

# CHANGING ROLES FOR REGULATORS IN ENVIRONMENTAL MANAGEMENT

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*REFERENCE:* *Proceedings of the 1995 Georgia Water Resources Conference*, held April 11 and 12, 1995, at The University of Georgia, Kathryn J. Hatcher, Editor, Carl Vinson Institute of Government, The University of Georgia, Athens, Georgia.

**Abstract.** Regulatory approaches to environmental management have inherent limitations that are increasingly problematic. The solution may lie in revising fundamental assumptions about development and environmental impact.

## INTRODUCTION

The purpose of this paper is to discuss the limitations of a strictly regulatory approach to environmental management with specific reference to nonpoint source pollution mitigation, and the implications of an alternative paradigm for economic development and environmental management with specific reference to NPS issues and regulatory agencies.

## IMPLEMENTATION OF §6217 IN SOUTH CAROLINA

More than 330 surface waterbodies or portions of waterbodies in South Carolina are estimated to be impacted by nonpoint source pollution (SCDHEC, 1989). Section 6217 of the Coastal Zone Reauthorization Amendments of 1990 requires that states with federally approved coastal zone management programs develop and implement Coastal Nonpoint Pollution Control Programs (CNPCP) to ensure protection and restoration of coastal waters. In South Carolina, lead agencies responsible for developing this program are the South Carolina Coastal Council (SCCC) and the South Carolina Department of Health and Environmental Control (SCDHEC). Both agencies have had active NPS pollution control programs for the past five years, and have collaborated with numerous other agencies and programs including the Stormwater Management and Sediment Reduction, Mining, and Dam Safety Programs of the S. C. Land Resources and Conservation Commission; Pesticide Control, Fertilizer and Liming Materials, and Chemigation Acts administered by Clemson University; and §404 permitting program administered by the U.S. Army Corps of Engineers.

South Carolina has elected to undergo a threshold review to establish whether or not existing state programs and/or plans will meet federal requirements under §6217. The required review document (SCCC and SCDHEC, 1993) was submitted to EPA and NOAA in November of 1993, and concludes that State-level enforceable policies presently exist to manage all of the NPS categories identified in EPA/NOAA guidance documents. A variety of management measures was recommended to produce an approvable CNPCP (Table 1).

Of particular concern to state agencies was a NOAA/EPA recommendation that, on the basis of watershed

characteristics, South Carolina's §6217 program include an expanded jurisdictional boundary for the SCCC. At present, this boundary is the most landward point of each of the eight coastal counties. Under the present CZM program, SCCC has direct approval authority for any construction project taking place within this boundary, and has certification authority for SCDHEC permits for water and sewer construction, mining, NPDES sites, and §404 wetland projects. This scope of authority combined with other state-wide NPS programs provides adequate ability to implement §6217 requirements. And besides, changing the boundary as suggested would require petitioning the General Assembly to amend the South Carolina Coastal Zone Management Act; which, according to the Threshold Review document, "... would be very difficult if not impossible to accomplish considering the present political climate in this State, and may allow for other amendments to the program which would not be favorable to resource protection.."

## LIMITATIONS OF CONVENTIONAL REGULATION

This concern highlights the predicament currently facing environmental managers. On one hand, public concern continues to create pressure for effective measures to improve environmental quality. But at the same time, there is growing opposition to any additional regulatory activity and, in fact, mounting pressure to weaken regulations that are already in place. Illustrative of the latter is Malcolm Forbes' (1995) recent comment on Senator Phil Gramm's proposed "Private Property Rights Restoration Act" which, according to Forbes, "would sharply curtail Washington's increasingly capricious imposition of stringent controls on people's private property," and "would restore a sense of accountability to regulators who, up to now, have been largely uninhibited in issuing increasingly arbitrary decrees."

Even among those genuinely concerned with sound environmental management, some inherent limitations of the regulatory approach are becoming apparent. Not the least of these are the expenses of administration, enforcement, and compliance. In 1992, compliance costs alone exceeded \$115 billion, more than 2% of the gross national product (Makower, 1993). Equally troubling is what appears to be an asymptotic track record for environmental improvements. Despite significant and visible improvements resulting from control of grossly polluting facilities, particularly through NPDES and Clean Air programs, environmental quality on many fronts has declined since 1970: water quality in bays and estuaries has deteriorated (World Resources Institute, 1992), ground water quality has declined (Frederick, 1991), overdrafts of groundwater have increased (Rogers, 1985), greenhouse gas emissions have increased (World Resources Institute

and International Institute for Environment and Development, 1988), and soil erosion rates have increased (Clark *et al.*, 1985). In the words of one corporate environmental manager, "The low-hanging fruit has been plucked;" incremental improvements to environmental quality will be orders of magnitude more difficult to achieve by current strategies.

Another problem inherent to a purely regulatory approach to environmental management is the lack of incentive to exceed regulatory requirements; indeed, there are often disincentives to such initiatives. Companies that install emission control equipment that is not mandated run the risk of being required to replace these installations with other equipment at a later date, even though there may be no added environmental benefit. Exceeding the letter of the law often entails additional costs that are not incurred by companies who only adhere to the minimum standard, reducing the competitive position of the more environmentally responsible company.

To many observers, we are approaching a sort of regulatory gridlock: public concern and demand for action are

intensifying, even as environmental improvements become more difficult to achieve; the volume and complexity of regulations continues to grow, even as agency budgets are slashed and the business community feels increasingly burdened. As a result, we hear ever more frequent and strident calls for "systemic change" and "paradigm shifts."

## CHANGING THE PARADIGM

### What's a "paradigm?"

Thomas Kuhn (1970), who popularized the notion of "paradigms," defines the word to mean a body of accepted theory that implicitly defines the legitimate problems and methods of a research field for succeeding generations of practitioners. The key word in this definition is "implicitly:" the actual foundation that a paradigm represents is not explicitly articulated, rather it is understood. Indeed, we may be virtually unaware of the specific nature of the paradigms under which we are operating. Paradigms change, according to Kuhn, when something goes wrong with normal research, signalling the inadequacy of the existing paradigm.

**Table 1. Management Measures Recommended to Produce an Approvable CNPCP for South Carolina**

#### *Wetlands*

- maintain vegetation and geochemistry
- restoration of former wetland & riparian areas
- develop engineered vegetated filters and artificial wetlands

#### *Urban*

- maintain TSS, peak runoff rate, & average volume in new developments at pre-development levels
- maintain natural drainage and vegetation on watershed & site-specific scales
- control erosion and chemical contamination from construction sites
- retrofit existing development to reduce pollution loading
- OSDS design, siting, and operating standards
- public education re: HHW, pet waste, lawns & gardens, OSDS, service stations, parking lots
- site, construct, and operate roads highways & bridges to protect sensitive areas, minimize land disturbance, erosion, and chemical contamination, preserve natural drainage and vegetation, and reduce pollutant concentration in runoff from existing roads, highways & bridges

#### *Agriculture*

- sediment and erosion control
- storage of solids runoff from animal facilities
- nutrient management
- pesticide management
- restricting livestock from sensitive areas
- irrigation management

#### *Forestry*

- preharvest planning
- streamside management areas
- road construction and management standards to reduce sediment and pollutant loading
- timber harvesting standards to reduce erosion and pollution from petroleum products
- standards for mechanical site preparation to reduce erosion
- management of prescribed burning to avoid loss of litter and incorporated soil organic matter
- rapid revegetation of disturbed areas
- forest chemical management
- protection of forested wetlands

#### *Marinas*

- siting standards to provide maximum flushing
- incorporate water quality concerns into plans for new and expanding marinas
- siting criteria to protect shellfish, wetlands, SAV, and important habitats
- shoreline stabilization to reduce erosion
- runoff control and suspended solids removal from hull maintenance areas
- spill containment in fueling areas
- install and maintain pump out and restroom facilities
- management of solid wastes, fish wastes, liquid materials, fuel and oil leaks, and boat maintenance chemicals
- public education re: disposal of pollutants
- boat operating standards to protect shallow-water habitats

#### *Hydromodification*

- planning standards to evaluate impacts of proposed work on physical and chemical characteristics of surface waters, as well as instream and riparian habitats
- management measures for dams to control erosion, sediment, toxic substances, nutrients, and impacts on surface water quality and habitats
- streambank and shoreline stabilization

### **Assumptions of the current paradigm**

The approach of regulatory gridlock may be precisely this sort of signal; a signal that we are operating under a flawed paradigm. And that paradigm in large part may be the implicit assumption that human activity is inevitably harmful to the environment. This paradigm makes natural adversaries of economic developers and environmental managers, and defines environmental management solely in terms of stopping as many blatantly detrimental activities as possible.

### **Pursuing an alternative**

But why should human activity be inherently destructive to our environment? Odum (1993) states that "...it is important that we recognize that the city is a parasite on the natural and domesticated environments, since it makes no food, cleans no air, and cleans very little water to a point where it could be reused." All true, but cities *could* perform these and many other positive functions—if we built them to do so. Our understanding of natural communities and ecosystems suggests that most species play positive roles that contribute to the overall functioning of these systems. Is this truly impossible for the human species...or have we simply failed to consider the opportunities? Indeed, the notion of restoration in Section 6217 Guidance suggests that we may be able to do considerably more than minimize negatives impacts.

The Harmony Project is a non-profit educational corporation created in South Carolina to identify alternative approaches to development and environmental management. The Project is based on three unusual premises that may suggest a new paradigm. First, that it is possible for human activities to have positive environmental impacts. Our failure to demonstrate this may simply be the result of not having considered the possibility. Second, that business and economic development are essential. We recognize that change is a natural part of every ecosystem, and that every species alters its environment in some way. Our concern is with the quality of change. Business and development are potentially one of our most powerful agents for positive change. Third, that sustainable development is cost effective. Sustainability involves increased efficiency, reduction of waste, and added value, all of which produce demonstrable economic benefit.

### **Relevance of the alternative paradigm to NPS Issues**

Many of the management measures listed in Table 1 to reduce NPS pollution can be undertaken as part of economic development activities, and may be much easier to support in this context than as measures solely targeted toward environmental protection. Making environmental improvement (or NPS pollution reduction) an objective of development reveals numerous opportunities for new businesses and new approaches for existing businesses. In Charleston, for example, we have a company that manufactures a stripping machine that can remove surfaces ranging from paint on an aircraft fuselage to three-inch oak planks on the deck of a ship. The machine uses on baking soda and water to accomplish these tasks, and provides an economical and highly effective alternative to hazardous solvents that often create serious air and water quality problems.

Electric passenger vehicles are another example. A variety of misconceptions surround this technology: "They're just golf carts...They're too expensive...They can't go very

fast/far." In fact, electric retrofits are now available for the Geo Metro, S-10 pickup, and several other popular vehicles. They cost less than \$20,000, frequently qualify for government rebates, and cost about 2¢ per mile to operate. They accelerate from 0 to 60 mph in seven seconds, and travel 70 miles on a single charge. These capabilities are entirely adequate for many commuters and government fleet vehicles. Potential impacts on NPS concerns include reduction in air emissions and elimination of potential contamination from oil, gasoline, and antifreeze.

Energy and water conservation are frequently included in lists for public actions to reduce NPS pollution; but utility managers often feel these measures are antagonistic to profitability. The case of New England Electric, however, shows that this does not have to be the case. In the late 1980's, NEE, in collaboration with the Conservation Law Foundation, proposed a modification to the regulatory system that would allow the company to receive a share of the savings resulting from investment in energy conservation projects. In 1990, NEE spent \$71 million on such projects, saving 194,300 megawatt-hours of electricity valued at \$161 million, for a net value of \$90 million. NEE was allowed to set its rates so that it retained 9% (\$8.4 million) of the net value and its customers kept the remainder. This provided an 11.8% return on NEE's investment, and the company estimates that it could spend \$100 million a year until the end of the decade on economically viable energy conservation projects.

### **New roles for regulators?**

What is the role of regulatory agencies under an alternative paradigm based on positive environmental impacts from human activity? Without doubt, part of their role will continue to be to prevent things that should not happen. But as the inevitability of negative impacts becomes a less acceptable premise and alternatives are recognized, prevention of environmentally destructive activities should become an easier task. As this happens, the role of regulatory agencies could broaden to become one of true stewardship: the act of managing the property of others, in this case the resources that we hold in trust for future generations. This role demands more than preservation—it also requires enhancement; just as a financial trustee is expected to manage resources held in trust in ways that will increase their value.

As stewards, the mission of regulatory agencies would be to catalyze appropriate activities as well as inhibit the inappropriate ones. In many cases, regulatory agencies are already uniquely well-equipped to function as catalysts, because they have access to the best expertise available on interactions between human activity and the environment. The problem is that there are few mechanisms presently available to share this expertise, because this has not been necessary to accomplish the primary mission of the agencies. But in a catalytic role, information sharing is essential to increase capabilities for environmentally positive activity. Success under the alternative paradigm would be quantified in terms of how much empowerment has been accomplished and how many non-regulatory entities are taking active responsibility for stewarding resources. In the case of nonpoint source pollution, this sort of broad participation is widely acknowledged as the key to long-term solutions. Changing the paradigm may not be so difficult after all; perhaps we simply have to decide to do it.

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