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Office of Wetlands,
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EPA Sustainable Communities

Putting Wetlands to Work in Your Watershed

The adverse effects of unchecked growth, or sprawl, on our communities and our watersheds are forcing us to reconsider how and where we grow. In many areas of the country, communities are beginning to realize the cumulative effects of sprawl on the quality of our water resources and all that is dependent on them. Protecting and restoring wetlands and other open spaces with smart growth initiatives is one way to curb those effects. Developers, city planners, and elected officials can work together in local and regional efforts to incorporate wetlands into watershed planning to help meet local water quality standards or permit requirements, generate revenue for the local economy, and protect and improve plant and wildlife habitat. The following case studies highlight how local governments around the country are putting wetlands to work in their watersheds.

PROTECTING FLOODPLAINS FOR THE FUTURE:
Spotlight on Flossmoor, Illinois

When communities become aware of benefits provided by their local wetlands, they more readily collaborate to protect them. Twenty years ago floods began to strike seven communities in the Butterfield Creek watershed, 25 miles south of Chicago. Since then the communities have cooperated with local, regional, state, and federal organizations to combat the flooding problem. A watershed study revealed several facts: (1) the existing floodplain maps underestimated floods; (2) existing detention requirements for construction did not prevent increased flooding; and (3) the watershed had large undeveloped wetlands areas that stored storm water, and developing those areas could increase flooding by 500 percent. To address these concerns, the communities led the development of a model storm water management code that adopted revised floodplain maps to keep construction out of flood-prone areas, required stricter storm water detention methods in construction areas, and required no net loss of valuable natural wetlands. To supplement the code's requirements, the communities are implementing wetland restoration projects throughout the watershed that not only increase storage capacity and protect against future floods but also function as enhanced wildlife areas, recreational sites, and outdoor classrooms. For more information contact Peggy Glassford, 2800 Flossmoor Road, Flossmoor, IL 60422. Phone: (708) 798-2300.

Wetlands benefit this community by

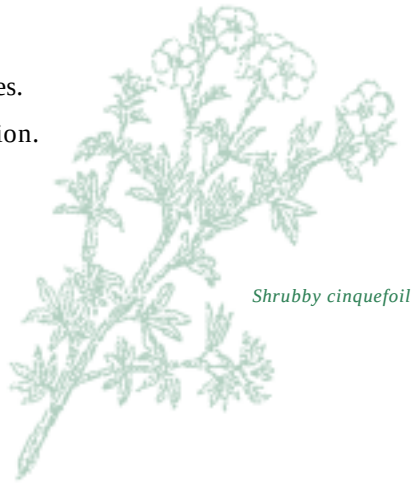
- Storing floodwaters.
- Providing habitat for birds and other wildlife.
- Instilling community pride.
- Providing recreational opportunities.
- Providing opportunities for education.
- Filtering pollutants from runoff.

How does sprawl affect our watersheds and wetlands?

Diverting flows to or from wetland areas, channelizing streams, or draining wetlands for development and mosquito control are all by-products of sprawl that change the hydrology of a watershed.

Al Thomas

The restored wetlands along Butterfield Creek protect several communities from flooding and provide wildlife habitat for many animals like this great blue heron.



Shrubby cinquefoil

PROTECTING THE BOTTOM LINE:
Spotlight on Arcata, California

Using wetlands as an alternative to traditional wastewater treatment saved the city of Arcata millions of dollars.

Faced with the need to improve treatment of the city's wastewater, city officials in Arcata, California, on the northeast shore of Humboldt Bay, settled on a unique approach to wastewater treatment. The Arcata Wastewater Treatment Facility uses a constructed marsh system to improve the quality of the city's treated wastewater. The marsh system, was developed as an alternative to a proposed regional sewage facility. Building a traditional sewage treatment facility would have increased sewer rates by 70 percent, so the marsh system is a cost-effective and environmentally sound solution. The city and the California Coastal Conservancy also restored the 75-acre marsh and wildlife sanctuary that originally occupied the site of the old wastewater treatment facility. The new wetland facility was completed in 1986 at a cost of $7.1 million, which was financed using 75 percent federal, 12.5 percent state, and 12.5 percent local funds. For more information, contact Julie Neander at the City of Arcata Department of Environmental Services, 736 F Street, Arcata, CA 95521. Phone: (707) 822-8184.

Wetlands benefit this community by

- Helping meet water quality criteria.
- Revitalizing a degraded urban waterfront.
- Providing habitat for birds and other wildlife.
- Generating revenue from ecotourism.
- Providing opportunities for academic research.
- Instilling community pride.
- Providing recreational opportunities.
- Educating the public on the importance of protecting water resources.

PROTECTING PLANT & WILDLIFE HABITAT FOR THE FUTURE:
Spotlight on Baytown, Texas

In 1996 the Brownwood subdivision, located about 20 miles east of Houston in Baytown, Texas, was transformed into wetlands and a wildlife sanctuary. The peninsula on which it had been built had suffered a multitude of problems. After the subdivision had been built in the 1940s and 1950s, overuse of groundwater supplies caused the area to sink 10 to 15 feet, leaving the peninsula more vulnerable to storms and hurricanes. In 1983 Hurricane Alicia wiped out the subdivision completely and the residents, fearing future flooding and hurricane damage, abandoned the area. Over the next 10 years, the city of Baytown bought the lots from the former residents and began to formulate plans to create the Baytown Nature Center. With funding from the Federal Emergency Management Agency and other sources, the city removed the old houses, graded the land, dug channels to return flow to the wetlands, and reestablished wetland plants.

The new Baytown Nature Center, which consists of approximately 400 acres of uplands and submerged land, is now home to 275 species of birds, including 5 endangered species. Alligators, deer, fox, and other native wildlife have also returned. In 1997 the nature center was officially designated part of the Great Coastal Texas Birding Trail, a 500-mile route linking the best bird-watching sites along the coast. The center is open to the public for picnics, fishing, and bird-watching; it is also used as an outdoor classroom for fifth graders. Plans are underway for new walking trails and other wildlife observation areas. With the subdivision now removed, the peninsula is reverting to its original mosaic of forest and wetlands. For more information, contact the Baytown Nature Center at (281) 420-6697.

Ken Hammond, USDA NRCS

Wetlands benefit this community by

- Storing floodwaters.
- Filtering out sediment, nutrients, and other pollutants from storm water.
- Providing habitat for birds and other wildlife.
- Increasing the diversity of plant and animal life in the area.
- Generating revenue from ecotourism.
- Providing opportunities for education.
- Providing recreational opportunities.
- Educating the public on the importance of protecting water resources.

The Big Picture

Filling in one acre of wetlands may not seem significant, but the cumulative effect of filling in hundreds of one-acre wetlands affects entire watersheds—including the people, plants, and animals that live in them—and the quality and quantity of our water resources. Arresting sprawl and protecting wetlands requires hard work at the local level through master planning and zoning ordinances. Master plans form the basis for making public and private decisions on land use regulation and development, future investment, and the allocation of critical resources. Zoning ordinances define the permitted uses of land and buildings, the size of lots and yards around homes and buildings, the size of parking lots and other impervious surfaces, and other characteristics of development that might affect wetlands.

Because of the effects of destroying or degrading wetlands, it is important that county, city, and regional managers charged with making local decisions take measures to protect wetlands. Restricting the amount of impervious surface allowed on new developments and encouraging the use of wetlands in open space and water quality management plans are ways to ensure the vitality of wetlands in the future.

Much of the hard work for arresting sprawl and protecting wetlands takes place at the local level through town meetings like this

Characteristics of Sustainable (Smart Growth) Development

Rockdale County, Georgia

- **Development is economically viable and preserves open space, natural resources, and habitats for indigenous species.**
- **There is certainty and predictability in the development process, and development projects that enhance the economy, the community, and the environment receive expedited approval.**
- **Existing infrastructure is maintained and enhanced but expanded when appropriate to serve current and new residents.**
- **There is a beneficial collaboration among the community, the nonprofit sector, and the public and private sectors.**
- **Compact development is focused on existing commercial centers, new town centers, and existing or planned transportation facilities.**
- **Development is limited in ecologically significant areas.**

Conventional residential design . . .

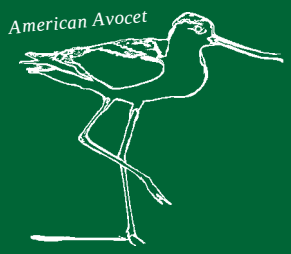
- Lots are uniform in size and shape.
- Cul-de-sacs dominate the landscape.
- Existing natural resources (forest, streams, floodplains, and wetlands) are only moderately protected.
- Streets are excessively wide.
- Long, wide driveways create unnecessary impervious cover.
- Lawns are the dominant features of the site.

Smart residential design . . .

- Lots are narrower and varied in shape.
- Existing natural resources are preserved wherever possible.
- A significant area is retained as natural open space.
- Streets are narrow.
- Houses are closer to the road, creating shorter driveways.
- Vegetated buffers are required along all intermittent and perennial streams.
- Storm water is managed in a treatment train (bioretention facilities coupled with a wet extended detention pond).
- Lawn size is minimized.

Source: Michael Pawlukiewicz. Urban Land Magazine, June 1998.

The Wetland Fact Sheet Series



For more information, visit www.epa.gov/owow/wetlands.

Wetland Resources

On the Internet

Encouraging Smart Growth ..... www.epa.gov/smartgrowth

The Wetlands Conservation and Sustainability Project ..... www.iwla.org

The Sierra Club's Challenge to Sprawl Campaign ..... www.sierraclub.org

The Trust for Public Land ..... www.tpl.org

The Urban Land Institute ..... www.uli.org

Smart Growth Network ..... www.smartgrowth.org

Smart Growth in Maryland ..... www.op.state.md.us/smartgrowth

Smart Growth America ..... www.smartgrowthamerica.com

Center for Watershed Protection ..... www.cwp.org

In Print and Related Fact Sheets

Measuring the Benefits of Federal Wetland Programs, Paul F. Scodari. Available from the Environmental Law Institute. Call 1-800-433-5120, or visit www.eli.org.

Building Green Infrastructure: Land Conservation as a Watershed Protection Strategy, 1999. Available from the Trust for Public Land at www.tpl.org.

The Economic Benefits of Parks and Open Space: How Land Conservation Helps Communities Grow Smart and Protect the Bottom Line. Available from the Trust for Public Land at www.tpl.org.

The Wetlands Assistance Guide for Landowners. Available from the Texas Parks and Wildlife Department at www.tpwd.state.tx.us/conserve/wetlands/wetintro.htm. For a printed copy, contact Julie Anderson, State Wetlands Planner, Resource Protection Division, Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, TX 78744. Phone: (512) 389-4328, fax: (512) 389-8059, e-mail: julie.anderson@tpwd.state.tx.us.

Guiding Principles for Constructed Wetlands, United States Environmental Protection Agency, EPA 843-B-00-003, October, 2000.

Growth and Water Quality Fact Sheet, United States Environmental Protection Agency, EPA 842-F-01-007, November 2001.