

How Quickly We Forget: The National Flood Insurance Program and Floodplain Development in Missouri[†]

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Chesterfield Commons, the largest strip mall in the country, would have been underwater.¹ In the summer of 1993, the rain began, and did not stop until it flooded 17,000 square miles of the Midwest, damaged 70,000 buildings, killed fifty people, and caused damages exceeding \$12 billion.² Over a decade later, much of this land is home to new development, with tens of thousands of acres more planned.³ In the St. Louis region, more than \$2.2 billion worth of new commercial and residential development currently stands on land that was under water in 1993.⁴

[†] This Note was written long before the tragedy of Hurricane Katrina hit the Gulf Coast. Katrina and the flooding that followed the storm killed over a thousand people, displaced over a half million others, destroyed numerous towns, and covered New Orleans in over twenty feet of water. See Peter Slevin & Sylvia Moreno, *Biloxi Mayor: 'This Is Our Tsunami,'* WASH. POST, Aug. 31, 2005, at A1; Michael Powell & Michael Grunwald, *The Lure of Coastal Life Outweighs the Risks*, WASH. POST, Sept. 7, 2005, at A1; *New Orleans Shelters to be Evacuated*, CNN.COM, Aug. 31, 2005, <http://www.cnn.com/2005/WEATHER/08/30/katrina/>. As the country processes the horror and devastation on the Gulf Coast, we will hopefully begin a dialogue in Missouri about the potential effects of developing in floodplains.

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1. Eric Heisler, *A Flood of Development: \$400 Million in Investment Flows into Chesterfield Valley*, ST. LOUIS POST-DISPATCH, July 28, 2003, at A1.

2. Sara Shipley, *A Flood of Development: Unprecedented Growth in the Flood Plain Brings Riches and Risks*, ST. LOUIS POST-DISPATCH, July 27, 2003, at A1. The flood had other impacts:

The five-month-long deluge . . . forced the evacuation of about 54,000 people. Thousands of people helped fill sandbags, only to lose the battle in places.

Whole towns were swallowed in a lake of brown floodwater. High water shut down 12 commercial airports, 388 sewage treatment plants and almost all bridges over the Missouri and Mississippi rivers between St. Louis, Kansas City and Davenport, Iowa.

Id. at A8.

3. *Id.*

4. *Id.*

The National Flood Insurance Program (“NFIP”), now over thirty-five years old, was intended to “encourag[e] sound land use by minimizing exposure of property to flood losses.”⁵ Its application in Missouri has done just the opposite. Missouri leaves all floodplain management decisions to local jurisdictions, effectively promoting development on floodplains. Missouri needs to adopt statewide floodplain laws, as many other states have already done. Creating a statewide standard for floodplain development will prevent the competition between communities that leads to unsound use of floodplains and will prevent a loss like the one caused by the flood of 1993.

This Note addresses the application of the NFIP in Missouri, which is contrary to the intent of the statute, and argues that state regulation of floodplain development would be more beneficial. Part I discusses the origins, history and functioning of the NFIP. It also describes how various states, including Missouri, manage floodplains. Part II proposes a management scheme for Missouri that is both beneficial and politically feasible. This scheme incorporates strong state technical assistance, state standards for local floodplain ordinances, repetitive loss prevention measures, and market-based incentives in order to prevent future flood damages.

I. THE NATIONAL FLOOD INSURANCE PROGRAM: ORIGINS, HISTORY, AND IMPLEMENTATION

Before the establishment of the NFIP in 1968, the federal government handled flood disaster management on a case-by-case basis.⁶ For example, the Flood Control Act of 1936 enabled the federal government to build dams and levees.⁷ Generally, disaster assistance was the only financial recourse for flood victims.⁸ Despite

5. 42 U.S.C. § 4001(c)(1) (2000).

6. FEMA, NATIONAL FLOOD INSURANCE PROGRAM: PROGRAM DESCRIPTION 1 (2002), available at <http://www.fema.gov/fima/nfip.shtm> [hereinafter NAT'L FLOOD INSURANCE PROGRAM].

7. 33 U.S.C. §§ 701a–f (2000). The response was usually in the form of structural measures in reaction to significant floods. NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 1.

8. NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 1.

the government's investment of billions of dollars into flood control projects, flood damages continued to rise.⁹ In the 1950s, when the government first considered flood insurance, it was clear that private industry could not provide coverage and still retain a profit.¹⁰

In the meantime, the costs of building and maintaining structural measures, such as dams and levees, were increasing, as were losses from flooding.¹¹ Structural measures were also not one hundred percent effective. They created a false sense of security that led to development in flood-prone areas. Once they failed, the flooding caused more damage than if the structural measures had never existed, increasing the costs of floods.¹²

In the face of these increased flood losses and costs, Congress began to reexamine federal flood control policy in the 1960s.¹³ This began with the passage of the Southeast Hurricane Disaster Relief Act in 1965, after Hurricane Betsy caused extensive property damage in states surrounding the Gulf of Mexico.¹⁴ In addition to providing

9. *Id.*

10. 42 U.S.C. § 4001(b). This was "primarily because of the catastrophic nature of flooding and the inability to develop an actuarial rate structure which could adequately reflect the risk to which flood-prone properties are exposed." NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 1.

11. The Federal Water Resources Council reported that, "although 'the dollars spent for flood control works . . . have nearly doubled,' the still worse news was that '[a]verage annual flood damages are now estimated to approach \$3 billion and are continuing to rise.' Flood control projects were not solving the problem." Oliver A. Houck, *Rising Water: The National Flood Insurance Program and Louisiana*, 60 TUL. L. REV. 61, 66 (1985) (quoting U.S. WATER RES. COUNCIL, A UNIFIED NATIONAL PROGRAM FOR FLOOD PLAIN MANAGEMENT II-3 (1979)).

12. Houck, *supra* note 11, at 67. Houck notes:

Even the best of structures "can confine floods of limited magnitudes, but every so often a really big one will top it" and, once topped, the levee "tends to aggravate and prolong inundation beyond what it would have been" without it. If investments have been placed below a dam or behind a levee, relying on their protection, the losses will be greater than ever. Another limitation . . . is that constriction of the floodplain in one area will inevitably increase water stages somewhere else. The net result has been that "[e]fforts at control may, in some cases, in the end produce results worse than they were intended to cure."

Id. (quoting SENATE COMM. ON BANKING AND CURRENCY, 89TH CONG., 2D SESS., REPORT ON INSURANCE AND OTHER PROGRAMS FOR FINANCIAL ASSISTANCE TO FLOOD VICTIMS 35 (Comm. Print 1966)).

13. NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 1.

14. *Id.* at 1-2.

relief for the flood victims, the Act provided for a study of the feasibility of national flood insurance.¹⁵

A year later, a second, larger study concluded that a broad program on flood control was needed.¹⁶ This conclusion presented the basis for the National Flood Insurance Act of 1968.¹⁷ The Act created the NFIP, to be administered by the Federal Emergency Management Agency (“FEMA”).¹⁸ The Act had three main goals: “[to b]etter indemnify individuals for flood losses through insurance; [to r]educe future flood damages through State and community floodplain management regulations; and [to r]educe Federal expenditures for disaster assistance and flood control.”¹⁹ A key provision of the 1968 Act prohibits FEMA from providing flood insurance unless the community adopts and enforces floodplain regulations that meet or exceed those stated in the Act.²⁰

In the first few years of the NFIP, low participation rates led to the creation of greater incentives to purchase flood insurance.²¹ The Flood Disaster Protection Act of 1973²² provided these incentives.²³

15. *Id.* at 2.

16. *Id.* (summarizing H.R. DOC. NO. 89-465). The second study produced “five major goals: [1] Improve basic knowledge about flood hazards; [2] Coordinate and plan new developments in the floodplain; [3] Provide technical services; [4] Move toward a practical national program of flood insurance; and [5] Adjust Federal flood control policy to sound criteria and changing needs.” *Id.*

17. Pub. L. No. 90-448, 82 Stat. 572 (codified as amended in scattered sections of 42 U.S.C.).

18. 42 U.S.C. § 4011(a). The Act authorizes the Director of FEMA to “establish and carry out a national flood insurance program which will enable interested persons to purchase insurance against loss resulting from physical damage to or loss of real property or personal property related thereto arising from any flood occurring in the United States.” *Id.*

19. NAT’L FLOOD INSURANCE PROGRAM, *supra* note 6, at 2.

20. 33 U.S.C. § 701b–12. Furthermore:

To qualify for the sale of federally-subsidized flood insurance a community must adopt and submit to the Administrator as part of its application, flood plain management regulations, satisfying at a minimum the criteria set forth at Part 60 of this subchapter, designed to reduce or avoid future flood, mudslide (i.e., mudflow) or flood-related erosion damages. These regulations must include effective enforcement provisions.

44 C.F.R. § 59.2(b) (2004). For regulations regarding flood-prone areas, see *id.* § 60.3.

21. Houck, *supra* note 11, at 70. In mid 1972, there were less than 1200 communities and less than 100,000 policyholders enrolled. *Id.*

22. Pub. L. No. 93-234, 87 Stat. 975 (codified as amended at 42 U.S.C. §§ 4002, 4003, 4012(e), 4104, 4105, 4106, 4128, 4107).

It required participation in the NFIP for federally financed construction or acquisition in flood-prone areas.²⁴ This increased participation in the program by nearly 600 percent.²⁵

The National Flood Insurance Act of 1994²⁶ made the last major change to the NFIP. Among its many goals, this Act aimed to increase compliance among mortgage lenders through mandatory flood insurance purchase requirements.²⁷ It also established a Flood Mitigation Assistance grant program to help states fund and develop plans to reduce future flood damage.²⁸

A. Operation of the NFIP

Although the NFIP is a federal program, the primary control of floodplain regulation lies with local communities.²⁹ The flood insurance program generally functions by involving the federal government directly with local governments.

23. NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 3.

24. 42 U.S.C. § 4106(a).

No Federal officer or agency shall approve any financial assistance for acquisition or construction purposes on and after July 1, 1975, for use in any area that has been identified by the Director [of FEMA] as an area having special flood hazards unless the community in which such area is situated is then participating in the national flood insurance program.

Id.

Without flood insurance, a property owner cannot use money from the Department of Housing and Urban Development, the Federal Housing Administration, Freddie Mac and Fannie Mae, federally insured or regulated lenders, the Small Business Administration, the Department of Agriculture's Rural Housing Service, or the Veteran's Administration for the construction or acquisition of buildings in a flood prone area. NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 29–31.

25. Houck, *supra* note 11, at 70–72. Participation went from 1174 communities in 1972 to 17,351 communities in 1983. *Id.*

26. Pub. L. No. 103-325 §§ 511–584, 108 Stat. 2255 (codified as amended at 42 U.S.C. §§ 4001–4020).

27. 42 U.S.C. § 4012a(b).

28. *Id.* The Act also “[i]ncrease[d] the amount of flood insurance coverage that [could] be purchased; [p]rovide[d] flood insurance coverage for the cost of complying with floodplain management regulations by individual property owners . . . ; . . . [c]odif[ied] the NFIP's Community Rating System; and [r]equire[d] FEMA to assess its flood hazard map inventory at least once every 5 years.” NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 4.

29. NANCY S. PHILIPPI, FLOODPLAIN MANAGEMENT: ECOLOGIC AND ECONOMIC PERSPECTIVES 64, 70 (1996). This is in line with the general rule that zoning is a local matter. 83 AM. JUR. 2D *Zoning and Planning* § 9 (2005).

1. Communities' Admission into the NFIP

There are three major parts of the NFIP: identifying and mapping flood-prone areas, requiring communities to adopt and enforce floodplain management regulations, and providing flood insurance.³⁰ The first step is carried out by FEMA.³¹ The result of FEMA's work is flood hazard maps, used to assess the flood risk for each community.³² FEMA informs the community of the area's propensity for flooding, and provides instruction on how to implement floodplain development regulations in order to be a part of the NFIP.³³

When a community first becomes involved with the NFIP, it comes under the Emergency Program.³⁴ While a community is in the Emergency Program phase, only limited amounts of insurance are available.³⁵ In addition, a community must adopt interim measures as part of the Emergency Program.³⁶ These include the provision of permits for all proposed development in the flood prone area.³⁷ Any development must allow for drainage, be adequately anchored, and otherwise attempt to minimize flood damage.³⁸

30. NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 4.

31. *Id.* at 6. Communities need not wait for FEMA to inform them that they are flood-prone. They can also enter the Emergency Program themselves.

32. *Id.*

33. 44 C.F.R. § 59.2(a).

34. *Id.* § 59.1. "Emergency Flood Insurance Program or emergency program means the Program as implemented on an emergency basis It is intended as a program to provide a first layer amount of insurance on all insurable structures before the effective date of the initial FIRM." *Id.*

35. *Id.* § 61.6(a). Coverage is limited to \$35,000 for single family residential houses and \$10,000 for their contents, and \$100,000 for non-residential property and \$100,000 for its contents. *Id.*

36. *Id.* § 60.3.

37. *Id.*

38. *Id.* § 60.3(a)(4).

[T]he community shall: . . . [r]eview subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding. If a subdivision proposal or other proposed new development is in a flood-prone area, any such proposals shall be reviewed to assure that (i) all such proposals are consistent with the need to minimize flood damage within the flood-prone area, (ii) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed

The Emergency Program is meant to give the community time to complete the application process for the Regular Program. The community has one year to do so.³⁹ The application process includes passing an ordinance that details the community's floodplain development regulations and establishes a permit system for development.⁴⁰ As part of the application process, the community must also adopt a Flood Hazard Boundary Map ("FHBM").⁴¹ The FHBM shows which areas have a one-percent or greater chance of flooding every year.⁴² This "floodway," also called the A-Zone, is the portion of the floodplain that must be free from any development that would cause an increase in flood heights.⁴³

As part of the Emergency Program, FEMA is responsible for performing a Flood Elevation Study, a detailed documentation of flood hazards.⁴⁴ The end result of this study is a Flood Insurance Rate Map ("FIRM").⁴⁵ This map shows gradations that illustrate flood-prone areas and determine rates for insurance.⁴⁶ The FIRM is essentially a more detailed FHBM, as it breaks down the FHBM into smaller zones of individual premium rates based on risk levels.⁴⁷ The

to minimize or eliminate flood damage, and (iii) adequate drainage is provided to reduce exposure to flood hazards

Id.

39. *Id.* § 59.2(a).

40. *Id.* § 59.2(b).

41. *Id.* § 59.1. "Flood Hazard Boundary Map (FHBM) means an official map of a community, issued by the Administrator, where the boundaries of the flood . . . related erosion areas having special hazards have been designated" *Id.*

42. *Id.*

43. NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 14. For a definition of floodway, see 44 C.F.R. § 59.1 ("Regulatory floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.").

44. 44 C.F.R. § 59.1.

45. *Id.* § 59.1. "Flood Insurance Rate Map (FIRM) means an official map of a community, on which the Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community." *Id.*

46. Factors that go into rate determinations include: "the amount of coverage purchased; location; age of the building; building occupancy; design of the building; and, for buildings in Special Flood Hazard Areas (SFHAs), elevation of the building in relation to the Base Flood Elevation." FEMA, Flood Hazard Mapping: Frequently Asked Questions, http://www.fema.gov/fhm/fq_genhm.shtm (last visited Sept. 2, 2005).

47. 44 C.F.R. § 59.1 "Risk premium rates mean those rates established by the Administrator pursuant to individual community studies and investigations which are

FIRM shows several floodplain elements that are important to the community's permitting process. For example, it shows the Base Flood Elevation ("BFE"),⁴⁸ as well as floodway boundaries.⁴⁹

2. Floodplain Ordinance Required by NFIP

Once the community adopts a FHBM and passes a floodplain development ordinance that meets or exceeds FEMA's requirements, it is admitted into the Regular Program.⁵⁰ Households and businesses in the community then become eligible for the full amount of flood insurance coverage.⁵¹ However, to get federal financial assistance to build or buy property in a Special Flood Hazard Area,⁵² property owners must purchase flood insurance.⁵³

All new or substantially improved structures in the flood hazard area must obtain a permit and be elevated or made watertight to the BFE level.⁵⁴ In areas designated as regulatory floodways, more stringent regulations for development apply.⁵⁵ The community must select a path and boundaries for the floodway "based on the principle that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood, without increasing the water surface elevation of that flood more than one foot at any point."⁵⁶ The regulations must prohibit all fill and construction within the floodway

undertaken to provide flood insurance in accordance with . . . the Act and the accepted actuarial principles." *Id.*

48. *Id.* § 59.1. The BFE is the level of the water during a 100-year flood, a flood that has a 1% chance of occurring in any given year. *Id.* A 100-year flood has a 26% chance of occurring during a standard 30-year mortgage. INTERAGENCY FLOODPLAIN MGMT. REVIEW COMM., SHARING THE CHALLENGE: FLOODPLAIN MANAGEMENT INTO THE 21ST CENTURY 50 (1994). This is the regulatory standard used by both federal and state governments to administer floodplain management programs.

49. 44 C.F.R. § 59.1.

50. *Id.* § 59.22(a).

51. 42 U.S.C. § 4013(b)(2)-(4). Residential buildings receive coverage of \$250,000 and non-residential buildings receive \$500,000. The contents of residential buildings are covered up to \$100,000 and those of non-residential up to \$500,000.

52. A Special Flood Hazard Area is defined as "the land in the floodplain within a community subject to a 1 percent or greater chance of flooding in any given year." 44 C.F.R. § 59.1.

53. 42 U.S.C. § 4106(a).

54. 44 C.F.R. § 60.3(c)(2)-(3).

55. *Id.* § 59.1. For a definition of regulatory floodways, see *supra* note 43.

56. 44 C.F.R. § 60.3(d)(2).

that would increase flood levels anywhere within the community during the base flood discharge.⁵⁷ If the community wants to permit encroachments in the floodway, it must apply to have the FIRM revised.⁵⁸

Most restrictions on structures in floodplains refer to new, substantially improved, or substantially damaged buildings. Structures that existed before FEMA labeled the area flood-prone are called Pre-FIRM and are not subject to the same regulations.⁵⁹ In addition, Pre-FIRM structures are subject to basic subsidized insurance rates, while new construction and substantial improvements are subject to risk premium rates.⁶⁰

FEMA can grant variances on floodplain regulations, but not on insurance premium rates.⁶¹ FEMA may grant variances for extreme hardship, on a showing of “good and sufficient cause,” and on a showing that the variance will not result in increased flood heights or any other harm to the public.⁶² Variances will only be granted for lot sizes of a half acre or less, but that limitation can be waived.⁶³

57. *Id.* § 60.3(d)(3). This provision requires communities to:

Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge .

Id.

58. *Id.* § 65.12(a)(2)-(5). A community’s application for the revised FIRM must include: reasons why there are no feasible alternatives; legal notice to all affected property owners, both inside and outside the community; agreement by the chief executive officer of all other communities affected by the revision; and certification that there are no structures in the areas which will be affected by the higher BFE. *Id.*

59. NAT’L FLOOD INSURANCE PROGRAM, *supra* note 6, at 15–16.

60. 44 C.F.R. § 64.5(b).

61. *Id.* § 60.6(a).

62. *Id.* § 60.6(a)(3).

63. *Id.* § 60.6(a).

B. Other Federal Responses to Flooding

1. Mitigation

Mitigation is an important part of the federal government's flood control program.⁶⁴ Through the Hazard Mitigation Grant Program,⁶⁵ FEMA can contribute up to seventy-five percent of the cost of a program that will "substantially reduce the risk of future damage, hardship, loss, or suffering in any area affected by a major disaster."⁶⁶ The Program also allows FEMA to remove people and buildings from high hazard areas after a disaster.⁶⁷ Local governments are heavily involved in the implementation of this Program, working closely with those affected.⁶⁸ In addition to this Program, the NFIP has a mitigation element, which aims to reduce or eliminate the risk of flood damages to buildings insured by the NFIP.⁶⁹

An important part of any mitigation program is buyout, a voluntary program in which a community purchases property in high

64. 42 U.S.C. § 4001(e)(1)–(2) (encouraging state and local governments to take steps to prevent flood damage); *see also* ASS'N OF STATE FLOODPLAIN MANAGERS, NATIONAL FLOOD PROGRAMS IN REVIEW 7 (2000), *available at* <http://www.floods.org/PDF/2000-FPR.pdf> [hereinafter NAT'L FLOOD PROGRAMS IN REVIEW] ("Mitigation, successfully applied, contributes both to flood resiliency and to long-term sustainability.").

65. 42 U.S.C. § 5170c.

66. *Id.* § 5170c(a).

67. *Id.* § 5170c(b)(1). The Program allows FEMA to acquire flood damaged property, but it must be "dedicated and maintained in perpetuity for a use that is compatible with open space, recreational, or wetlands management practices." *Id.* § 5170c(b)(2)(B)(i).

68. 44 C.F.R. § 201.3; *see also* MO. COALITION FOR THE ENV'T FOUND., FLOODING FORGOTTEN: THE STATE OF MISSOURI'S FLOODPLAIN MANAGEMENT TEN YEARS AFTER THE 1993 FLOOD 11–12 (2003), <http://65.108.172.154/Issues/Floodplains/ReportFinal.pdf>. After a natural disaster, the local government must submit the application to participate in the program. MO. COALITION FOR THE ENV'T FOUND. at 11. The local government becomes a subgrantee, working with the individual property owners, negotiating the terms of the transfer of title or the conservation easement. *Id.* at 11–12.

69. 44 C.F.R. §§ 201.1–.6. Grants are available for administration, planning, technical assistance, and implementation of mitigation programs. FEMA, Flood Mitigation Assistance (FMA) Program, <http://www.fema.gov/fima/fma.shtm> (last visited Sept. 2, 2005). A third FEMA mitigation program is the Pre-Disaster Mitigation Program. It functions similarly to the other two. FEMA, Pre-Disaster Mitigation (PDM) Grant Program, <http://www.fema.gov/fima/pdm.shtm> (last visited Sept. 2, 2005) (containing information on Pre-Disaster Mitigation Program, including model deed restrictions, environmental conservation guidance, and cost-benefit analyses).

flood risk areas.⁷⁰ The land is then deed-restricted, or its use is limited to open space.⁷¹ Another means of mitigation is the designation of properties that have filed more than one claim as repetitive loss properties.⁷² Although these properties are only two percent of those covered by the NFIP, they represent forty percent of all payments.⁷³ Congress has passed legislation to reduce the impact of repetitive losses on the NFIP.⁷⁴

70. LINDA A. MALONE, ENVIRONMENTAL REGULATION OF LAND USE § 7.02(5)(b) (2003). The buyout property must have been located in a “special flood hazard area and have been covered by NFIP insurance when the damage occurred. Extensive damage is required” *Id.*

The Missouri Buyout Program was widely used after the floods of 1993 and 1995. FEMA, SUCCESS STORIES FROM THE MISSOURI BUYOUT PROGRAM (2002), available at http://www.fema.gov/txt/fima/mo_buyoutreport.txt. In all, more than \$100 million dollars were spent. *Id.* It enabled many communities to reduce or eliminate their flood losses in ensuing floods. *Id.* Under the Program, communities pay the homeowner the pre-flood price of their home, allowing them to move to a safer area. *Id.* This was an especially valuable program for homeowners who had wanted to move before, but were unable to do so due to financial limitations.

Cape Girardeau resident Pete Cooper explained the importance of the buyouts for his family.

“Every time it flooded, we flooded.” Though he had often considered moving his wife Juanita and six children from the flood-prone Smeltonville neighborhood, finances always prevented them from doing so.

“I wanted to get out,” said Cooper, “but I just couldn’t afford it.” The buyout program gave the Coopers the chance they’d been waiting for.

With \$23,655 from the Missouri Buyout Program, the Coopers were able to move to a house on Park Street, out of the floodplain. “The buyouts were real nice,” Pete Cooper said. “They helped us get out.”

Id. Funding for buyout programs comes from FEMA’s Hazard Mitigation Grant Program, the Department of Housing and Urban Development Community Development Block Grant Program, state general revenue funds, and community support. *Id.*

71. 44. C.F.R. § 78.12. *But see infra* note 143 (Missouri now allows building on some deed restricted land).

72. NAT’L WILDLIFE FED’N., HIGHER GROUND: A REPORT ON VOLUNTARY PROPERTY BUYOUTS IN THE NATION’S FLOODPLAINS 64–65 (1998), available at <http://www.nwf.org/nwfwebadmin/binaryVault/Higher%20Ground1.pdf>. A repetitive loss property is any insured property that has sustained two or more flood losses of at least \$1,000 each in any 10-year period. *Id.* at 55. A repetitive loss community is any community containing at least one repetitive loss property. *Id.* at 65.

73. *Id.* at 64–65.

74. Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, Pub. L. No. 108–264, 118 Stat. 712 (codified in scattered sections of 42 U.S.C.).

2. Disaster Assistance

In addition to providing flood insurance, FEMA also coordinates direct disaster assistance in places the President has declared disaster areas.⁷⁵ The Individual and Family Assistance Program gives direct aid to flood victims.⁷⁶

The Disaster Relief Act⁷⁷ provides different rules for business and governmental applicants than it does for individual applicants. Business and governmental applicants for aid to repair or replace flood-damaged property must provide assurance that they will obtain flood insurance.⁷⁸ These applicants may not receive future disaster assistance unless they have obtained and maintained insurance.⁷⁹ This rule effectively allows communities who have not joined the NFIP “one free bite of federal disaster relief assistance.”⁸⁰

Individuals are subject to more lenient rules under federal disaster relief. Most notably, the “one bite” rule does not apply to them. A private citizen may apply for federal disaster relief as many times as they need, with no insurance purchase requirement.⁸¹ This exception

75. PHILIPPI, *supra* note 29, at 64. Disaster aid comes in many forms. For instance, the Public Assistance program gives grants to local governments to compensate for property damage and the USDA provides compensation for damage to crops. *Id.* In the years from 1990 to 1999, FEMA paid more than \$25 billion in federal disaster relief. FEMA, Disaster Expenditures, http://www.fema.gov/library/df_6.shtml (last visited Sept. 2, 2005). This includes money for declared disasters, emergencies, and fire suppression grants. *Id.*

76. PHILIPPI, *supra* note 29, at 64. Victims can receive temporary housing, counseling, and compensation for property loss. *Id.*

77. Disaster Relief Act Amendments of 1974, Pub. L. No. 93-288, 88 Stat. 143 (codified as amended in scattered sections of 42 U.S.C.).

78. 42 U.S.C. § 5154(a)(1).

79. *Id.* § 5154(b).

80. Houck, *supra* note 11, at 131.

81. *Id.* The Senate version of the Disaster Relief Act Amendments of 1974 removed this inconsistency. The accompanying report noted:

The increased Federal costs of providing disaster assistance in recent years, especially to the private sector, has focused attention on the need for more extensive insurance coverage against losses caused by natural hazards. It seems reasonable to expect property owners to purchase basic protection against such losses through any reasonably available insurance.

The bill stipulates that insurance adequate to protect against future loss must be obtained for any disaster-damaged property which has been replaced, restored, repaired, or constructed with Federal disaster funds. Unless such insurance is secured,

has been criticized as removing all inducements for individuals to join the NFIP.⁸²

C. Elements of Floodplain Land Use Policy

1. Structural Flood Measures

A community can reduce premium rates by erecting structural flood prevention measures, generally in the form of levees.⁸³ These levees are commonly built by the Army Corps of Engineers using federal money.⁸⁴ Federal laws require that structural flood control measures provide a positive cost/benefit ratio—the annual benefits must exceed the costs of the project.⁸⁵ The benefits are calculated by

no applicant for Federal assistance can receive aid for any damage to his property in future major disasters.

S. REP. NO. 93-778, at 4 (1974), *reprinted in* 1974 U.S.C.C.A.N. 3070, 3073. The proposal failed in conference. H.R. CONF. REP. NO. 93-1037, at 34 (1974), *reprinted in* 1974 U.S.C.C.A.N. 3091, 3099.

82. Houck, *supra* note 11, at 132.

[This effectively] divorces disaster relief from the NFIP. The Act's provisions with respect to state and local governments allow relief on a one-time basis, without insurance or NFIP participation, for even the most foreseeable disaster. Inducements for individuals to join the NFIP, or to ask their communities to join, stem only from the NFIP itself. The conclusion is inescapable that the federal government has yet to exercise its authority fully, or even to the extent that a private businessman would think prudent and reasonable, to effectuate the NFIP and reduce the disaster losses of individuals, local governments, and its own treasury.

Id. (citations omitted).

83. 44 C.F.R. § 61.12. The rates can be lowered before the levees are even completed, upon a showing of progress in financing or construction of the levees. Another, less common, structural measure is a channel to control river flow. NAT'L FLOOD PROGRAMS IN REVIEW, *supra* note 64, at 7.

84. PHILIPPI, *supra* note 29, at 74. The Army "Corps of Engineers pays for up to 65 percent of new levee construction and 80 percent of levee repair after a flood." Shipley, *supra* note 2, at A9. In Chesterfield Valley, the Corps could contribute up to \$38 million of the \$58 million cost of upgrading the levee to 500-year levels. *Id.*

85. PHILIPPI, *supra* note 29, at 74. There is debate over whether future benefits should be calculated in the ratio. The usual pattern is that a levee is built protecting agricultural land, or some buildings. The levee then attracts more development to the protected area, increasing the damages being prevented by the structure. Some want to include this future development in the benefits calculation. The counter argument is two-part. First of all, it is difficult to predict future benefits. Secondly, when the levee fails, as they often do, the damages will be much greater. The post-construction development poses other problems as well. The benefits of protecting agricultural land may only justify a 50-year levee. Once the levee is built, the land could then be

measuring the two main types of damages that can be avoided: property damage and loss of agricultural crops.⁸⁶

While an important and longstanding tool in floodplain management across the country,⁸⁷ levees can provide a false sense of security. In addition, whether they work exactly as planned or they fail, levees can have serious economic consequences. If a levee works perfectly, it will raise flood levels elsewhere.⁸⁸ Numerous studies have shown that levees raise flood levels elsewhere along rivers.⁸⁹ The basic hydraulic principles are simple: X amount of water constricted to a narrower river, leads to increased river levels to compensate. This means less water is required to create a flood.⁹⁰ If, on the other hand, the levee fails, the flooding can destroy much more than was expected under the original cost-benefit analysis.⁹¹ When

developed for housing and commercial use. Even if the levee performs exactly as it should, it is not adequate protection for the higher potential damages that exist behind it. *Id.* at 76.

86. *Id.* at 75. Damages are “annualized over the projected life of the levee and averaged out so they can be compared with costs.” *Id.* The guidelines for cost/benefit analyses are arguably biased against non-structural measures. NATIONAL FLOOD PROGRAMS IN REVIEW, *supra* note 64, at iv.

87. C.B. Belt, Jr., *The 1973 Flood and Man’s Constriction of the Mississippi River*, 189 SCI. 681, 681 (1975). “Man’s tampering with the [Mississippi] river started in 1837 when Lieutenant Robert E. Lee built the first confinement dikes to remove sandbars threatening the Saint Louis harbor. The river was narrowed by man from 1300 m in 1849 to . . . 580 m in 1969.” *Id.*

88. U.S. ARMY CORPS OF ENGINEERS, FLOODPLAIN MANAGEMENT ASSESSMENT OF THE UPPER MISSISSIPPI RIVER AND LOWER MISSOURI RIVERS AND TRIBUTARIES 4 (1995), available at <http://www2.mvr.usace.army.mil/UMRCP/Documents/FloodplainManagementAssessment.pdf>. The effect of raising levees on the middle and upper Mississippi to a level that would have prevented their failure in 1993 would increase flood stages elsewhere by six feet. *Id.*

89. *See, e.g., id.; see also* Belt, *supra* note 87, at 684. “Navigation works and levees make big floods out of moderate ones. . . . Constriction of the river channel causes flooding and makes floods higher. . . . The combination of navigation works and levees causes significant rises in the stages of floods. Additional channel constriction and levee building will cause further problems. The 1973 flood’s record was manmade.” Belt, *supra* note 87, at 684.

90. Philip Williams, *We’ve Proved That We Can’t Conquer the River*, L.A. TIMES, Aug. 6, 1993, at B7. Describing the 1973 Mississippi flooding:

New levees had isolated the river from the flood plain, preventing the storage of floodwaters and constricting the flow to a narrow channel. When the levees failed under the increased water pressure, inundation was sudden and unexpected. Whole communities had been built on the flood plain; believing that the levees would protect them, they had taken no steps, such as building raised structures, to protect themselves.

Id.

91. PHILIPPI, *supra* note 29, at 76–77. Levees can give a false sense of security to a community, promoting development where it is not necessarily safe.

levees fail and there is heavy development on the other side, the destruction is colossal. Right now, \$2.2 billion of development in Missouri sits behind levees.⁹² There will be huge losses if any of these levees fail.⁹³

2. Non-Structural Measures

Buyouts and land use and development ordinances are both examples of non-structural mitigation measures.⁹⁴ Communities can use these measures in combination with structural flood protections to protect themselves from the detriments of flooding.⁹⁵

Buyout programs can provide for the purchase and removal of structures already present, but ordinances can prevent building in the highest risk flood area. They can also require builders to elevate or make flood resistant buildings near the fringe, which is the area outside of the floodway. Levees can then be built further away from the riverbank to provide protection to homes and other property, while allowing the open space to act as a natural flood barrier.⁹⁶

Flood control projects reduce but never eliminate all risk from flooding. Once a project is in place, however, the public perceives . . . that all risk has been removed, often with good reason. In Johnstown, Pennsylvania the Corps District engineer announced when the flood control project was completed in 1943 that “the flood troubles of the city of Johnstown [were] at an end” but they were not, as the devastating 1977 flash flood demonstrated. . . . [A 1954 report on Mississippi River flood control projects promised that it] “would eliminate in large measure the damages in that part of the . . . valley” . . . yet [the area sustained heavy flooding in 1965, 1969, 1972, and 1993. A 1994 report found that] “the flooding of the Mississippi River was the most devastating in terms of property loss, disrupted business and personal trauma of any flood in the United States.”

Id. at 77 (citations omitted).

92. Shipley, *supra* note 2, at A1.

93. Levees destroyed by foul play can cause great destruction. During the flood of 1993, a man intentionally destroyed a levee, damaging more than 15,000 acres of cropland, destroying over 100 buildings, and causing a bridge to close. *Retrial Is on Tap for Man Who Sabotaged Levee in 1993*, ST. LOUIS POST-DISPATCH, Apr. 18, 1998, at 9. The water also knocked over fuel storage tanks, causing a huge fireball. *Id.* His motive? He wanted to strand his wife so that he could “party” without her. *Id.*

94. For a discussion of buyouts, see *supra* notes 70–71 and accompanying text.

95. NAT’L FLOOD PROGRAMS IN REVIEW, *supra* note 64, at 7.

96. *Id.* at 7–8. “This combination of structural and non-structural measures will reduce flood losses, preserve and maintain natural riparian functions, and provide for recreation and public open space.” *Id.* at 7.

D. State Models of Floodplain Regulations

Half of the states maintain state level floodplain laws.⁹⁷ State level laws can “both plug the holes in federal law and provide tighter regulation of development in floodplains.”⁹⁸ State laws represent a broad spectrum of approaches. There are three ways in which a state can become involved in floodplain management: it can set standards itself, but leave them to the local governments to implement; it can set the standards and also implement them; or it can set no standards at all, leaving everything to individual communities.⁹⁹

1. State Control of Floodplain Development and Local Ordinances

States have varying approaches in their control of local ordinances. Some states require nothing more than flood prone communities’ adoption NFIP standards.¹⁰⁰ Another low-level approach is to give a state department, like the department of natural resources (“DNR”) permitting control only over designated floodways.¹⁰¹ A broader state role would be to take jurisdiction completely, with the ability to delegate to local governments.¹⁰²

Other states give the state DNR authority for an overall program, including developing a state floodplain management program, but leave the implementation of the regulations to individual

97. *Id.* at 30. “The role of state government is to provide, as necessary, policy development, technical assistance to communities, coordination, and prioritization and integration of floodplain management issues within that state.” *Id.*

98. MO. COALITION FOR THE ENV’T FOUND., *supra* note 68, at 12.

99. *Id.* at 17.

100. *See, e.g.*, ARK. CODE ANN. § 15-24-102 (2003). There is no floodplain management in communities that do not participate in the NFIP. MO. COALITION FOR THE ENV’T FOUND., *supra* note 68, at 17, 19. Ohio requires state agencies, but not private parties, to follow floodplain management standards. OHIO REV. CODE ANN. § 1506.04 (West 1996).

101. *See, e.g.*, 615 ILL. COMP. STAT. ANN. 5/18g (West 1993). The Illinois DOT is given control over the state’s waterways, but only controls permitting for designated floodways; the rest of the floodplain area is left to the community to regulate. The law provides that “[i]f a . . . local government has adopted an ordinance that establishes minimum standards . . . that are at least as restrictive as those established by the Department . . . and the . . . local government has adequate staff to enforce the ordinance, the Department may delegate . . . the authority to issue permits for construction that is an appropriate use of the floodway within its jurisdiction.” *Id.* at 5/18g(b).

102. *See, e.g.*, IOWA CODE ANN. § 455B.264(1) (West 2004).

communities.¹⁰³ Some states reserve approval authority for local ordinances.¹⁰⁴ States can also provide incentives for communities to participate in the NFIP or define appropriate use of floodplains.¹⁰⁵

One of the ways that states retain control of floodplain regulations is through a system of granting permits and variances, as well as enforcement. Some states retain authority over permitting, but may delegate it to local governments.¹⁰⁶ Other states set permitting rules, but allow local governments to implement them.¹⁰⁷ Even if there are no state level floodplain regulations, a state may still retain power to enforce local ordinances.¹⁰⁸

2. State Laws Regarding Floodplain Ordinances

A crucial aspect of a floodplain ordinance is defining the regulatory floodway. NFIP regulations require that the floodway be mapped “to allow a one foot rise in the water level if the discharge associated with the 100-year flood is completely confined to the floodway by levees, floodwalls or fill.”¹⁰⁹ Some states require a base flood elevation rise lower than one foot when determining floodway boundaries.¹¹⁰

103. In Minnesota, communities must adopt a more stringent state ordinance. If they do not, the DNR has authority to impose it upon them. MINN. STAT. ANN. § 103A.207 (West 1997). All Minnesota communities are required to adopt an ordinance that meets or exceeds the state law. *Id.* § 103F.121.

104. *See, e.g.*, IOWA CODE ANN. § 455B.277; MINN. STAT. ANN. §§ 103B.325, 103B.315; OHIO REV. CODE ANN. § 1521.13(A)(1); *see also* MO. COALITION FOR THE ENV'T FOUND., *supra* note 68, at 18 (describing the role of local governments).

105. *See, e.g.*, OHIO REV. CODE ANN. § 1521.14(C)(3) (making disaster relief contingent upon the existence of a floodplain ordinance); 615 ILL. COMP. STAT. ANN. 15/1 (providing that the state flood plain management program strictly regulates floodways).

106. *See, e.g.*, IOWA CODE ANN. § 455B.276.

107. *See, e.g.*, MINN. STAT. ANN. §§ 103B.155, 103B.211.

108. *See, e.g.*, ARK. CODE ANN. § 15-20-207 (allowing enforcement in the form of a fine, with each day being a separate offense); MO. COALITION FOR THE ENV'T FOUND., *supra* note 68, at 26.

109. MO. COALITION FOR THE ENV'T FOUND., *supra* note 68, at 18–19.

110. *Id.* at 19. The lower the rise allowed, the larger the regulatory floodway, and the larger the area with restricted development. *Id.* Wisconsin allows a 0.01 foot increase. *Id.* Illinois allows a 0.1 foot increase. Minnesota allows a 0.5 foot rise. *Id.* Maryland allows no rise at all. Md. Dep't of the Env't, Regulations for Floodplain Development, http://www.mde.state.md.us/Programs/WaterPrograms/Flood_Hazard_Mitigation/devRegulations/index.asp (last visited Sept. 2, 2005) (“Any development that . . . causes any increase in water surface elevations during the 100-year flood is prohibited.”).

Once the floodway is defined, state and local governments must regulate development of the floodway. NFIP regulations prohibit development that would obstruct flood flows.¹¹¹ The only Midwestern states that do not place further limits on floodway development are Arkansas, Missouri, and Ohio.¹¹² Since the floodway is, by definition, near the river, there are a number of uses that are dependent upon river access.¹¹³ Having clear criteria for the type of acceptable use can help industries and regulators.¹¹⁴

In addition to the regulatory floodway, state or local governments often regulate the flood fringe.¹¹⁵ The NFIP requires permits for all development in the flood fringe,¹¹⁶ but many states have no additional requirements for such development.¹¹⁷ Those few states that have added restrictions may require, for example, that structures be elevated above the BFE.¹¹⁸

The constriction of floodways and the resulting increase in flood levels elsewhere has led some states to allow or require the use of flowage easements to compensate harmed parties.¹¹⁹ Another way

111. MO. COALITION FOR THE ENV'T FOUND., *supra* note 68, at 19. Some states also have threshold watershed sizes that must be exceeded before floodway restrictions are applicable.

112. *Id.* at 20.

113. See MINN. R. 6120.5800(3) (2005), available at <http://www.revisor.leg.state.mn.us/arule/6120/5800.html> (permitting public utility facilities and water oriented industries that require access in the floodway or between levees); WIS. ADMIN. CODE NR § 116.12 (1999) (prohibiting structures that are neither dependent on the water nor associated with open space use in the floodway).

114. MO. COALITION FOR THE ENV'T FOUND., *supra* note 68, at 20.

How the impact of development on flood heights is measured is another important factor when considering the effectiveness of floodplain management programs. Site-specific hydrologic and hydraulic analyses are required whenever there is a proposal to build in a mapped or unmapped floodway. Three of the states surveyed require site-specific analyses to account for future development on neighboring lands. Taking into consideration future land use conditions is a forward-looking method of accounting for changes in hydrology that occur when open land is developed.

Id.

115. *Id.* at 21.

116. *Id.*

117. See, e.g., ARK. CODE ANN. § 15-24-102.

118. See, e.g., MINN. R. 6120.5700(5), available at <http://www.revisor.leg.state.mn.us/arule/6120/5700.html> (requiring structures to be elevated above the BFE in all communities, not just those participating in the NFIP).

119. MO. COALITION FOR THE ENV'T FOUND., *supra* note 68, at 22. Illinois, Iowa, Minnesota, Ohio, and Wisconsin authorize the use of flowage easements, or other compensating

that states handle this issue is by requiring the consent of affected parties before an easement may be acquired.¹²⁰

As stated previously, buildings that existed prior to a community's involvement in the NFIP are called pre-FIRM.¹²¹ These buildings are usually not in compliance with NFIP regulations, and have often been repeatedly damaged by floods and then repaired.¹²² Some states have additional provisions to bring non-conforming structures into compliance with floodplain management regulations.¹²³

Structural flood controls, such as levees and floodwalls, are also an important part of any community's floodplain management plan. However, the controls are not foolproof, and can make flood levels even higher.¹²⁴ Their effects can reach the next town, or the next state.¹²⁵ State oversight of structural measures helps to coordinate

measures. *Id.* Iowa and Minnesota require flowage easements, or other mitigation when the floodway will be constricted. *Id.* Illinois, Iowa, Ohio, Minnesota, and Wisconsin authorize them only for "public benefit structures, such as bridges." *Id.*

120. *See, e.g.,* WIS. ADMIN. CODE NR § 116.17(6)(c) (requiring consent for agricultural levees if flood heights will be increased).

121. *See supra* notes 59–60 and accompanying text. The NFIP requires that pre-FIRM structures be brought into compliance if repairs or improvements valued at more than fifty percent of the property's value are made. NAT'L FLOOD INSURANCE PROGRAM, *supra* note 6, at 15.

122. These are repetitive loss properties. *See supra* notes 72–74 and accompanying text. "For 5,629 homes, or almost 10 percent of the 58,975 single family homes with repetitive [flood] losses, the cumulative payments have exceeded the building's value—in some cases several times over. Payments for these properties totaled \$416 million." NAT'L WILDLIFE FED'N, *supra* note 72, at 56. A Houston home, valued at \$114,480, received the highest flood insurance payments: \$806,591. *Id.*

123. *See, e.g.,* WIS. ADMIN. CODE NR § 116.15 (containing provisions to bring non-conforming structures into compliance).

124. *See supra* notes 88–90 and accompanying text.

125. Houck, *supra* note 11, at 79.

In the spring when the snow melts off the eastern Rockies and goes roaring down the canyons to the Platte, lakes of slush are forming on the central plains, it is raining with a vengeance in the Ohio Valley and the Monongahela booms with cracking ice. The Missouri is rising, the Ohio is rising, the Tennessee, the Arkansas and the Red run huge and brown and out of their banks and come crashing into the Mississippi at St. Louis, Memphis and Vicksburg, like drunks joining a parade. Look out Louisiana—the waters from two-thirds of America are caught between two levees and coming for New Orleans.

Id. (quoting Oliver A. Houck, *Atchafalaya is Heaven on Earth*, 17 NAT'L WILDLIFE 42, 43 (1979)). Houck also noted Louisiana Senator J. Bennett's contention that the flood of 1973 was man-made. *Id.* at 87 n.128.

communities, minimizing damages elsewhere.¹²⁶

E. Floodplain Regulation in Missouri

Missouri has one of the most hands-off approaches to floodplain regulation of all states, allowing communities to make all decisions themselves.¹²⁷ The State Emergency Management Association (“SEMA”) has jurisdiction over floodplain issues.¹²⁸ SEMA exercises this jurisdiction primarily through technical assistance projects.¹²⁹ Otherwise, communities must comply with floodplain regulations only if they choose to adopt the NFIP.¹³⁰

Stringent NFIP requirements have meant that only Missouri communities most affected by flooding have chosen to take part in the program.¹³¹ However, a community is not required to participate

126. See, e.g., MINN. STAT. ANN. § 103F.179 (requiring state approval of all structural measures. *But see* ARK. CODE ANN. § 15-24-102 (retaining no oversight).

127. Sara Shipley, *Missouri Lacks Rules on Flood Plain Growth*, ST. LOUIS POST-DISPATCH, July 27, 2003, at A12. “State officials still have no input on new levee projects. ‘When the Corps of Engineers does levees, they deal directly with communities, . . .’ said . . . [the] deputy director of the Missouri State Emergency Management Agency.” *Id.*

128. *Id.* SEMA staff “gives advice and occasionally conducts ‘audits’ to make sure communities are following the [NFIP] program.” *Id.*

129. *Id.* SEMA is preparing a handbook to assist local officials. As of January 2005, the SEMA’s website had virtually no technical assistance information. Mo. Floodplain & Stormwater Managers Ass’n, National Flood Insurance Program, <http://www.sema.state.mo.us/NFIP%20Page.htm> (last visited Sept. 2, 2005) [hereinafter National Flood Insurance Program].

130. MO. ANN. STAT. § 49.600 (West 1998).

1. The county commission, in all counties which have not adopted county planning and zoning, may, as provided by law, adopt or rescind by order or ordinance regulations to require compliance with Federal Emergency Management Agency standards, necessary to comply with the national flood insurance program, in any flood hazard area designated by the Federal Emergency Management Agency; provided, however, that no ordinance or order enacted pursuant to this section in any county shall be effective unless the county commission or governing body of the county submits to the voters of a county, at a county or state general, primary or special election, a proposal to authorize the county commission or governing body of the county to adopt such an order or ordinance.

. . .

4. Levee districts . . . and drainage districts . . . are subject to flood plain management regulations adopted by a county pursuant to this chapter.

Id.

131. National Flood Insurance Program, *supra* note 129.

in the NFIP when it is protected by a 100-year levee, so many property owners in flood-prone areas do not possess flood insurance at all.¹³²

F. Floodplain Development in Missouri

In the ten years since the Flood of 1993, Missouri has seen an explosion of development on its floodplains. More than any other state that was affected by the flood of 1993, Missouri communities have allowed and even promoted floodplain development.¹³³ Already, commercial development covers over 4200 acres of floodplains, seventy-five percent of which was covered by water in 1993.¹³⁴ Builders plan much more commercial development in the floodplain.¹³⁵

Missouri's terrain makes it more susceptible to flood plain development efforts. It has nearly fifty percent more flood plains than

132. Shipley, *supra* note 2, at A9.

133. *Id.* at A8. J. Wayne Oldroyd, community development director for Maryland Heights said that it is "a business decision (to build in the flood plain). The market will decide whether it's confident in putting development there." *Id.*

134. *Id.* St. Charles and St. Louis counties have 14,000 more acres planned for development for commercial and residential uses. *Id.*

[M]ost of the Missouri River flood plain in St. Louis County [has been] set aside for development by the end of [2003].

Bridgeton has approved plans for a 417-acre commercial park. Levee districts in Chesterfield and Maryland Heights are in the process of raising existing levees to encourage development. The Missouri Bottoms Levee District, farther downstream, is considering the same.

Across the river in St. Charles County, the city of St. Charles has 2.3 million square feet of new commercial space in the Mississippi River flood plain. St. Peters has one new levee around its Old Town district and plans to build a 1,670-acre business park in the flood plain nearby. O'Fallon has designs on annexing flood plain to the north.

Nowhere in the Midwest is this growth pattern as dramatic, according to a satellite image analysis of development in states affected by flooding in 1993.

Id. Most other states have limited development to land that did not flood in 1993. *Id.* ("In other states, development was limited mostly to land that didn't flood 10 years ago.")

135. *Id.*

its neighboring states.¹³⁶ In addition, Missouri's two largest cities, St. Louis and Kansas City, are both in flood-prone areas.¹³⁷

After the Flood of 1993, people's thinking about developing on floodplains seemed to change. The 1993 flood caught most people by surprise; they believed that the levees were adequate to protect their homes and businesses. As a result, many communities have rebuilt many 100-year levees into 500-year levees.¹³⁸ This has brought developers back to these areas.¹³⁹ Communities are also using tax increment financing ("TIF") to lure development.¹⁴⁰

Most of the flood plain development in Missouri lies behind levees. The Monarch Levee, which protects Chesterfield Valley, is being raised to 500-year levels.¹⁴¹ Maryland Heights is following

136. *Id.* Missouri has about 6400 square miles of flood plain, compared to 4755 in Illinois and 4330 in Iowa. *Id.*

137. *Id.* "You have . . . a big, wide flood plain next to an urban area. . . ." said Michael F. Robinson, a senior policy advisor at FEMA, when describing St. Louis. *Id.*

138. Heisler, *supra* note 1, at A6. Support for this approach is the fact that the 500-year levees in Riverport and Earth City, both St. Louis area levees, stood up against the 1993 waters. *Id.*

139. *Id.* at A7. For example, the Monarch levee in Chesterfield has led to development, which has been successful from an economic growth standpoint. More than 35,000 people visit Chesterfield Commons, a huge strip mall, every day, spending over \$300 million a year. *Id.* THF Realty, a major developer in the area, pays \$3 million in property taxes every year and THF's tenants generate over \$20 million in sales tax. *Id.* Proponents of the levee, such as Senator Jim Talent (R-MO) also argue that it was needed to protect existing development, such as Highway 40 and the Spirit of St. Louis Airport. *Id.*

140. *See, e.g., id.* The city of Chesterfield created a TIF district in 1994. *Id.*

That plan named \$72.5 million of specific improvements that would attract new development. Besides raising the Monarch Levee to the 500-year level, they also included upgrading Highway 40, improving drainage and building new roads.

The plan called for developers, the levee district and others to pay for the improvements and then later be reimbursed through a pot of TIF revenue. That revenue was to be generated by setting aside taxes on future development.

Id. In 2002, legislation forbade St. Charles County from using TIFs to promote floodplain development. The city filed suit to overturn the law. Mark Schlinkmann, *St. Charles Leaders Seek Veto on TIF Restrictions: They Say New Bill Singles Out the City and Would Hurt Development*, ST. CHARLES COUNTY POST, May 30, 2002, at 1. The court found the law void on a technical matter. Ben Hallman, *St. Charles County Floodplain is Again Cleared for TIF: Judge's Ruling Voids Law Passed After Deadline*, ST. LOUIS POST-DISPATCH, Feb. 10, 2004, at B1.

141. Mo. Coalition for the Env't, Floodplains, <http://www.moenviron.org/Section.asp?SID=4534&N=Floodplains> (last visited Sept. 2, 2005) [hereinafter Floodplains]. The problem is that in combination with the effects of other area levees, "some people . . . will say that maybe [a 500-year levee is] not even a 100-year levee anymore," says Edward J. Heisel, senior law and

suit,¹⁴² and the U.S. Army Corps of Engineers recently proposed building a 1000-year levee near Jefferson City.¹⁴³ Some contend that these actions amount to “levee wars,” with every community building higher and higher levees to protect themselves from river levels increased by their neighbors’ levees.¹⁴⁴ Recent efforts by Missouri state lawmakers to recommend that the state oversee floodplain development failed.¹⁴⁵

policy director of the Missouri Coalition for the Environment. Heisler, *supra* note 1, at A7. The Army Corps of Engineers says that the Monarch Levee raises flood levels elsewhere by 0.8 feet, under the one-foot NFIP maximum. *Id.* at A6. Earlier reports claimed that it would raise water levels as much as 3.4 feet. *Id.* at A7.

142. Shipley, *supra* note 127, at A12.

143. Shipley, *supra* note 2.

Part of the area protected by [the 1,000-year levee] and some of the footprint of the levee will cover land that was purchased using federal hazard mitigation [buyout] funds after the 1993 and 1995 floods.

Properties purchased in the Hazard Mitigation Grant Program are subsequently deed restricted to allow only open space uses. Construction of a levee on such property is specifically prohibited by [FEMA] regulations governing the program. However, political pressure from the Corps, [Senator] Bond and [former Senator] Ashcroft, and Missouri government officials convinced FEMA to allow construction of [the levee] over mitigation land.

Floodplains, *supra* note 141.

144. Shipley, *supra* note 127, at A12.

145. *Id.*

A task force convened by then-Gov[ernor] Mel Carnahan recommended that the state oversee levee construction.

“The current levee situation in Missouri invites levee wars—a situation where each community . . . is encouraged to continue building his levee higher and stronger in order to protect his interest and ensure river water flows elsewhere,” the report said. “But by everyone adopting this strategy, the aggregate result appears to actually increase the flood danger by increasing the height and velocity of the river flow during floods.”

Id. State Rep. Denny Merideth (D-Caruthersville) introduced a bill in 2003 to implement a state level permitting system for flood plain development, but it never got out of committee. The bill required:

[A]ll new commercial, residential, or industrial structures in federally delineated floodways and all variances from the requirements of local ordinances be approved by SEMA. Structures intended to be flooded or associated with bridges, roads, and water-related recreation and commercial activities are exempt. Permits will only be issued if the structure meets all applicable state and federal requirements and if the construction will not raise the elevation of the 100-year flood level by more than 1/10 of a foot. Permits must also require that the lowest floor of insurable structures be elevated at least one foot above the 100-year flood level.

II. THE NEED AND PROPOSAL FOR STATE LEVEL FLOOD PLAIN REGULATIONS IN MISSOURI

For over a hundred years, man has thought that he could tame the waterways. We have built “levees, then floodways, then reservoirs, and finally pumping, drainage, and channel building projects to protect and facilitate development of the nation’s floodplains.”¹⁴⁶ At nearly every step, we have lost.¹⁴⁷ Every time that flood waters broke or overtopped the levees, overwhelmed the pumping systems, or proved too much for the reservoirs, we were surprised, because this time, technology was supposed to have tamed the beast.¹⁴⁸ Despite suffering the losses of 1993, Missouri’s lawmakers continue to be convinced again that innovations can control the state’s waters. This is a mistaken assumption, and will lead to costly and disastrous consequences when the next flood once again proves stronger than our engineering abilities.

A. Effects of Locally Controlled Flood Plain Regulations

Missouri’s current system for flood plain regulation counteracts the goals of the National Flood Insurance Program. Leaving all development decisions up to local communities not only gives no

H.R. 620, 92d Gen. Assem., 1st Reg. Sess. (Mo. 2003), available at <http://www.house.state.mo.us/bills03/bills/hb620.htm>.

146. Houck, *supra* note 11, at 64–65.

147. *Id.* at 64.

The customary sequence of events generally continues to be (1) flooding, (2) flood losses, (3) disaster relief, (4) flood control projects attempting to modify the flood potential through provisions for storing, accelerating, blocking, or diverting flood waters, (5) renewed encroachment and development onto the floodplain and upstream watershed, (6) flooding, (7) flood losses, (8) disaster relief, (9) more projects, (10) more encroachment and development, *ad infinitum*.

Id. (quoting U.S. WATER RES. COUNCIL, A UNIFIED NATIONAL PROGRAM FOR FLOOD PLAIN MANAGEMENT II-3 (1979)).

148. This is most painfully evident in the tragedy caused by Hurricane Katrina in August and September of 2005. Of course, not everyone was surprised. See *Washing Away*, TIMES-PICAYUNE (New Orleans), June 23–27, 2002, available at <http://www.nola.com/hurricane/?/washingaway/>.

incentives for smart use of flood prone areas, but actually promotes overdevelopment of those lands.¹⁴⁹

Communities have strong incentives to develop flood prone lands.¹⁵⁰ These large, flat expanses are perfect locations for offices and commercial development that bring jobs and money. Moreover, the federal government subsidizes the levee development and infrastructure growth that makes this possible.¹⁵¹ For these communities, development appears on its face to be a win-win situation.¹⁵² The NFIP provides inadequate protections against poor choices in floodplain development.

This strategy of growth harms both the community itself and its upstream and downstream neighbors. Harm comes to the community because it develops in flood-prone areas under the assumption that next time, the levees will hold.¹⁵³ With billions of dollars of development now sitting behind imperfect levees in Missouri, when a breach occurs, the results will be catastrophic. Despite the

149. Developing floodplains also causes great harm to the environment and wildlife. This is, however, beyond the scope of this Note.

150. Interview by David Brancaccio with Oliver Houck, Tulane University Law School (Sept. 23, 2005) (transcript available at http://www.pbs.org/now/transcript/transcriptNOW138_full.html). In discussing the incentives for development in Louisiana, Houck notes:

The closer to the coast, the more money you get. You get federal bridges, federal highways, public sewage treatment, water lines. You get Corps levees, and jetties and this and that, none of 'em work. But, you get 'em free. And, above that you get disaster relief when the storm comes. And, above that you get federal flood insurance. I mean, these are huge incentives. You'd be a fool not to build on the beach.

Id.; see also *Rethinking Flood Insurance*, WASH. POST, Sept. 21, 2005, at A22.

151. Shipley, *supra* note 2, at A9. "'Right now, our national approach is, we're going to show you the high-risk area and then show you how to build there,' said Larry Larson, executive director of the Association of State Floodplain Managers . . ." *Id.*

152. Heisler, *supra* note 1, at A6. "'I think we'd be derelict if we didn't do everything we could to raise that levee,' said Earl Hoffman, chairman of the Monarch-Chesterfield Levee District. 'I don't know who this is not a win-win situation for.'" *Id.* Speaking about the two million square feet of construction at the Fountain Lakes Commerce Center, St. Charles City economic-development director Nadine Boon also is not worried about flooding. "Even a big flood like the one in 1993 isn't a concern. 'It would be high and dry' . . ." Bruce Rushton, *Odd Ducks: The Fight to Preserve St. Charles County Floodplains Makes for Some Strange Bedfellows*, THE RIVERFRONT TIMES, Nov. 27, 2002, available at <http://www.riverfronttimes.com/issues/2002-11-27/news/feature.html>.

153. See, e.g., Heisler, *supra* note 1, at A1. "'The likelihood of [Chesterfield Valley] ever flooding again is slim to remote Maybe it will flood [again] 200 years from now . . .,'" said one local developer. *Id.*

government's increasing expenditures on flood control projects,¹⁵⁴ potential flood losses continue to grow.¹⁵⁵ Neighboring communities both upstream and downstream face the repercussions of the raised flood levels levees cause.¹⁵⁶ The NFIP requires that a levee raise flood levels no more than one foot, but measurements do not account for the effects of flood control projects in other areas.

The terminology of flooding can easily confuse people into thinking that major floods are less common than they actually are.¹⁵⁷ Flood stages are increasing dramatically on the lower Missouri river.¹⁵⁸ With increasing flood stages, 1993's levels of flooding, characterized as approximately a 100-year flood, "can be expected to occur every 15–20 years or less in the future."¹⁵⁹ No matter what the cause of the increase, the result is that a levee designed to protect against what we today call a 500-year flood is likely to be overtopped.¹⁶⁰

154. Shipley, *supra* note 2, at A8. Federal taxpayers have spent about \$140 billion in the last twenty-five years on flood control structures and disaster assistance. *Id.*

155. *Id.* "[F]lood damages in the United States have more than doubled since 1900 in inflation-adjusted dollars, rising to more than \$5 billion per year on average." *Id.*

156. See Belt, *supra* note 87, at 684. Levees do not cause flooding, but they can exacerbate the effects. "[L]evees did not cause the 1993 flood. During large events such as occurred in 1993, levees have minor overall effects on floodstage but may have significant localized effects." INTERAGENCY FLOODPLAIN MGMT. REVIEW COMM., *supra* note 48, at 50.

157. INTERAGENCY FLOODPLAIN MGMT. REVIEW COMM., *supra* note 48, at 59. The term 100-year flood leads many to think that it will only occur once in 100 years. This is misleading—it can easily occur several times in that period.

Technically only the outer edge of the 100-year floodplain has a risk of one percent. The risk rises for sites closer to a river, ocean or some other water feature, and also at lower elevations Variation of risk is not usually shown on floodplain maps. There are areas within the mapped 100-year floodplain that may flood more frequently and to greater depths than others.

Id. (citations omitted).

158. Robert E. Criss, *Rising Flood Stages on the Lower Missouri River*, EAST-WEST GATEWAY BLUEPRINT PAPER (2002), at 1, available at http://www.kwmu.org/pic/Flood/rising_flood_stages.pdf. "Flood stages at constant discharge have risen approximately 4 to 9 feet over the last ~70 years at seven of the nine long-term gauging stations on the lower Missouri River." *Id.*

159. Nicholas Pinter & Reuben A. Heine, Hydrologic History of the Lower Missouri River 11 (2002), <http://216.114.78.114/webcenter/sites/mce/images/Pinter%202002.pdf>.

160. See, e.g., Shipley, *supra* note 2, at A9. The 1000-year levee being built in Jefferson City is expected to provide only 500-year protection by 2031. *Id.* "Rising flood stage trends imply that large floods will occur more frequently than previously estimated Such profound changes in flood response should be recognized on the Missouri River and

Missouri's hands-off approach to floodplain development resulted in a race to develop much of the most risky and flood-prone land in the state.¹⁶¹ This development, subsidized by the federal government, will lead to catastrophic losses when the next major flood arrives.

B. Proposed State Regulation of Floodplain Uses in Missouri

Statewide regulation of floodplain development will protect Missouri businesses and residents from the cataclysmic effects of the next major flood. A program of this type will be a difficult sell in Missouri, where property rights are taken very seriously.¹⁶² Any reform efforts must begin with education, reminding people of the trauma of 1993 and educating them on the realities of the current direction of development.

Another important early step will be to vastly improve the state level technical assistance program. Many negative attitudes towards state and federal level floodplain regulation can be traced to poor organization and communication from FEMA and state level officials.¹⁶³ State level technical assistance will be especially crucial for small businesses and farmers who do not have the resources to decipher the system themselves.¹⁶⁴

A successful state floodplain management program for Missouri has four elements. First, the state must require counties to adopt a floodplain ordinance that complies with state standards. Second, counties should have a choice between managing their own program or turning management over to the state agency. Third, communities

incorporated into current estimates of flood hazard and into strategies for river management and flood mitigation." Pinter & Heine, *supra* note 159, at 1.

161. For an excellent discussion of how the NFIP must be changed to provide incentives to state and local governments and to the private sector to promote smart use of floodplains, see NAT'L WILDLIFE FED'N, *supra* note 72.

162. See, e.g., Shipley, *supra* note 127, at A12. "There's an inherent feeling in the state of Missouri that people have the right to develop their property no matter what it does to their neighbors It's a very narrow-minded view that puts the rights of the individual supreme over the good of the community," said Ted Heisel, executive director of the Missouri Coalition for the Environment. *Id.*

163. Steven E. Ehlmann, *Conflict at the Confluence: The Struggle over Federal Flood Plain Management*, 74 N.D. L. REV. 61, 67-68 (1998). "FEMA officials often seem more like inquisitors than federal bureaucrats that are 'here to help.'" *Id.* at 67.

164. *Id.* at 68.

with high levels of repetitive loss claims must be under stricter regulation. Finally, the state should implement a program of market-based disincentives for developing floodprone areas.

Missouri must set statewide standards for floodplain management and require that communities adopt ordinances that meet these standards. Standards can be set out simply, beginning with a statement of purpose.¹⁶⁵ Missouri should note in its statement of purpose that agriculture is an acceptable use of floodprone property.¹⁶⁶ The state can also provide model ordinances to assist

165. A good model of a statement of purpose is that of Minnesota:

(a) The legislature finds:

(1) a large portion of the state's land resources is subject to recurrent flooding by overflow of streams and other watercourses causing loss of life and property, disruption of commerce and governmental services, unsanitary conditions, and interruption of transportation and communications, all of which are detrimental to the health, safety, welfare, and property of the occupants of flooded lands and the people of this state; and

(2) the public interest necessitates sound land use development as land is a limited and irreplaceable resource, and the floodplains of this state are a land resource to be developed in a manner which will result in minimum loss of life and threat to health, and reduction of private and public economic loss caused by flooding.

(b) It is the policy of this state to reduce flood damages through floodplain management, stressing nonstructural measures such as floodplain zoning and floodproofing, flood warning practices, and other indemnification programs that reduce public liability and expense for flood damages.

(c) It is the policy of this state:

(1) not to prohibit but to guide development of the floodplains consistent with legislative findings;

(2) to provide state coordination and assistance to local governmental units in floodplain management;

(3) to encourage local governmental units to adopt, enforce and administer sound floodplain management ordinances;

(4) to provide the commissioner of natural resources with authority necessary to carry out a floodplain management program for the state and to coordinate federal, state, and local floodplain management activities in this state; and

(5) to provide incentives for communities to participate in the national flood insurance program and for citizens of Minnesota to take actions such as purchasing and maintaining flood insurance to reduce future flood damage to private property.

MINN. STAT. ANN. § 103F.105 (Supp. 2005).

166. Agriculture is not an ideal use of floodprone land, but it is preferable to development. A major reason that prior state level floodplain laws failed was because farmers feared that their interests would be harmed. Shipley, *supra* note 127, at A12.

counties and communities.¹⁶⁷ If communities or counties do not adopt an ordinance, the law must provide that the state will impose one.¹⁶⁸

Missouri's new floodplain management system should allow counties to adopt and manage their own program, or to turn it over to the state. Unlike many other Midwestern states,¹⁶⁹ Missouri has a large number of counties, many of which are sparsely populated and have few resources.¹⁷⁰ These counties do not have adequate resources to implement and manage a floodplain program. On the other hand, counties such as St. Louis¹⁷¹ and Jackson County¹⁷² would probably prefer to manage their own programs, following the state's standards. Providing an opt-in system appears to be less of an imposition than a total state takeover, while still providing assistance for smaller, rural counties.

Levee permits, however, should be approved at the state level. Coordinating development among communities will help prevent levee wars.¹⁷³ A statewide levee permitting process would prevent each town from making decisions that harm its neighbors.

Repetitive losses are a problem in Missouri, and the state must work to reduce these types of losses.¹⁷⁴ Buyout programs have proven

167. Wisconsin and Maine both provide model ordinances on their websites. Me. State Planning Office, Floodplain Management Ordinances, <http://www.state.me.us/spo/flood/ord/> (last visited Sept. 2, 2005); Wis. Dep't of Natural Res., Model Zoning Ordinances and Associated Documents, <http://www.dnr.state.wi.us/org/water/wm/dsfm/flood/communities.htm> (last visited Sept. 2, 2005).

168. See, e.g., MINN. STAT. ANN. § 103F.121(3) (allowing state commissioner to impose an ordinance in the event that a local government fails to adopt certain minimum standards).

169. Wisconsin, for example, has only seventy-two counties. U.S. Census Bureau, Wisconsin County Selection Map, http://quickfacts.census.gov/qfd/maps/wisconsin_map.html (last visited Sept. 2, 2005). Forty-three of them have populations over 25,000, several over 100,000. U.S. Census Bureau, Wisconsin County Population Estimates: April 1, 2000 to July 1, 2002, http://www.census.gov/popest/archives/2000s/vintage_2002/CO-EST2002-01/CO-EST2002-01-55.html (last visited Sept. 2, 2005).

170. Missouri has 115 counties. U.S. Census Bureau, Missouri County Selection Map, http://quickfacts.census.gov/qfd/maps/missouri_map.html (last visited Sept. 2, 2005). Of these 115 counties, only seventeen had populations over 50,000 in 2003. U.S. Census Bureau, Missouri County Population Estimates: April 1, 2000 to July 1, 2002, http://www.census.gov/popest/archives/2000s/vintage_2002/CO-EST2002-01/CO-EST2002-01-29.html (last visited Sept. 2, 2003) [hereinafter Missouri County Population Estimates]. Seventy-four counties had populations under 25,000. *Id.*

171. Population 1.018 million. Missouri County Population Estimates, *supra* note 170.

172. Population 660,000. *Id.*

173. See *supra* note 144 and accompanying text.

174. Of the top 200 communities with repetitive losses, almost 10% are in Missouri. NAT'L

to be a very effective tool against repetitive loss.¹⁷⁵ Missouri needs to target the communities with high repetitive losses, requiring them to address the problem through participation in the buyout program, or to implement other mitigation efforts.

Market based incentives should be a major part of the Missouri program. By contrast, Maryland requires developers to purchase easements for any project that will increase flood levels elsewhere, even below the one foot FEMA maximum.¹⁷⁶ This requirement forces communities and developers to account for the costs their projects have on other towns and serves as a control on building.¹⁷⁷

Much of the undeveloped floodplains in Missouri are currently used for agricultural purposes.¹⁷⁸ An agricultural conservation easement coupled with a charitable remainder trust allows farmers to maintain their income throughout their life while ensuring that their lands remain undeveloped after their death.¹⁷⁹ While this option would only be appealing to those landowners with strong feelings on conservation of agriculture, it could still be a powerful tool to those farmers who want to preserve their way of life for future generations.¹⁸⁰ State level standards, with special protections for agricultural land, managed at the state or local level, combined with repetitive loss prevention measures and market based incentives will reverse Missouri's dangerous path of building on flood-prone land.

WILDLIFE FED'N, *supra* note 72, at 86. St. Charles County alone has 1382 repetitive loss properties, with a total payout from the NFIP of over \$58 million. *Id.* at 81. Valley Park has 396 properties totaling \$24 million. *Id.* They are 5th and 14th in the nation, respectively, for repetitive loss payments. *Id.* As a state, Missouri is third for total repetitive loss payments. *Id.* at 95.

175. *Id.*

176. MO. CODE REGS. 26.17.04.11(B)(6) (Supp. 1996).

177. This will require legislative determinations of who is affected by building. The legislature will need to determine a narrower range of affected parties, as it will become unfeasible without one.

178. *See supra* note 166.

179. Myra Lenburg & Norman Rogers, Jr., *Farmland Preservation: Combining Land Conservation and Planned Giving*, PROB. & PROP., Sept./Oct. 2003, at 17, 18. A landowner would create a conservation easement and donate it to a conservation organization. *Id.* The landowner then donates a restricted fee interest to a charitable remainder trust ("CRT"). *Id.* The CRT would provide a lifetime income to the landowner and/or his or her spouse. *Id.*

180. *Id.* They could get a much higher price for their land on the market if it carried no easements.

III. CONCLUSION

Missouri relies on a false sense of security in developing lands that have been flooded numerous times in the past 100 years. Each flood was followed by larger levees and other structural measures, and each time we were surprised when the waters broke through. The cycle must be broken. The NFIP is inadequate to prevent the pattern.

Missouri needs to follow the path of many other states and enact stronger floodplain laws. Even in Missouri, with its proudly independent property owners, state level floodplain laws are feasible. An aggressive education campaign, combined with the proposed community friendly program, and market based incentives will allow Missouri to break the cycle and prevent a soggy future.