988 when a FWS survey identified 13, to the 1991 EPA and Corps survey identified more than 20,[224] to the

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219. H.R. 1290, 106th Cong. (1999); 1997 WL 760727 (F.D.C.H.) (Dec. 9, 1997) (Statement of Jim Sutliff, Ohio Wetlands Foundation).

220. H.R. 1290, 106th Cong. (1999).

221. 1997 WL 760727 (F.D.C.H.) (Dec. 9, 1997) (Statement of Jim Sutliff, Ohio Wetlands Foundation). Representative Wayne Gilchrest (R-MD) introduced this legislation, H.R. 2762, 105th Cong. (1997). There was no congressional action regarding this bill after the House Committee on Transportation and Infrastructure Subcommittee hearings were held in December 1997.

222. *See id.*

223. One bill proposed in 1997, "Florida Wetlands Mitigation Banking Study Act of 1997," directed the Secretary of the Army to study mitigation banks to evaluate "the potential and problems of mitigation banking." H.R. 227, 105th Cong. (1997). However no action was taken regarding H.R. 227 after the bill was referred to the House Committee on Transportation and Infrastructure, Subcommittee on Water Resources and Environment in February 1997.

224. *See* Robert Brumbaugh & Richard Reppert, *Wetlands Mitigation Banking Demonstration Study—Status and Summary, in* EFFECTIVE MITIGATION: MITIGATION BANKS AND JOINT PROJECTS IN THE CONTEXT OF WETLAND MANAGEMENT PLANS 12 (Jon A. Kusler & Cindy Lassonde eds., 1992). By 1993, an Environmental Law Institute published report indicated that forty-six

EPA's 1999 report of approximately 100 mitigation banks both operating and proposed for construction.[225] Clearly, disincentives exist that minimize participation in mitigation banking, both credit selling and purchasing.

While advantages for stakeholders do exist, the incentives to initiate such a venture are limited. Wetland mitigation banking offers developers an opportunity to purchase credits and transfer legal and financial liability for failure to bankers.[226] However, as the Urban Lands Institute Wetlands Task Force in their *Response to President Clinton's Wetlands Initiative and Legislation Proposed in Congress* predicted, private capital will not be used for mitigation banking "until some set of incentives is created that allows it to attract private capital."[227] The governmental agencies must encourage participation not by motion but by action.

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mitigation banks existed, and sixty-three were proposed. *See* ELI Report, *supra* note 5, at Appendix A (1993). The report listed the majority of these banks as single-client Department of Transportation banks, or local government (own use) banks. *See id.* Although public credit markets face the additional difficulty of requiring substantial public funding for front money for bank construction, administration, and management, more public banks exist. *See* SHABMAN, *supra* note 69, at 11. As of May 1999, the EPA reported approximately 100 mitigation banks both operating and proposed for construction existed across 34 states, "including the first private entrepreneurial banks." ENVTL. PROTECTION AGENCY, WETLANDS FACT SHEETS: WETLANDS MITIGATION BANKING 1 (1999) *available at* <http://www.epa.gov /OWOW/wetlands/facts/fact11.html>.

225. *See* ENVTL. PROTECTION AGENCY, WETLANDS FACT SHEETS: WETLANDS MITIGATION BANKING 1 (1999) *available at* <http://www.epa.gov/OWOW/wetlands /facts/fact11.html>.

226. *See id.; see also* SCODARI , *supra* note 137, at 2.

227. Urban Lands Institute Wetlands Task Force, *supra* note 206.