



# A Wetland Dilemma

by Dr. Martin C. Michener

Jim is an environmental engineer. Philip is a volunteer Conservation Commissioner for the town of Everywhere, N.H. As we join them, they peer into a small, dark pool of water, adjacent to a recent town roadway. The engineer wants the pool filled to finish a house lot shown on a subdivision plan. The Conservation Commissioner wants it preserved.

*Jim: See, this isn't a natural wetland; it's a case of trapped water. The town specified the wrong culvert height. You can see that if the culvert was lowered to where it should be, the water would drain out properly.*

*Philip: This is year-round water I've seen several ducks over the last few months using this wetland.*

*Jim: The state law says it's not a wetland unless there are wetland plants present. These are all dead oaks. This never was wet until they put the culvert in too high. It killed the oaks and now you want to save it?*

*Philip: There are cinnamon ferns and sensitive ferns along the edge; both are wetland plants. The town ordinance defines wetlands by the soil drainage; this soil is so wet it's under water. It's now Very, Very Poorly Drained Soil!*

*Jim: You can't find it on the soil maps. They show Well Drained Sandy Loam. Not a wetland.*

*Philip: That's just because this is more recent than the county survey. It is still a wetland and under our jurisdiction. Anyway, with the wildlife value, you can't remove it or alter it without a permit.*

Science describes the facts; law judges what's fair. They meet uncomfortably. Law draws lines between the values of the private land-owner and the values the public accrues from the land. These values often conflict. The land owner is held legally responsible for maintaining public health and welfare values accruing from his or her wetland.

Each New England state defines wetland values differently. In New Hampshire, each town has a different ordinance, most utilizing soils alone for a definition. Some require a no-build buffer zone, others none. In Vermont and Maine, state wetland laws generally have less effect on large land developments than do the site development laws, which scrutinize upland as well as wetland values. In Connecticut, wetlands are protected by the state Department of Environmental Protection and are defined solely by soil parameters. In Rhode Island and Massachusetts, vegetation is the sole criterion for wetland delineation. The values listed for public protection by Massachusetts and

Rhode Island include wildlife habitat, flood control, erosion control, water quality enhancement, and recharge of underlying aquifers. Values are drawn with much logical overlap, and each definition places different legal and practical limits around their protected domains.

The Corps of Engineers administers permits to fill wetlands under Section 404 of the Clean Water Act. If the waterway connecting it to a river flowed less than 5 cubic feet per second, average annual flow, the wetland would be a "headwater" wetland. The Corps also sends each completed application for review to, and receives comment from, the EPA, the U. S. Fish & Wildlife Service, and the National Marine Fisheries Service.

Most states regulate development based on the impact the development will have on the wetland site. The basic concept of estimating impact is simple enough and has three steps. First, describe the existing landscape before alteration. Second, project the 'after' case. Third, evaluate which is more desirable to the various segments of the public and compare the relative values of each. The third step is easier said than done. It is hard to achieve fairness in weighing competing values; the diverse New England public is already polarized on the subject of development and conservation.

A wetland scientist looking at the pool in Everywhere, N.H.. would look for both the causal factors and the possible public values. The hydrology has undergone recent alteration; the culvert has raised the water table during the growing season. The plant pattern supports this interpretation: dead upland trees suggest that flooded roots have recently caused the death. The culvert was the causal factor but what are the possible public values? Philip has seen ducks using the pond, indisputable evidence of wildlife value. However, the tiny area does not significantly support downstream aquatic life, because of its low water storage capacity. During heavy precipitation, the residence time of water in this basin is very short, due to small size and lack of well-developed plant-soil substrate. This lack prevents its serving many of the values on the list, from flood control to water quality renovation. It has an insufficiently developed plant community to provide much recreational, aesthetic, or educational value. But recent ferns have grown up where soils now remain saturated all summer. The decaying trees have holes for cavity-nesting birds. The insects which now burrow through their trunks augment the food available for many species of wildlife. The newly-opened canopy permits sunlight to flood the ground, aiding the growth of herbs and shrubs.

What about values prior to flooding: The land lost to deer, scarlet tanagers, veeries; or the drowned Jack-in-the-pulpit, Lady's-slipper, Indian Cucumber Root, Fringed Polygala, Canada Mayflower and Twin-flower now gone? Is this accidental wetland actually a net public gain? How can one put a fair value on a change, planned or accidental?

To nature-lovers in Everywhere, the initial roadway was an intrusion into the oak forest. Although not owners of this land, many abutters had walked it for years and some knew it better than the owners. So when the owners sold the land and it was subdivided, the ensuing changes wiped out the special knowledge they held. They fought back. Developers cynically refer such campaigns as "Not-In-My-Back-Yard-You-Don't" or NIMBYD. Former neighbors strenuously objected to all the impacts to which they could get the developer's consultants to admit. Many issues were heatedly discussed. More traffic -- it'll endanger our children! Less open space -- where will the children play? Where will the wildlife go? Increased run -- off-the downstream abutters will be flooded, worse than before. Erosion will kill the fish in the stream and pollute our well water. In fact, many small setbacks in the natural world were exaggerated in an effort to

counterweigh the project engineers' land-consuming zeal. In addition to these disputations, nostalgic memories of their walks in the woods close about them haunted their consciences. Frustration over the first phase of development invigorated their fight to protect the new wetland. Many felt as though society's notion of progress, development, and profit had really gone too far.

But engineers can be nostalgic too. From the late nineteenth century through the 1940s, engineers were society's heroes. They built bridges where no one had imagined them. They built ships bigger than some towns to cross the ocean in a few days' time. And trains, hundreds of cars long, to pull people safely from coast to coast; they tunneled through unbroken mountain ranges or found gradually sloping paths to accommodate the modest grades required by locomotives. They designed engines so predictable and self-contained that even non-engineers could run them with some luck. Soon everybody needed cars and electric devices to give them freedom from hard work and exhaustion. Exhaustion had kept everybody from the relaxed leisure time typical of the envied aristocrats: more time would allow them to get back in touch with nature. . . .

Civil engineers are conscientious and hardworking, if often too narrowly focused. Some engineers feel environmental science is not a new field, but an outgrowth of civil engineering. Many feel shut out of their natural role of promoting and caring for the public good.

What if civil engineers had been contracted to enhance the wetland in Everywhere? The site could have been graded with extensive nearly-level areas. The bottom could have been finished with muck, dredged recently from a nearby wetland. Possibly, in addition to the herbs growing spontaneously from the muck, native wetland shrubs, saplings or herbs could be planted. The vegetative diversity would then be higher, with areas of open water surrounded by marsh sedges, cat-tails, rushes, and woody plants such as Silky Dogwood, Red Maple, Black Gum, Buttonbush, Leatherleaf, Winterberry, Maleberry, or Sweet Gale. Level, well-vegetated wetland areas would quickly serve many functions quite well. Our impact can put entries on both sides of the ecological ledger.

Determining the value of wetlands to the surrounding community, both natural and man-made, is a dilemma clouded by many shades of gray. The black water wetland in Everywhere, N. H. is an imaginary situation but it is no less authentic than the numerous "notice of intent" forms filed across New England each day.

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