

13-2 Ecological Solutions to Flooding and Water Supply Problems

What do The Woodlands, Texas, and Boston, Massachusetts, have in common, besides the distinguishing accents of their people? The answer is that both places have made important decisions in land-use planning that will save millions of dollars by reducing flood damage.

Boston boasts a fine city park system that stretches from the center of the city into the outlying suburbs. Few realize that the park system, with its meandering streams, was built in large part to help control flooding (FIGURE 1). After heavy rains, excess water flows into this basin, where it is slowly released to the sea, reducing flooding and property damage.

The city also purchased large wetlands in an outlying area, rather than letting developers drain and build on them. The wetlands were set aside to reduce flooding and also to provide valuable habitat for fish and wildlife. The project costs one tenth as much as a dam to control flooding.

In 1971, landscape architect Ian McHarg wrote a landmark book entitled *Design with Nature*. In it, he suggests that builders consider wildlife needs, natural flooding, soil stability, and a half dozen other factors when constructing homes. By careful site analysis and design with nature, builders lessen their impact on the land, air, and water.

Texas developer George Mitchell decided to build a new town called The Woodlands using McHarg's ideas. On his forested tract north of Houston, Mitchell envisioned a city in harmony with the forces of nature. He and his staff of planners first analyzed the region and found that they could leave the natural drainage system as open space, which would carry water away more effectively and more cheaply than a storm sewer system. That step alone saved \$14 million in construction costs. Roads were built on high ground, and buildings were restricted from aquifer recharge zones, thus protecting the groundwater that supplies Houston. In 1979, rainwaters drenched the site. The streams swelled by 55%. In neighboring towns built with little regard for nature, water flows increased 180%. Those towns suffered considerable flood damage, whereas The Woodlands managed well.

The Woodlands is an attractive community (FIGURE 2). Most of its trees still stand. The floodplains that were set aside for natural drainage and aquifer recharge harbor numerous birds and mammals, including bobcats and white-tailed deer. This community stands as a testament to the benefits of designing with nature. This approach to development permits nature to direct the design of human settlement and helps people to live in harmony with it—so important in building a sustainable future.