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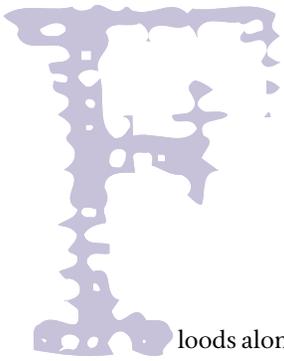
Preventing Flood Damage

**Floodplain protection offers a
cost-effective alternative to
expensive flood-control measures.**



RICHARD DAY/DAYBREAK IMAGERY

Inappropriately sited
development costs bil-
lions in flood damage.
Alma, Illinois.



Floods along Northern California's Napa River have caused an average of \$10 million in property damage each year since 1960. It's not that engineers haven't tried to control the river's rages. Like many rivers, the Napa River—which flows through the famous Napa Valley wine-growing region—has been dredged and channeled. Levees have been built, and the river's banks have been fortified with concrete. Still, seasonal floods have wreaked havoc on lives and property and threatened to disrupt the valley's lucrative tourist trade.

But in 1998, Napa County voters approved funding for a radical new river-management plan. Instead of trying to control the river, the engineers will let it flow, and 500 acres of floodplain will be acquired to accommodate winter rains. Bridges will be raised, some levees will be lowered, and 17 homes in the floodplain will be purchased and demolished, as will several businesses and a trailer park. The estimated cost: \$160 million to "fix" a river that has done \$500 million in flood damage since 1960.⁹⁸

According to the U.S. Army Corps of Engineers, flood damages in the U.S. average \$4.3 billion each year.⁹⁹ But a protected floodplain contains no property to be damaged and acts as a permanent "safety valve" for flooding, reducing destruction to developed areas downstream. A 1993 study by the Illinois State Water Survey found that for every 1 percent increase in protected wetlands along a stream corridor, peak stream flows decreased by 3.7 percent.¹⁰⁰

Communities across the nation are learning that building in floodplains is an invitation to disaster, despite expensive dike and levee systems that simply increase flooding farther downstream. Expense piles on expense as residents and businesses demand costly drainage improvements, flood control projects, flood insurance, and disaster relief. In the heavily developed floodplain of New Jersey's Passaic River, for example, inappropriate development resulted in \$400 million in flood damages in 1984 alone. One mitigation proposal envisioned construction of a \$2.2 billion tunnel; another would require the purchase and condemnation of 774 homes.¹⁰¹ ►

Save the bay!



ALEX TEHRANI

Students test the waters of Barnegat Bay, New Jersey.

Only 40 miles from New York City, Ocean County, New Jersey, is among the fastest growing counties in the nation's most densely populated state. It is also a

place of great natural beauty and home to a network of streams and marshes along slender Barnegat Bay.

Inappropriate development across Ocean County is polluting the ground water and threatening the quality of life. Despite this, county leaders were long reluctant to ask voters to spend money on open space protection, fearing that the largely Republican and senior electorate would not support new property taxes for land conservation.

But polling and other research by the Trust for Public Land suggested that voters would support local open space funding. TPL helped organize a citizens committee to promote a property tax measure and helped draft a measure that their research indicated voters would support. When county leaders approved the measure for the November 1997 ballot, TPL made a grant to a community organization to educate the public about the issue.

Today, Ocean County is one of 16 New Jersey counties and 99 municipalities to have dedicated open space trust funds, making them eligible for state grants. Ocean County's measure is expected to generate \$4 million annually to protect watershed and agricultural lands.

Reaping the benefits of the forests and the trees



NANCY WARNER, PACIFIC FOREST TRUST

Susan Pritchard of the Pacific Forest Trust visits a sustainably-managed forest protected from development by conservation easements.

Private timberlands contribute to community economies through the production of lumber and other forest products, by hosting recreation and tourism, and by performing vital ecological and biological services such as cleaning the air, stabilizing watersheds, and safeguarding biodiversity.

In Virginia, for example—where 77 percent of more than 15.4 million acres of timberland is held by more than 400,000 private landowners—timber production and wood processing contribute \$11.5 billion a year to the state economy and employ 220,000 workers. Wildlife and forest-based recreation contribute an additional \$11.7 billion.¹⁰²

But as the timberland becomes valuable for development, small timber owners may no

longer be able to afford to pay property taxes, and families of deceased timber owners may have to sell the land to pay crushing inheritance taxes.

According to the Pacific Forest Trust, which protects timberland through conservation easements, some nine million acres of forestland—one quarter of all private holdings—may be in danger of conversion to non-forest use in the Pacific Northwest alone.¹⁰³

Just as an agricultural easement prohibits development while allowing a farmer to farm, a timberland easement prohibits development while allowing a specified level of timber harvest. The easement reduces the taxable value of the land, so a landowner can afford to keep it in forest, and preserves the forest's economic value while reducing the community's costs for schools, roads, and other development-related infrastructure.

In recognition of the need to conserve working forests, in 1990 Congress created the Forest Legacy Program to fund purchases of forestland and easements.¹⁰⁴ By 1998, the program had distributed approximately \$38 million—barely enough to make a dent in conservation needs.

In 1999, as part of its effort to increase federal funding for land protection, the Clinton administration requested \$50 million in Forest Legacy funds. Other money for forest protection comes from state and local programs. Many forest easements are held by the nation's more than 1,200 local land trusts.

Governments at all levels are prohibiting development in floodplains or are acquiring these lands for permanent flood protection.



RICHARD DAY/DAYBREAK IMAGERY

Standing levee along the Mississippi River.

► **Communities Acquire Floodplains**

No wonder that more and more governments at all levels are prohibiting development in floodplains or are acquiring floodplains for permanent flood protection. Near Boston, for example, officials protected—through purchase or easement—over 8,000 acres of wetlands along the Charles River that are capable of containing 50,000 acre-feet of water as an alternative to a \$100 million system of dams and levees. Loss of these wetlands would have caused an estimated \$17 million in flood damage annually.¹⁰⁵

Similarly, the residents of Littleton, Colorado, created a 625-acre park and seasonal wetland rather than channel 2.5 miles of the South Platte River. (Local bonds and federal grants paid for the floodplain acquisition.)¹⁰⁶

Some towns have even relocated to avoid the ongoing expense and trauma of trying to prevent—and rebuild after—a disastrous flood. In 1978, the entire population of Soldiers Grove, Wisconsin, moved out of reach of the Kickapoo River to avoid the devastating floods that had descended once each decade. The U.S. Army Corps of Engineers proposed a \$3.5 million levee to protect the town, but maintenance expenses would have been double the town's annual property tax receipts. It cost the U.S. Department of Housing and Urban Development \$1 million to move the town, saving an estimated \$127,000 a year in flood damage.¹⁰⁷

Because of the high cost of recurring flood damage, in 1988 the Federal Emergency Management Agency (FEMA) announced that in the future it would work to relocate homes and businesses out of the path of "recurring natural disasters."

Valmeyer, Illinois, relocated out of the reach of the Mississippi River after the Midwest floods of 1993—the most costly in U.S. history, with damage estimates between \$12 billion and \$16 billion. Residents of Valmeyer (pop. 900), 30 miles south of St. Louis, reestablished their town on a nearby hill after FEMA announced it would help rebuild homes only in a new, higher location.¹⁰⁸

FEMA granted \$2 million dollars in disaster assistance to Arnold, Missouri, after flooding by the Mississippi and ►

Open space in Minnesota? You bet!

- Proportion of proceeds from Minnesota state lottery dedicated to that state's Environment and Natural Resources Trust Fund since its establishment in 1988: **40 percent**
- Amount granted from that fund in its first decade to protect land and complete other environmental projects: **\$82.8 million**
- Proportion of Minnesota voters that in November 1998 approved a 25-year extension of the Environment and Natural Resources Trust Fund: **77 percent**
- Annual amount expected to be generated by this fund by the year 2010: **\$50 million**¹⁰⁹

The town of Valmeyer, Illinois was relocated to save money spent on flood damage.

RICHARD DAY/DAYBREAK IMAGERY



A protected floodplain that doubles as a wildlife refuge or recreation area may generate economic benefits by attracting hunters, birdwatchers, and other tourists to a community.

Voters in Arnold, Missouri, passed a bond initiative to raise funds to buy endangered open space.



MIKE MOORE

Urban trees, please

- Proportion of tree cover in the total land area of Atlanta, Georgia: **27 percent**
- Estimated annual value of this tree cover to improving Atlanta's air quality: **\$15 million**
- Additional annual economic benefits to air quality that would be realized if Atlanta's tree cover were increased to 40 percent, the proportion recommended by the forestry organization American Forests: **\$7 million**
- The amount Atlanta's current tree cover has saved by preventing the need for stormwater retention facilities: **\$883 million**
- Additional economic benefits in stormwater retention that would be realized if Atlanta's tree cover were increased to 40 percent: **\$358 million**
- Decline in natural tree cover in the Atlanta metropolitan area since 1972: **60 percent** ¹¹³

- ▶ Meramec Rivers in 1993. The assistance was awarded in part because of the town's strong flood-mitigation program, which includes the purchase of damaged or destroyed properties and a greenway along the Mississippi River floodplain. In 1995, another large flood struck Arnold, but this time damage amounted to less than \$40,000 because of public acquisition of flood-prone and flood-damaged properties.¹¹⁰

FEMA estimates that federal, state, and local governments spent a total of \$203 million acquiring, elevating or removing damaged properties from floodplains after the 1993 floods. This mitigation resulted in an estimated \$304 million in reduced future disaster damages.¹¹¹

Protected floodplains also create economic benefits by providing open space for recreation, wildlife habitat, and farming. A protected floodplain that doubles as a wildlife refuge or recreation area may generate economic benefits by attracting hunters, birdwatchers, and other tourists to a community.

In the Katy Prairie near Houston, Texas, the Trust for Public Land is helping flood control officials and a local land conservancy to purchase agricultural land to serve as a safety valve for seasonal flooding. Much of the land is leased to farmers for growing rice, and it also serves as critical habitat for migratory waterfowl, which attract bird watchers and hunters. Each dollar invested in the project will yield multiple economic benefits that promote local industries and tourism.¹¹² ■



RICHARD DAY/DAYBREAK IMAGERY

Acquiring land, along with elevating and removing properties after the 1993 mid-west floods saved an estimated \$304 million in future flood damages.