



SUMMER 2001

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**Palazzolo v. Rhode Island:  
Another Supreme Court Take on  
Takings?**

By W. Scott Laseter,  
Kilpatrick Stockton LLP

More than 80 years ago the United States Supreme Court held in *Pennsylvania Coal Co. v. Mahon*<sup>1</sup> that government regulations could so impair the value of private property as to constitute a taking under the Fifth and, in the case of an action by a state or local government, the Fourteenth amendments to the Constitution. In *Pennsylvania Coal*, Justice Holmes wrote that, “while property may be regulated to a certain extent, if a regulation goes too far it will be recognized as a taking.” Later cases developed an analytical distinction between so-called total takings, where the offending regulations deprive the property of “all economically beneficial use,” and partial takings, where the regulations deprive the owner of substantial value but do not go as far as a total taking. At the heart of the Court’s analysis in “partial takings”<sup>2</sup> cases is the “economic impact of the regulation on the claimant and, particularly, the extent to which the regulation has interfered with distinct investment-backed expectations.”<sup>4</sup>

In *Palazzolo v. Rhode Island*,<sup>5</sup> the high court considered, among other questions, whether a claimant who acquires property after the date the offending regulation goes into effect can have any reasonable investment-backed expectations that could be impaired by the regulation. The Court answered in the affirmative. However, Justice Kennedy’s brethren saddled his decision, which merely remanded to the Supreme Court of Rhode Island the plaintiff’s claim that prohibitions on filling coastal wetlands constituted a partial taking, with five separate opinions. Both Justices O’Connor and Scalia concurred in Justice Kennedy’s decision. Justice Stevens filed a partial concurrence and partial dissent, and both Ginsberg and Breyer filed separate dissents. Only Justices Rehnquist, Souter and Thomas failed to provide their individualized views of the matter, making *Palazzolo*’s use as a predictive tool for future partial regulatory takings cases rather difficult.

Considering the restraint the high Court normally exercises in accepting cases, the facts underlying *Palazzolo* are surprising. One might expect the case to involve facts where the plaintiff acquired the property in an arms length transaction after the date the offending regulations went into effect. In actuality, however, Anthony Palazzolo had been the real party in interest for a dozen years before the state agency promulgated them. In 1959, Palazzolo formed an investment company, Shore Gardens, Inc., to purchase more than 20 acres of seaside property in Westerly, Rhode Island. A large portion of that property was comprised of coastal marshlands. Although Shore Gardens made at least two unsuccessful efforts to secure government approval for fill projects in the 1960s, the regulations on which the defendant Rhode Island Coastal Resources Management Council relied in denying the permit at issue in the case were not promulgated until 1971.

However, in a fact that the both the trial court and the Supreme Court of Rhode Island deemed fatal to Palazzolo’s taking claim, Shore Gardens’ corporate charter was revoked in 1978 for failure to pay corporate income taxes, and title devolved to Palazzolo individually. As a result, when Palazzolo filed the ill-fated application to fill his wetlands in 1983, his title dated back only to the 1978 dissolution of Shore Gardens, not back to Shore Garden’s original acquisition in 1959.

<sup>1</sup> 260 U.S. 393, 43 S. Ct. 158 (1922).

<sup>2</sup> 260 U.S. at 415, 43 S. Ct. 158.

<sup>3</sup> See e.g., *Lucas v. South Carolina Council*, 505 U.S. 1003, 112 S. Ct. 2886 (1992).

<sup>4</sup> *Penn Central Transp. Co. v. City of New York*, 438 U.S. 104, 98 S. Ct. 2646 (1978).

<sup>5</sup> 121 S. Ct. 2448 (2001).

## Message From the Chair

The Section has been active this spring and summer. In May, the Section was a co-sponsor of the Region IV Environmental Conference in Atlanta. Several of our members spoke at the Conference, which attracted attorneys from throughout the southeast. In June, DNR Commissioner Lonice Barrett spoke at our third luncheon of the year. Mr. Barrett provided an overview of the DNR divisions and programs for which he is responsible and engaged in an insightful discussion with members of the audience regarding issues facing the DNR Board.

In August, our Section held its twelfth-annual Summer Seminar in St. Simons. Over 100 people attended the seminar, which began with a keynote address from EPD Director Harold Reheis on "Georgia's Water Future at the Crossroads." The panels that followed discussed civil and criminal enforcement trends, air quality developments, handling client conflicts in a professional manner, emerging water policies, litigation developments, disclosures to the government, and Georgia's new rules of ethics. I wish to thank Seminar Co-Chair Anne Hicks, Steve Harper of ICLE, and all of the speakers for their valuable contributions to this year's Summer Seminar. Be sure to mark your calendar for next year's Summer Seminar, to be held August 2-3 at the Hilton Sandestin Hotel.

On November 6, 2001, the Section and the Georgia Industry Environmental Coalition will host the Georgia Environmental Conference at the Sheraton Colony Square Hotel in Atlanta. GIEC is a non-profit membership organization of environmentally-related businesses in Georgia, including Southwire, Georgia Power, Georgia-Pacific, and many others. Last year's Conference was very well attended and offered Section members a valuable opportunity to network with key industry representatives who do not regularly attend Section functions. This year's program will include presentations by representatives of industry, the private bar, government, and public interest organizations. I hope to see you at the Conference.

Thank you for your membership and participation in the Section.

### From the Editor:

Thanks to the contributing writers for this edition of the Environmental Section Newsletter. If you would like to submit an article for Fall 2001 edition, please call me at 404.881.7629 or send me an email at pnunez@alston.com.

## Designer Bugs Eat Contamination

By Matthew Ford,

Senior Environmental Regional Counsel, ECS Inc.

Bioremediation - a cleanup method in which tailor-made bacteria are injected into a contaminated site to ingest a pollutant - is growing in popularity. As the following case study illustrates, bioremediation's efficiency, effectiveness, and relatively low-cost make it a remediation option worth serious consideration for appropriate sites.

### What is Bioremediation?

Bioremediation is a process in which bacteria are cultured to break down specific families of petroleum products as they consume the carbon component of the hydrocarbon molecules. When first posited as a remediation option in [insert year/time frame here], bioremediation's viability was uncertain at best; it was not easily tailored to individual sites, and posed significant regulatory hurdles. Since that time, great strides have been made in biosciences, resulting in the creation of tailored organisms specifically designed to ingest a particular kind of pollutant.

In the late 1980s, the U.S. Geological Survey (USGS) conducted studies on microorganisms naturally found in soil and found that some were actively consuming fuel-derived toxic compounds and transforming them into harmless carbon dioxide. The studies showed that the rate at which these microorganisms can consume the toxic compounds is increased if the microorganisms are given certain nutrients. By providing nutrients, the natural microbes increase their rate of biodegradation of the pollutants. By 1992, USGS scientists were testing this natural method of remediation by introducing nutrients to contaminated soils, which resulted in a 75 percent overall contaminant reduction within one year. Along with technical advances has come greater acceptance and approval of bioremediation technology from the regulatory community.

In controlling costs of remediation, bioremediation has proven effective in certain circumstances. First, bioremediation treats contamination in-place. Most of the costs associated with traditional remediation methods involve the physical removal and disposal of contaminated soils. Clearly, the elimination of removal and disposal costs can result in substantial savings. Additionally, bioremediation uses natural processes that do not rely upon invasive or intensive manual labor. The processes involved in bioremediation reduce labor costs, although they do require that qualified professionals oversee and monitor the process. Another significant benefit of this process, particularly in the above case, is that it reduces environmental stress to the surrounding areas,

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## **Palazzolo v. Rhode Island...**

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In what is arguably the most significant portion of the Court's decision to remand the case,<sup>6</sup> at least five justices of the Supreme Court indicated their belief that such a *per se* rule that a plaintiff can never recover compensation for takings caused by regulations existing at the time of acquisition goes too far. Writing for the Court, Justice Kennedy stated:

The right to improve property, of course, is subject to the reasonable exercise of state authority, including the enforcement of valid zoning and land-use restrictions. The Takings Clause, however, in certain circumstances allows a landowner to assert that a particular exercise of the State's regulatory power is so unreasonable or onerous as to compel compensation. Just as a prospective enactment, such as a new zoning ordinance, can limit the value of land without effecting a taking because it can be understood as reasonable by all concerned, other enactments are unreasonable and do not become less so through passage of time or title. Were we to accept the State's rule, the post enactment transfer of title would absolve the State of its obligation to defend any action restricting land use, no matter how extreme or unreasonable. A State would be allowed, in effect, to put an expiration date on the Takings Clause. This ought not to be the rule.<sup>7</sup>

Declining to elaborate further, Kennedy noted:

We have no occasion to consider the precise circumstances when a legislative enactment can be deemed a background principle of state law or whether those circumstances are present here. It suffices to say that a regulation that otherwise would be unconstitutional absent compensation is not transformed into a background principle of the State's law by mere virtue of the passage of title.<sup>8</sup>

Thus, the majority opinion stands only for the proposition that post-enactment acquisition is not an absolute bar to recovery. In her concurrence, Justice O'Connor elaborated on her view that the proper inquiry requires evaluation of the extent to which the pre-existing regulation weighs upon the reasonableness of the claimant's outlook by stating:

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<sup>6</sup> The Supreme Court also reversed the Rhode Island court's decision that Palazzolo's claim for a partial takings was not ripe. The state supreme court had focused on the fact that Palazzolo had not determined the extent to which an upland portion of his property could be developed. The majority determined, however, that the state agency had made it clear that the wetlands portion of the property could not be developed under any circumstances, which was sufficient to make the issue ripe for review. 121 S. Ct. at 2458-62.

<sup>7</sup> *Id.* at 2462-3.

<sup>8</sup> *Id.* at 2464.

<sup>9</sup> *Id.* at 2467.

If investment-backed expectations are given exclusive significance in the Penn Central analysis and existing regulations dictate the reasonableness of those expectations in every instance, then the State wields far too much power to redefine property rights upon passage of title. On the other hand, if existing regulations do nothing to inform the analysis, then some property owners may reap windfalls and an important indicium of fairness is lost. As I understand it, our decision today does not remove the regulatory backdrop against which an owner takes title to property from the purview of the Penn Central inquiry. It simply restores balance to that inquiry. Courts properly consider the effect of existing regulations under the rubric of investment-backed expectations in determining whether a compensable taking has occurred. As before, the salience of these facts cannot be reduced to any "set formula." The temptation to adopt what amounts to *per se* rules in either direction must be resisted. The Takings Clause requires careful examination and weighing of all the relevant circumstances in this context. The court below therefore must consider on remand the array of relevant factors under Penn Central before deciding whether any compensation is due.<sup>9</sup>

Although he dissented from the Court's opinion on standing grounds, Justice Breyer noted in his dissent that he would agree with Justice O'Connor's formulation. True to form, Justice Scalia staked out the most pro-property rights position in his separate concurrence:

The polar horrible, presumably, is the situation in which a sharp real estate developer, realizing (or indeed, simply gambling on) the unconstitutional excessiveness of a development restriction that a naïve landowner assumes to be valid, purchases property at what it would be worth subject to the restriction, and then develops it to its full value (or resells it at its full value) after getting the unconstitutional restriction invalidated.

This can, I suppose, be called a windfall - though it is not much different from the windfalls that occur

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## **Palazzolo v. Rhode Island...**

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every day at stock exchanges or antique auctions, where the knowledgeable (or the venturesome) profit at the expense of the ignorant (or the risk averse). There is something to be said (though in my view not much) for pursuing abstract “fairness” by requiring part or all of that windfall to be returned to the naïve original owner, who presumably is the “rightful” owner of it. But there is nothing to be said for giving it instead to the government - which not only did not lose something it owned, but is both the cause of the miscarriage of “fairness” and the only one of the three parties involved in the miscarriage (government, naïve original owner, and sharp real estate developer) which acted unlawfully - indeed unconstitutionally.<sup>10</sup>

Justice Stevens occupied the other pole, arguing that the effect of the regulation’s impact on value should be measured at the time of enactment. Accordingly, only the party holding title at the time of enactment has a takings claim. As Stevens explained:

If the regulations are invalid, either because improper procedures were followed when they were adopted, or because they have somehow gone “too far,” petitioner may seek to enjoin their enforcement, but he has no right to recover compensation for the value of property taken from someone else. A new owner may maintain an ejectment action against a trespasser who has lodged himself in the owner’s orchard but surely could not recover damages for fruit a trespasser spirited from the orchard before he acquired the property.<sup>11</sup>

The extent to which *Palazzolo* will act as encouragement for those seeking compensation for regulations they believe go “to far” remains to be seen. While his claim survived the high Court’s review, the fact that Anthony Palazzolo has invested a virtual lifetime in pursuit of the development of his small corner of the Rhode Island marsh and still has neither permit to fill the property nor compensation for his alleged harm makes that survival cold comfort indeed. ■

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## **Good News Regarding Air Quality Requirements and Flexible Permitting**

*David Dunn, President,  
Environmental Resources Management*

Amongst all the potentially discouraging news related to U.S. EPA’s New Source Review (NSR) Enforcement Initiative, risks associated with Title V Compliance Certification, ozone non-attainment, and a number of other air quality issues, there is at least one potential bright spot on the air-permitting horizon. This ray of optimism centers around the flexible permitting and advance approval concepts presented in U.S. EPA’s Title V White Paper #3 “Design of Flexible Air Permits” and some of the intriguing and beneficial permit conditions/strategies that industry has developed in this regard. White Paper #3 is essentially a recognition by U.S. EPA and various states that a number of recent air permitting pilot programs have been very successful in improving Title V permitting and operating flexibility while ensuring facilities are maintaining compliance with all applicable requirements. In this regard, based on the lessons learned from the design and implementation of a range of innovative permitting projects (e.g. Saturn, Cytec, Intel, etc.), U.S. EPA now acknowledges that flexibility and advance approval for many facility changes is feasible and can be built into existing permits given sufficient conditions and protections. The following information is intended to provide some insight into how the White Paper #3 concepts can be used by facilities to address the many uncertainties, risks, costs and scheduling impacts of our complex air regulations.

White Paper #3’s initial focus is to make sure that Title V permits do not overly restrict facility operating flexibility by eliminating unnecessary and unduly burdensome permit conditions. U.S. EPA provides specific examples of “smart permit” conditions in which regulatory compliance is maintained while minimizing the resulting operating restrictions on facilities. A good example in this regard is U.S. EPA’s acknowledgement that overlapping permit limits on material content, quantity, and usage rates (e.g., %VOC, gal/yr, lb/hr) can often be eliminated and replaced with an emission limit (e.g., ton/yr) that ensures regulatory compliance and practical enforceability, while maximizing operating flexibility. Based on this guidance and recognition, facilities should review their existing permits (and all future permit conditions) to reduce unnecessary restrictions where possible. It is important to remember that in specific situations more restrictive permit conditions may, in fact, be appropriate and desirable as a trade-off to streamline associated compliance monitoring, record keeping, and reporting requirements.

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<sup>10</sup> *Id.* at 2467-8.

<sup>11</sup> *Id.* at 2471.

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## Good News Regarding Air Quality...

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Beyond the concept of “smart permits,” the greatest potential value of White Paper #3 to industry in terms of permit flexibility is likely the advance approval of 1) new capacity/equipment and 2) the modification of existing operations. Essentially, White Paper #3 takes the concept of alternative operating scenarios, as already provided for in Title V for existing equipment, and extends it to the advance approval of new and/or modified equipment. This potential for advance approval of facility additions and changes can have very significant benefits in terms of reducing regulatory delays, risks, and uncertainties while enhancing company planning, decision-making, and competitiveness. The type of changes that can potentially be considered for advance approval are very broad and include: new or modified process lines, tanks, reactors, dryers, boilers, control devices, NSPS sources, and minor NSR activities. White Paper #3 even envisions a mechanism for addressing operating flexibility for major NSR activities and sources through the potential use of plant-wide applicability limits (PALs). In this manner, a PAL would allow significant facility changes so long as the site’s actual emissions do not exceed its PAL emission cap. Even though the overall concept of PALs has a number of significant potential drawbacks and may not be well received by all regulators, it can provide real benefit in terms of reduced time, cost and regulatory burden in specific situations. In the end, advance approval is simply a tool that can enhance a company’s planning certainty and the ability to do what it wants to do, when it needs to do it.

U.S. EPA does not plan to require states to implement Title V flexible permitting and advance approvals, but it will encourage the use of the concept whenever appropriate based on a balance between a facility’s operating needs and the overall regulatory effort to implement the concepts. It is important to note that advance approval may potentially be obtained based on both qualitative and quantitative information so long as the bounds of the change can be defined and the corresponding applicable requirements and compliance activities can be determined. For example, the advance approval concept has already been used to build Maximum Achievable Control Technology (MACT) “place holder language” into Title V permits for various hazardous air pollutant (HAP) control strategies and options for facilities that will be subject to a future MACT standard.

While the White Paper #3 concepts are not a potential solution for all permitting issues, they can be a very effective strategic management and compliance assurance tool when used correctly. In this regard, U.S. EPA Region 4 encourages the use of these concepts when appropriate and has already approved a PAL permit, and management within the Georgia Air Protection Branch has stated

that the concepts would be of value in specific situations. Also, these flexibility concepts are not restricted to just Title V permitting and they can be applied in practice to many air permitting activities (e.g., SIP, NSPS, NSR, MACT, etc.) in order to reduce regulatory burden, improve operating flexibility and enhance a facility’s overall competitive advantage. ■

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# Georgia's Smart Growth Vision: The Greenspace Program

By Ellen Zahren Calves,  
Long Aldridge & Norman LLP

Rapid development and growth in Georgia has brought prosperity to the state, but it is also likely to result in sprawling, treeless, paved-over cities and towns, increased reliance on automobiles, impaired water bodies, and less livable communities. To address the negative aspects of growth on Georgia's environment, Governor Barnes has put in motion a program to encourage smart growth throughout the state: The Georgia Greenspace Program.

The Greenspace Program, enacted by the Georgia General Assembly in 2000,<sup>1</sup> encourages rapidly developing counties and their municipalities to permanently protect at least twenty percent of their geographic area as greenspace.<sup>2</sup> After the close of the Program's first fiscal year on June 30, 2001, thirty-nine of the forty eligible counties have state-approved Greenspace Programs in place.<sup>3</sup>

## *What is Greenspace and Why is it Important?*

As Harold Reheis, Director of EPD, explained at the recent Environmental Law Summer Seminar, how we develop land will change how we use water throughout the state. The Greenspace Program is designed to help facilitate this kind of change in land use not only to benefit water quantity and quality, but also to promote other environmental and societal goals such as recreational use, flood prevention, natural habitat protection, and preservation of scenic, archaeological, and historical resources.<sup>4</sup> The legislation also promotes the connection of existing planned areas contributing to these goals.<sup>5</sup> The Program enables counties to plan for and acquire greenspace. Greenspace is defined as permanently protected land, either in its undeveloped, natural state, or developed only to the extent consistent with one of the above-mentioned goals.<sup>6</sup>

The idea of connectedness of greenspace is probably Governor Barnes' brightest goal for the Program, as well as the Commission's biggest challenge in implementing the Program. The concept of connected community greenspace envisions communities linked by open areas, parks, greenways along water bodies, and trails connecting basic services (such as schools, recreational facilities, and libraries) and eliminating the dependence on automobiles. This connectedness allows for better recreational opportunities and better physical health, improved air and water quality, a sense of community, potentially less crime, and enhanced economic viability.<sup>7</sup>

## *How Eligible Counties Participate in the Program*

Eligible counties that are approved to participate

in the Greenspace Program obtain grants from the Georgia Greenspace Trust Fund to help them acquire land. To be eligible for a grant, a local government must have a population of at least 60,000 or it must have experienced an average growth of at least 800 persons per year as measured by the population change between the most recent U.S. decennial census and the most recent year for which the Census Bureau has prepared official estimates of population.<sup>8</sup> After written notice to the Greenspace Commission and a public hearing, an eligible county develops and submits its program to the Commission.<sup>9</sup> The program delineates how the county will adopt policies and procedures to enable it to accomplish its goal to promote the permanent protection of twenty percent of the county as greenspace.<sup>10</sup> The program basically gives the county an idea of what they will need to do to meet their community and program goals. It also requires them to document these goals.<sup>11</sup>



If the Commission determines that a program meets the terms and conditions of the legislation, the county becomes eligible for and receives a grant from the Trust Fund.<sup>12</sup> This money is available to assist with the acquisition of fee-simple property, or lesser interests, such as conservation easements, for the protection of greenspace.<sup>13</sup> An eligible county's share of the state-appropriated funds is proportional to its levy on residential property taxes in the preceding fiscal year.<sup>14</sup>

## *Results of the Program's First Year*

In the Program's first year, the State Legislature appropriated \$30 million to the program, forty counties were eligible to participate, and thirty-nine programs were approved. The biggest grant went to Fulton County, which received over \$5.8 million. After the 2000 census results were published, forty-nine additional counties became eligible for the 2001-2002 year.<sup>15</sup>

The participating counties have determined these funds will be used, among other things, for land acquisitions to create parks and open-spaces; to develop paths to interconnect recreation, living, and working areas; to establish corridors running along river banks to provide greenways for cyclists, joggers, and pedestrians while protecting natural resources along the shoreline; and to acquire ecologically sensitive areas such as wetlands.

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## **Georgia's Smart Growth Vision...**

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The Commission is authorized to use non-appropriated funds from the Greenspace Trust Fund for discretionary grants for preservation of greenspace in any city or county in the state.<sup>16</sup> After the first year, approximately \$1.1 million is available (from interest income on the state appropriated funds).<sup>17</sup> However, the Commission has not determined how it will award this money.

### *Implementing the Vision of the Greenspace Program*

All counties that were eligible in the first year of the Program, except Murray County, now have a greenspace program and were awarded grants. But this part was intended to be easy. The vision of the Greenspace Program - smart growth throughout the state - has been embraced by these counties on paper, but the heavy lifting to make it all happen is only beginning.

According to Harvey Young, Greenspace Program Coordinator at DNR, the grant money from the state is only a starting point. "Free market transactions and regulatory changes will help conserve more land as part of the development process than just governmental mandates or the small amount of state funds available."<sup>18</sup> The counties will have to think and act creatively to reach their greenspace protection goals. At the same time, the state will have to provide increasing technical and legal assistance and support to keep the counties working toward the greenspace goals.

### *Land Acquisition*

Although the grant money will help the counties purchase land in fee simple as well as acquire conservation easements on privately owned land,<sup>19</sup> this funding alone will not accomplish the twenty percent land preservation goal. For example, although Fulton County received the biggest grant this year, it has estimated that to purchase all of the land it needs to meet its greenspace goal would require between 300 and 400 million dollars.<sup>20</sup> Clearly, other sources of funds, regulatory changes, and other innovations will be required at the local level to make the Georgia greenspace vision a reality.

### *Identifying Additional Sources of Funding*

The local governments will have to identify significant sources of funding to preserve greenspace. The counties will have to identify opportunities to receive gifts of land in fee simple or as conservation easements, as well as private, state, and federal sources of funds.<sup>21</sup> The counties will also have to commit local funds to the program. Either the community can use existing funds (such as the parks and recreation fund for purchasing land for or connecting to a park) or create new sources of funds.

Local governments can raise funds by authorizing a special-

purpose local option sales tax (known as SPLOST) to fund greenspace protection.<sup>22</sup> This is an appropriate vehicle for greenspace acquisition because it asks for a financial commitment from all citizens who benefit from the protection of greenspace. Currently, the Georgia SPLOST statute recognizes only limited purposes for these tax revenues that may or may not fit with a particular county's greenspace objectives.<sup>23</sup>

One way to use existing funding for greenspace acquisition is to include the greenspace program in the county stormwater management plan. Since greenspace serves important functions in stormwater management, counties could use funds available for stormwater management to acquire greenspace for that purpose. Counties might raise more funds for this purpose by establishing a stormwater utility that levies a fee on the amount of impervious surface on a property.<sup>24</sup>

### *Using Local Development Regulation And Performance-based Zoning*

Probably the most important way to implement the long-term vision of the Greenspace Program will be for counties to adopt regulations and policies that will promote the preservation of greenspace. Enacting regulations and embracing the greenspace program in the county land use plan will allow for more flexible land development processes and will enable developers and residents to make the greenspace program a reality.

One way to enable greenspace development is by enacting performance-based zoning, such as conservation zoning, to supplement prescriptive zoning.<sup>25</sup> Currently, developers in many counties are forced to subdivide in such a way that prohibits the development of greenspace. Prescriptive zoning might allow for an 85-acre parcel of land only to be subdivided into 80 one-acre lots. This leaves the developer no opportunity to designate parts of the development as greenspace.<sup>26</sup> Performance-based zoning, on the other hand, would allow the developer to cluster similarly priced homes in one section of a site (generally high land desirable for home sites) and preserve greenspace on the remainder of the site. By making lot sizes smaller, the developer would get the same number of homes built in an environmentally, recreationaly, and aesthetically superior community.<sup>27</sup> This type of development can be encouraged further by amending subdivision regulations to specify the protection of steep slopes, wetlands, or flood plains and to encourage setting aside recreational greenspace in neighborhoods.

Another way for counties to encourage free market development of greenspace is by establishing a transferable development rights program.<sup>28</sup> Under a TDR program, development rights are transferred from "sending zones" designated for protection to

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## Georgia's Smart Growth Vision...

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“receiving zones” designated for future growth. Owners of natural, historic, or scenic property sell their property’s development rights to owners of land in areas more conducive to growth. The “receiving zone” landowner can then increase development on his or her property. The “sending zone” landowner is paid for these rights, grants a conservation easement to the county, and reduces his or her property taxes.<sup>29</sup>

### Conclusion

The tools mentioned above, and many other regulatory innovations, will be necessary to make the Greenspace vision a reality. Once the counties make greenspace development possible, it is likely developers will promote this smart growth because of the various benefits that accompany it.

The major accomplishment for the Greenspace Program in its first year is that it has spurred serious discussions about what these thirty-nine counties will look like twenty to thirty years from now. Because of the Program, these counties have set goals, reviewed and revised policies, made plans, and started thinking about regional growth in ways that will move them towards smarter growth in the future. ■

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<sup>1</sup> See Senate Bill 399 (as passed).

<sup>2</sup> O.C.G.A. § 36-22-1. See Ga. Admin. Code § 391-1-4-.04.

<sup>3</sup> Telephone interview with Harvey Young, Georgia Green Space Program Coordinator, Department of Natural Resources (August 1, 2001).

<sup>4</sup> *Id.* at § 36-22-2(3)(A)-(H).

<sup>5</sup> *Id.* at § 36-22-2(3)(I).

<sup>6</sup> O.C.G.A. § 36-22-2(3).

<sup>7</sup> Green Space Advisory Committee, *Georgia's Community Green Space Program*, 14 (December 15, 1999), available at <http://www.cviog.uga.edu/projects/projects.htm> (hereinafter, “*Greenspace Committee Report*”) (citations omitted).

<sup>8</sup> O.C.G.A. § 36-22-10.

<sup>9</sup> *Id.* at § 36-22-5.

<sup>10</sup> *Id.* at § 36-22-6(1).

<sup>11</sup> See *id.* at § 36-22-6(2).

<sup>12</sup> *Id.* at § 36-22-8(b). Counties with approved programs must review/revise their programs at least every two years and resubmit them for approval by the Commission, together with an annual progress report. *Id.* at § 36-22-9.

<sup>13</sup> *Id.* at § 36-22-4. Participating cities within approved counties can also be given a portion of the county’s grant proportional to its population. See *id.* at § 36-22-4(c).

<sup>14</sup> O.C.G.A. § 36-22-4(b)(1). At the end of each fiscal year, any state appropriated funds not disbursed are divided among the counties having approved programs in proportion to the ratio of each county’s grant to the total amount of grants that year. *Id.* at § 36-22-4(b)(3).

<sup>15</sup> Telephone interview with Harvey Young. However, the 49 new counties will account for only about 10% of the available funds.

<sup>16</sup> O.C.G.A. § 36-22-11. See Ga. Admin. Code § 391-1-1-.14 for the criteria used by the Commission to determine which grant applications to support with non-appropriated funds.

<sup>17</sup> Telephone interview with Harvey Young.

<sup>18</sup> *Id.*

<sup>19</sup> Ga. Admin. Code § 391-1-4-.10. Conservation easements allow a landowner to give up one or more specific rights (such as to exclude public access, to subdivide, to develop) in a Deed of Conservation Easement, which is binding on future owners of the property. It is the responsibility of the easement holder. See Georgia’s Uniform Conservation Easement Act, O.C.G.A. § 44-10-1 *et seq.*

<sup>20</sup> Telephone interview with Harvey Young.

<sup>21</sup> Ga. Admin. Code § 391-1-4-.10; see *Greenspace Committee Report* at Appendix B for a listing of State and Federal Funding Mechanisms Available to Help Local Governments Acquire Green Space.

<sup>22</sup> Ga. Admin. Code § 392-1-4-.10.

<sup>23</sup> See O.C.G.A. § 48-8-111 (recognizing use of the tax revenues for capital outlay projects such as, *inter alia*, “recreational facilities,” “historical facilities,” and “road, street and bridge purposes, which may include sidewalks and bike paths.”)

<sup>24</sup> *Greenspace Committee Report* at 42. The City of Griffin adopted such a stormwater utility in 1998.

<sup>25</sup> Ga. Admin. Code § 391-1-4-.10. See *Greenspace Committee Report* at 47.

<sup>26</sup> Telephone interview with Harvey Young.

<sup>27</sup> *Id.*

<sup>28</sup> Ga. Admin. Code § 391-1-4-.10.

<sup>29</sup> *Greenspace Committee Report* at 49. See O.C.G.A. § 36-66A-1 (legislation authorizing local governments to implement TDR programs).

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## Designer Bugs...

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especially in and around areas of limited access.

### *The Florida Hospital Model*

For years, a Florida hospital's petroleum UST piping leaked in a tightly contained area of the facility's courtyard. When petroleum free product was discovered years later during closure of the tank, the situation seemed to call for a traditional remediation solution: dig up the contaminated soil, haul the affected soil off-site, and eliminate the potential for the contamination to spread within the site. Introduce a maze of sewers, utility lines and a walkway above the contaminated area, however, and such a remediation scenario becomes infinitely more difficult and dramatically more costly.

In the above-mentioned case, the hospital administration and a highly qualified environmental services firm weighed a variety of remediation options to determine the safest, most cost-effective cleanup option. Soil analytical results associated with the tank closure procedures at the hospital area indicated petroleum constituents that exceeded state soil cleanup target levels.

Similarly, groundwater analytical results indicated petroleum constituents exceeded groundwater cleanup target levels and natural attenuation default source concentrations. Standard remediation methods - simply digging out the contaminated soil, hauling it off for treatment, and replacing with clean fill - were simply not possible. Because the affected area was covered by a walkway, intertwined with sewer and utility lines, and tightly confined among hospital buildings (which include the ICU), the only method available to remove impacted soil from the site would be with a hand shovel. Such a painstaking procedure would take years of manual labor and cost millions of dollars in response costs and costs associated with the disruption of critical hospital activities.

The other available option was s bioremediation. Specifically, the best available and practical technology is enhanced bioremediation, using inert nutrients, and American Type Culture Collection Class 1 (ATCC C1) bacteria.

In the hospital situation, the bioremediation option would cost tens of thousands of dollars, as opposed to a multimillion-dollar cleanup bill. Bioremediation, however, required additional special approval from the environmental officials in the county where the hospital was located and as in any cleanup, environmental service contractors with the appropriate expertise.

In various studies, aerobic bacteria have been shown to break down hydrocarbons more rapidly than anaerobic bacteria. Therefore, ample oxygen was also a requirement for successful aerobic enhanced bioremediation of this particular site. Several bioremediation vendors

offer formulations that include a proprietary inert chemical, known as COGEN V, that help aerobic bacteria scavenge oxygen from surrounding water molecules for metabolic needs, instead of relying solely on dissolved oxygen. Until they are ready to be used on site, the bacteria are stored in spore form within suspension matrices, the two most common of which are bentonite clay and corn starch. A bentonite clay suspension may be used during an initial injection in anticipation of a minimal number of required treatment events. But the suspension may be supplemented with cornstarch in the anticipated need for multiple applications.

The bioremediation process begins by mixing microorganisms with a liquid formula of nutrients and proprietary oxygen-scavenging chemicals to create a slurry. The slurry is then pressure-injected into subsurface soils through a steel injection tube that is advanced into the shallow soils in areas identified for treatment remediation. Petroleum-impacted groundwater is treated by injecting the slurry into injection points installed specifically for the bioremediation effort.

The hospital remediation work plan included installation of several groundwater injection points to deliver the nutrient, microbe and COGEN slurry into two areas of the contaminated site. Following initial treatment, up to two inches of free product was observed in a monitoring well in each affected area. The appearance of elevated levels of free product on the water table at first seemed to indicate a worsening of the problem, but in fact was attributed to the successful liberation of stratified petroleum impacts from the overlying soils. Monthly injection retreatments were performed to maintain the introduced nutrients, bacteria and especially the COGEN concentrations in the impact areas. Following initial treatment, the free product thickness decreased appreciably.

Monthly groundwater sampling monitored progress of the bioremediation, as did monthly organic vapor field screenings of the area's soils. During the first six months of enhanced bioremediation treatment, the stratified soil impacts were reduced and free product was reduced to less than a measurable thickness. A total of seven to eight treatments are anticipated necessary to finish the remediation at the health care facilities, followed by one year of post-treatment monitoring. The end result though is a two-year cleanup acceptable to the state regulatory authority that will be accomplished at a reasonable cost with minimal disturbance to the hospital and its critical care unit.

### *Risks Nonetheless*

Bioremediation offers promising remediation opportunities. The process appears especially conducive to areas sensitive to

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## Designer Bugs...

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excavation, such as wetlands, and tightly confined properties, such as in urban settings, where access to impacted soils is restricted, and where such attempts can be disruptive to adjacent operations, tenants or businesses.

With the success of bioremediation comes the need for a precautionary note, however. The growing acceptance of the process has spurred a new growth area of “fly-by-night” bio-contractors. As a result, companies contemplating the retention of such remediation specialists need to be especially aware of their qualifications, reputation, and employee credentials. For example, having a licensed geologist on staff may be advisable to ensure proper oversight of this complex procedure. In addition, it may also be advisable to work with professionals, such as legal counsel and remediation contractors that have the regulatory knowledge in this growing area.

Finally, when employing an emerging cleanup method such as bioremediation, the importance of a thorough and appropriate work order contract cannot be stressed enough. To control costs and future liability, a contract for a bioremediation project should determine a guaranteed closure for the site. In other words, the contract should require the remediation contractor to provide a provision limiting payments for additional treatments or bacteria injects should the process take longer than the contractor determined at the onset.

To control costs, minimize a company’s liabilities, and maximize the use of the best available technologies, it is important to know what remediation options are available and what will work best in the situation at hand.

While bioremediation is not the answer for every environmental cleanup, it is proving to be a very viable, cost-effective alternative for some.

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