Federal, State, and Local Water Quality Control

An Assessment of the Current Laws Affecting the Etowah River and Suggestions for Local Proactive Planning

Etowah Initiative
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1.0 General Introduction

1.1 Problem and the solutions

Water quality is a matter of concern in many areas due to population growth and land use changes. The stress from both point and non-point pollution is causing many water bodies to fail state water quality standards. Since in many cases these polluted water bodies are vital to communities as both a source of drinking water and economic prosperity, it is important that all possible measures are taken in order to secure their continued use. Concerning the Etowah River, there are two laws, which will have a direct and lasting impact on the watershed and community: Total Maxi-

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mum Daily Load (TMDL) under the Clean Water Act, and Georgia State Law OCGA 12-5-23.1. These two laws are intended to protect water bodies from excessive point and non-point pollution, and their penalties can be severe. There are also countless examples of local ordinances and programs, which can be, used by communities and towns to proactively safeguard their water bodies. The implementation and enforcement of these programs on the Etowah River will help to ensure the future integrity of the watershed and avoid large penalties from the federal and state governments.

1.2 TMDL

Under the Clean Water Act section 303(d), a TMDL is required to be implemented for any water body in which technology-based controls are found to be inadequate to meet state water quality standards. A TMDL takes into consideration both point and non-point sources of pollution. In many situations, this method of water quality control is important because non-point pollution is the dominant source. Every two years the Environmental Protection Division (EPD) is required to submit a 303(d) list to the United States Environmental Protection Agency (EPA). In this list, rivers and streams which partially or do not support their designated uses are listed and prioritized. The 20-mile stretch of the Etowah River between Sharpmountain Creek and Lake Allatoona was listed as partially supporting designated use. The listing was due to violations of mercury and copper. Both pollutants were attributed to non-point pollution.

1.3 Georgia State Law OCGA 12-5-23.1

Under OCGA 12-5-23.1 three Comprehensive Lake Studies must be started every year within the state of Georgia. These studies will identify current and potential problems, and they will also suggest strategies for how these problems can be resolved. Upon the completion of these reports the EPD must set new water quality standards for both the lake and its major tributaries. These new standards must include but are not limited to pH, fecal coliform bacteria, chlorophyll *a* for designated areas, total nitrogen, total phosphorus loading for the lake, and dissolved oxygen. At present, a comprehensive study prepared by the A. L. Burruss Institute of Public Service at Kennesaw State University for Lake Allatoona has been submitted to the EPD and EPA for approval. In this report nutrients, manly phosphorous, were cited as the largest threat to the lake. It was also concluded that the Etowah River was the largest source of phosphorus, delivering 77% of the total phosphorous to the lake. The Etowah's contribution was due to both its elevated phosphorus concentration and the large proportion of water discharged. Nitrogen and phosphorus entering the Etowah River was determined to be largely the result of non-point agricultural and forestry practices.

Similar studies have already lead to new water quality standards. The April to October chlorophyll *a* standards have been set at for West Point Lake at 27 µg/L, Lake Jackson at 20 µg/L, and Lake Walter F. George at 18 and 15 µg/L. In the Lake Allatoona report chlorophyll *a* was measured as high as 20.5 µg/L in the Etowah arm of the lake. It is doubtful that the standards, which will be set for Lake Allatoona, will be any less stringent than the other lakes cited due to the important economic role Lake Allatoona plays for the surrounding communities. If these future water quality standards are not met, they will become another criteria for which a TMDL must be created.

2 Water Quality Problems

2.1 Copper

The sources of copper pollution, as with most other metals, are geologic weathering, industrial processing of ores and metals, the use of metals and metal components, leaching of metals from garbage and solid waste dumps, and animal and human excretions. However, the consequences are not as clear as the sources. Copper can be bioconcentrated through the food chain. These elevated levels of copper can be lethal to fish and cause health problems to humans as well. The symptoms caused by acute toxicity of copper include nausea, vomiting, bloody diarrhea, hypotension, hemolytic anemia, uremia and cardiovascular collapse. If exposed chronically to copper, symptoms include sporadic fever, vomiting, epigastric pain, diarrhea, and jaundice. Infants and children under 10 years of age are the most vulnerable to copper toxicity.

2.2 Mercury

Mercury is a widespread pollution problem. In the United States 33 states have issued fish consumption advisories for mercury. Mercury contamination can come from a diverse array of both point and non-point, natural and anthropogenic sources. The natural sources of mercury are continental degassing of the earth's crust, volcanic emissions, and ocean evaporation. These natural sources were thought to be greater than anthropogenic sources. However, current estimates suggest anthropogenic activity has doubled or tripled the mercury content in the atmosphere. Anthropogenic sources of mercury in the environment include the chlorine industry, paper and pulp industry, mining and refining, paint, laboratories, hospitals, dental procedures, sewage treatment plants, pesticides, fossil fuel combustion, cement manufacturing, spent catalysts, electrical industries, and incinerators.

The most toxic form of mercury is methylmercury. This form is able to bioaccumulate in organisms because of its ability to be absorbed through membranes and its affinity for sulfhydryl groups. Methylmercury is concentrated in the proteins of organisms where it is transformed into a non-diffusible protein form. However, there is equilibrium between diffusable and non-diffusable binding sites. This allows for movement within and out of the organism's tissues. The main human exposure to methylmercury is through fish and other food items from contaminated environments. Methylmercury is a neurotoxin, with extreme cases of exposure ending in death. Milder cases can cause loss of motor skills and the dulling of touch, taste, and sight. It is believed that unborn children have the greatest risk of developing serious health problems when exposed to low levels of methylmercury. On test organisms methylmercury has also been demonstrated to be mutagenic.

2.3 Phosphorous and Nitrogen

The excessive addition of phosphorous and nitrogen, which leads to eutrophication, is the most common cause for surface water impairment in the United States. The sources of these nutrients come from a combination of both point and non-point sources. However, non-point sources of P and N are considered dominant in most U.S. surface waters. It is believed that 72 to 82 percent of eutrophic lakes would require control of non-point P and N in addition to total elimination of point sources of P and N in order to meet water quality standards. Point sources of P and N are easier to regulate and monitor due to their continuous nature and little variability over time. Non-point sources are much more difficult to measure due to their seasonal fluctuations and the effects of random events such as heavy rain. Point sources are also more confined to a certain location, whereas non-point sources regularly originate from extensive surrounding areas. Some point sources include waste water effluent, runoff and leachate from waste disposal sites, runoff and leachate from animal feed lots, runoff from mines, oil fields, unsewered industrial sites, storm water from cities with more than 100,000 individuals, overflows of storm and sanitary sewers, and runoff

from construction sites greater than 2 hectares. Non-point sources of include runoff from agriculture, pasture, rangeland, storm water from cites less than 100,000 individuals, septic tank leachate, runoff from failed septic systems, runoff from abandoned mines, atmospheric deposition, and other human altercations of the environment.

The consequences of eutrophication can be great and long lasting. One consequence is the increase in algae and aquatic weeds. These increases cause the water body to become less suitable for fisheries, recreation, industry, agriculture, and drinking water. When these unwanted algae and aquatic weeds are decomposed the water can be stripped of oxygen and result in large fish kills. Blooms of cyanobacteria can also create foul odors and release toxins, which can be fatal to both live stock and humans.

3 TMDL

3.1 WHAT IS A TMDL

The implementation of TMDLs for water quality limited segments is the way in which states will get their waters into compliance with the Federal Clean Water Act. I will be giving an overview of what, exactly, a TMDL is, and some concerns of implementation. The Clean Water Act focuses on two potential sources of pollution: point sources and nonpoint sources. A point source is "any discernible, confined, and discrete conveyance," including pipes, ditches, conduits, or vessels "from which pollutants are or may be discharged." 33 U.S.C. § 1362(14). A non-point source of pollution is any non-discrete source, such as runoff from agriculture, forestry, and construction activity.

Point source pollution is subject to technology-based controls imposed by the National Pollution Discharge Elimination System (NPDES) permit process, which sets quantitative limits on the amount of pollutants released from each point source. Under authority of the CWA, EPA has delegated its duties to establish and administer the NPDES permit program to Georgia, which operates the program through the Department of Natural Resources/Environmental Protection Division (EPD). 33 U.S.C. § 1342(b). Where those controls are insufficient to clean up water bodies, the CWA mandates use of a water quality based approach. 33 U.S.C. § 1313(d).

Under the Act's water quality based approach, states must adopt water quality standards based on the uses of the waters and the amount of pollution that would impair the uses. 33 U.S.C. §(a)-(c). Each state must then identify waters within its boundaries, which do not meet these water quality standards. 33 U.S.C. §1313(d)(1)(A). These waters are called "water quality limited segments" (WQLS). After identifying WQLSs, states must prioritize them based on the severity of the pollution and the uses of the waters. Id. States must then develop, in accordance with the priority ranking, a "total maximum daily load" (TMDL) for each pollutant impairing each WQLS. 33 U.S.C. § 1313(d)(1)(C).

A TMDL sets the maximum amount of pollutants a water body can receive daily without violating the state's water quality standards. 33 U.S.C. § 1313(d)(1)(C). A TMDL includes best estimates of pollution from nonpoint sources and natural background sources (called load allocations or LA s), pollution from point sources (called wasteload allocations or WLAs), and a margin of safety. 40 C.F.R. § 130.3(i). TMDLs must take into account seasonal variations. 33 U.S.C. § 1313 (d)(1)(C). The TMDL process can best be illustrated by an equation: a TMDL= The Sum of the Allowable Discharges from Point and Nonpoint Sources. The controls on the human-made point and nonpoint sources must be stringent to meet water quality standards, given natural background condi-

tions. The elements of the TMDL equation are as follows:

Loading Capacity ("LC"): The LC is the total allowable discharge level.

Wasteload Allocation ("WLA"): Dividing up total allowable point source discharge levels among point sources is called a "wasteload allocation."

Load Allocation ("LA"): Dividing up total allowable nonpoint source pollution levels among diffuse or nonpoint sources of pollution is called "load allocation."

Margin of Safety ("MOS"): The Margin of Safety is used to account for the uncertainty about the relationship between the pollution source and the water quality of the impaired stream or lake, usually because of lack of information.

TMDL = LC = sum of all WLA + sum of all LA + MOS

3.2 IMPLEMENTATION OF TMDL

The process for WQLS identification and TMDL development is set out in §303(d) of the Clean Water Act, which states:

> Each state shall submit to the Administrator from time to time, with the first such submission not later than June 26, 1979, for his approval the WQLSs identified and the TMDLs established. The Administrator shall either approve or disapprove the WQLSs and TMDLs not later than thirty days after the date of submission…If the Administrator disapproves [the WQLSs and TMDLs], he shall not later than 30 days after the date of such disapproval identify such waters in such state and establish such loads for such waters as he determines necessary to implement the water quality standards applicable to such waters…

33 U.S.C. § 1313(d). If a state fails to submit a WQLS list or TMDL determinations over a long period of time, this prolonged failure may amount to the 'constructive submission' by that state of no WQLS list or TMDLs, thus triggering EPA's mandatory duty to approve or disapprove of the constructive submissions and, upon disapproval, to promulgate a WQLS list or TMDL determinations. See Scott v. City of Hammond, 741 F.2d 992 (7th Cir. 1984).

Georgia's Response to the Clean Water Act Requirements

The first submissions by all states to the EPA of WQLSs and TMDLs were due on June 26, 1979. 33 U.S.C. § 1313(d)(2); see Alaska Center for the Environment v. Reilly, 20 F.3d 981, 983 n.1 (9th Cir. 1994). EPA recently adopted regulations requiring that WQLS lists and TMDL determinations are due on April 1 of every even numbered year. 40 C.F.R. § 130.7(d).

Georgia did not submit a WQLS list to EPA until September 25, 1992, over thirteen years after the statutory due date. This list contained approximately 123 waters. EPA approved the list on November 24, 1992, after the 30-day statutory deadline for approval of § 303(d) submissions. Georgia submitted its 1994 WQLS list on August 10, 1994, after the April 1 deadline. On October 6, 1994, after the statutory deadline, EPA notified Georgia that the 1994 list must go through the public

participation requirements. After submitting the list to public comment, Georgia resubmitted its WQLS list to EPA on Mays 10, 1995, which EPA approved on June 9, 1995. This list contains approximately 340 WQLSs.

In the 1996 case of Sierra Club v. Hankinson, plaintiffs alleged that Georgia and the EPA clearly failed to comply with the time deadlines of the Clean Water Act in establishing WQLSs and TMDLs. The Court agreed. The Court also held that the two TMDLs (for dissolved oxygen), that had been established in Georgia, one for Line Creek located in Peachtree City, and the other for Big Flat Creek in Loganville, did not meet the requirements of § 303(d) because they did not provide daily limits for priority pollutants on identified WQLSs. As a result of this litigation, Georgia has been forced to speed up its TMDL process. Although the targeted waters are prioritized, the establishment of TMDLs for the Etowah are just around the corner.

Guidelines For the Establishment of a TMDL

To develop a TMDL for impaired water, states must:

- Establish Ceilings: A TMDL must have a set limit (sometimes called a ceiling or cap) on the amount of the particular pollutant allowed into a water body that is responsible for all/part of the water quality problems. This ceiling is the maximum amount of the pollutant (the total maximum daily load, or TMDL) that the water body segment can receive and safely absorb in order to meet state water quality standards.

- Set Source-Specific Limits: States must limit or "allocate" the acceptable pollution discharge (or TMDL) among all polluters- both point and nonpoint sources. For TMDLs to be met and, consequently, for water quality standards to be achieved, neither point nor nonpoint sources can exceed their allocations.

- Select Control Technologies: Particularly for nonpoint source controls, states must evaluate controls for effectiveness in reducing pollution to ensure that the nonpoint source pollution reduction obligations (its allocation of the allowable discharge level) can be achieved. States can use existing information, federal assistance (like expertise from the U.S. Department of Agriculture's Natural Resource Conservation Service ("NRCS")), pilot studies, and modeling to help select the control technologies. The control technologies must be stringent enough that, when implemented, the water body will meet water quality standards.

3.3 PROBLEMS WITH IMPLEMENTATION OF TMDL

The TMDL process, however, is not an easy endeavor. The following is an exemplary list of potential problems with the implementation of an effective TMDL:

- Lack of Numeric Standards: Many states, including Georgia, lack numeric water quality standards for some pollutants, especially nutrients like phosphorous and nitrogen. This lack of numeric standards makes it difficult to identify the pollution-reduction objective in a TMDL. The outcome is that any pollution-reduction objective becomes another item for negotiations by stakeholders. However, TMDLs can and should be developed for pollutants that do not have a numeric water quality standard. In the short-term, citizens should push for aggressive pollution-reduction objectives. For example, the 1987 Chesapeake Bay Agreement requires nutrient

reductions by 40% from 1985 levels, yet many of the states that signed the agreement do not have nutrient standards. Vice President Gore's Clean Water Initiative is expected to call for numeric standards for nitrogen and phosphorous by the year 2001. Citizens should lobby to keep Georgia on this schedule, so that U.S. EPA models will be adopted for the appropriate waters.

- Stakeholder Process: Identifying stakeholders is an important way to allocate responsibility between point and nonpoint sources. It is also used to evaluate and select "alternative" strategies to reduce pollution. The process, involving input from representatives of industry, municipalities, nonprofit organizations, private businesses, landowners, and the public, can be an effective way to gain "buy-in" by all affected parties in the implementation of the necessary pollution controls. However, stakeholders groups are often heavily weighted with industry representatives (from pulp and paper companies, agri-business, timber associations, etc.). Stakeholders are reluctant to support implementation of controls that would affect their industry. Industry-oriented stakeholders want to minimize their allocation of pollution-reduction obligations, and typically support more flexible, incentive-based or voluntary measures, rather than enforceable controls. In response, there should be representation from all groups affected: county government, citizens, etc. in order to ensure adequate allocation of pollution-reduction responsibilities and that the selection of controls are based on relative contribution of the impairment and are enforceable.

- Lack of Information/Phased Approach: A phased TMDL is applicable when lack of information makes it uncertain that the control strategies will work to achieve water quality standards. States may impose a phased TMDL, which will focus solely on point source controls, even if the pollution is caused by nonpoint sources. Although a phased approach is a quick way to get a TMDL up and running, it is important to make sure that the state has plans for monitoring and implementation of the phase II TMDL as soon as the necessary information is acquired.

- Reasonable Assurance: Under the TMDL for a water body impaired by both point and nonpoint sources, states are supposed to provide "reasonable assurances" that the pollution reduction obligations from nonpoint sources will be achieved. Otherwise, the entire load reduction must be assigned to point sources. The problem is that nonpoint source control measures may fail to achieve water quality targets for a number of reasons such as inadequate selections of BMPs, inadequate design, and lack of participation of contributing sources. In addition, the proposed TMDL may be designed to off-load as much pollution reduction obligations from the regulated point sources to the more difficult to control nonpoint sources (which are not regulated by a permit system). To implement pollution reduction obligations at nonpoint sources, states have flexibility. They can rely on voluntary actions, incentive based approaches, state regulations, or local zoning ordinances related to land uses and stormwater runoff. A proposed TMDL may not require stringent enough controls at the point sources because of expected reductions at the nonpoint sources. Citizens should demand reasonable assurances that the pollutant reductions at the nonpoint sources can be achieved, since the TMDL will be relying on voluntary nonpoint source pollution reduction programs. Require the state to define the actual amount of pollution reductions expected at the nonpoint sources and the actions necessary to achieve those objectives. Require monitoring to ensure that the pollution reductions are being achieved. Partner with industry over this matter. They've been bearing the costs of cleaning up polluted waterways for years, even when the impairment may be principally a nonpoint source problem. It is in their interest to ensure that the nonpoint sources are meeting their obligations; otherwise, industry and

other point sources will be forced to bear the cost of additional pollution controls.

- Critical Conditions: Typically, pollution from point and nonpoint sources causes the most harms to water quality during critical periods. The critical period for potential problems with nonpoint sources is a storm event with high amounts of precipitation. The critical period for point source discharges is the dryer, warmer seasons of the year when there is less stream flow to dilute the discharges and when streams may get warmer, making them subject to substantial growth in aquatic vegetation. Any TMDL, therefore, should be designed for the "worst case environmental condition" in order to ensure achieving the state's water quality standards. Lack of consideration for critical conditions reduces the likelihood of resolving the water quality problem. Citizens should ask the state agency to identify the critical environmental condition and whether the proposed TMDL is designed to meet water quality standards under that condition.

- Margin of Safety (MOS): The TMDL includes a margin of safety to account for any uncertainty in predicting the relationship between the intended reduction of pollutants by point and nonpoint sources and the expected improvement in water quality. The MOS must not be used to account for future expectations about growth and increased runoff or pollution discharges. Future expectations about increases in pollution loads must be incorporated in the TMDL's pollution allocations assigned to all sources. Otherwise, the effectiveness of the TMDL would be short-lived. The state agency would need to recalibrate the TMDL to incorporate the new pollution loads. Citizens should make sure that future expectations about growth, runoff, and discharges are incorporated into the actual allocations among point and nonpoint sources. Many states require municipalities to develop a master plan that predicts growth and related infrastructure needs. Georgia is up and coming on this front. Citizens should finally demand that the TMDL is being developed conservatively. There needs to be enough of a MOS built into the TMDL to almost guarantee that water quality standards will be met upon implementation of the TMDL.

3.4 OTHER OPPORTUNITIES FOR PUBLIC INVOLVEMENT

In addition to ensuring that the foregoing problems with TMDL implementation are dealt with, the public can get involved in the TMDL process in other ways such as:

- Review of NPDES permits: The issuance of a NPDES permit for point sources requires a public review process. The point source's WLA (waste load allocation) then becomes incorporated into the NPDES permit, for which violations can be enforced. However, sometimes NPDES permits are not stringent enough because of reliance on nonpoint source reductions. Citizens can demand that the nonpoint source pollution reduction schemes remedy the pollution. Otherwise, the EPA must assign the entire load reduction to the point sources in order to get the river in compliance with water quality standards.

- Issuance of BMPs (Best Management Practices) for Nonpoint Sources: The only BMPs that are effective for achieving water quality standards are those that are required and enforceable. If the river segment is on the Impaired Waters List, citizens must argue that a TMDL must be in place before the new nonpoint source activities can occur, and the TMDL must be part of the permitting process.

- Performance Partnership Agreement: An Environmental Performance Partnership Agreement

(PPA) is another way to get involved to ensure that your watershed is being protected. The PPA is an agreement between the state and the regional U.S. EPA office to offer states flexibility in setting priorities and channeling federal funds to support state priorities. Under a PPA process, the parties identify environmental priorities, use a public process to establish priorities, and apply measurable indicators to evaluate state performance. Such agreements can cover an array of programs such as programs in surface water and groundwater, public water supply, air, waste, and pollution prevention. More and more states are adopting this approach because of its flexibility. However, there is always the risk with any block grant process that program funds are diverted away, and that there will not be enough resources available to make the TMDL program a strong component of the states' water quality management efforts to clean up their impaired waters. In addition, the schedule for TMDL development, contained in either the Performance Partnership Agreement or some memorandum of understanding (MOU), may not contain milestones that indicate when U.S. EPA will step in if the state fails to meet the agreed-upon schedule. Citizens should advocate for a strong TMDL component to the state's Performance Partnership Agreement or any relevant MOU to see is U.S. EPA indicates when it will step in and how long it will take for them to develop TMDLs and if the state fails to meet the agreed-upon schedule.

- Review of State Water Quality Standards: Water Quality Standards consist of designated beneficial uses for surface water, water quality criteria, and anti-degradation provisions. TMDLs are a tool for ensuring that water quality standards are met. States are required to revise their standards at least once every three years. However, special interest groups representing industry, water suppliers, and agriculture weigh in more heavily during the public review process. In addition, the process of updating water quality standards can be very time-consuming which almost eliminates the public from being closely engaged in this process. The rising interest in TMDLs, particularly brought on by all the citizen lawsuits, may cause states to try to weaken their water quality standards or simply reduce its water quality monitoring efforts. Revision of standards represents an important opportunity for the public to be involved and learn more about the state's water quality management program. Contact the state agency and ask to be notified for any future actions. Advocate that standards are comprehensive and fully protect the chemical, physical, and biological integrity of the state's waters.

3.5 TMDL Summary

In sum, the TMDL process is designed to help state waters get into compliance with the Clean Water Act. Specifically, a TMDL is useful in targeting pollution that can't easily be regulated by any permits (as with point sources), by regulating a water body through a water quality based approach.

Georgia, having been sluggish in this process, is now trying to get TMDLs up and running for polluted waters. The Etowah River is at the top of the priority list for waters to establish TMDLs.

A TMDL must establish total maximum daily loads of each offending pollutant, in order to achieve water quality standards, to be set forth soon. To establish a TMDL, states must establish ceilings for the amount of pollutants allowed, set source specific limits for polluters, and select control technologies. Some pertinent problems that the public must be aware of in effectuating a meaningful TMDL are the lack of numeric standards for offending pollutants, problems arising from the stakeholder process, the lack of information and the subsequent initiation of a phased approach,

reasonable assurances from the state, account for critical conditions of the water body in the TMDL, and adequate margin of safety.

The public can get involved with the TMDL process in additional ways such as: in review of NPDES permits for point source dischargers, citizen involvement in the issuance of BMPs, Performance Partnership Agreements, and review of state water quality standards.

This has been an overview of what, exactly, a TMDL is, and what some of the concerns are in implementing an effective TMDL. It is going to be important for all affected parties to be aware of the requirements and repercussions of the laws governing clean water.

4 How will TMDLs be enforced?

While the TMDL program is the regulatory mechanism established by the Clean Water Act to control nonpoint sources of pollution, there are no enforcement provisions within the Act that create civil or criminal liability for these sources. Thus, a citizen cannot rely on the federal statute to abate any particular nonpoint pollution source. Instead, the Clean Water Act simply provides criteria which states must meet in order to maintain their state-run programs, and resultantly allows each state great discretion in how compliance with the established TMDL will be met. Even if the U.S. EPA revokes the state's power to run the program, the lack of liability provisions in the Clean Water Act for nonpoint sources inhibits the EPA's enforcement as well. Thus, the water quality standards that form the basis of the TMDL envision a "regulatory encouragement" method of inducing compliance through a type of implicit effluent trading program. This "regulatory encouragement" most likely will not happen at the federal level, but rather at the state and local level. Nonetheless, the EPA senses the difficulty state agencies may have, both politically and economically, and in the future may attempt to regulate many of the nonpoint sources by reclassifying them as point sources and requiring them to maintain an NPDES permit.

The discretion given to the states will allow the state agency to determine what methods will be used to achieve compliance with the loading capacity level mandated by each TMDL. Thus, the state must make choices as to what reductions will be made by lowering the discharge limits of permitted point sources and what reductions will be made control of nonpoint pollution. This is somewhat similar to the Clean Air Act, where the federal government sets levels of ambient air quality for a region, and the state is left with the decision of how best to achieve these levels required. The theory behind this regulatory method is that it is the state and local governments that are in the best position to decide how to achieve these standards—they may take the easier route by being heavy handed on permitted point sources, or they may attempt to initiate a more comprehensive pollution control strategy by reducing nonpoint pollution. Each choice has its consequences, and it is here that the Congress has chosen that the state and local governments must make these politically charged decisions.

While the Georgia EPD may issue some broad regulations covering all waterways within the state, the most effective program will be run on a river basin approach rather than a statewide regulatory program. Since the state only must create TMDLs and attempt to control nonpoint pollution on waterways that do not meet their water quality standards, the state has no incentive to create statewide regulations that may be very expensive to implement and hinder growth in areas that are not required to implement TMDLs. As a result, the state agency will instead pass the discretion down to the local government level of counties and municipalities. Only at this level will there most likely be any type of enforceable laws, if any are passed, that will control nonpoint pollution sources.

Under the Clean Water Act, point sources are regulated by the issuance of what is commonly called an NPDES permit. These permits limit the discharge amount of various pollutants, and any

discharge above the level set out in the permit is illegal. 33 U.S.C.A. §1311(a). Thus, any violation of the parameters of the permit will result in criminal or civil penalties. A discharger who negligently violates the permit is subject to a penalty of up to $25,000 per day of violation, while a person who knowingly violates the permit is subject to a penalty of up to $50,000 per day of violation. 33 U.S.C.A. §1319(c)(1-2)(A recent change to these provisions is that a single operational upset which leads to simultaneous violations of more than one pollutant parameter is treated as a single violation). The terms "negligently" and "knowingly" are of course subject to much legal interpretation which need not be discussed here, for these provisions simply show what types of true enforcement mechanisms are present under the Clean Water Act. These permitted point sources are the only group of dischargers or polluters into the river, which may be subject to direct monetary penalty under the Clean Water Act.

While the implementation of the TMDL program has the potential to have a large impact on nonpoint sources, such effect will not come from the ability to hold the creators of such pollution sources directly civilly or criminally liable under the Clean Water Act. Instead, any effective impact on nonpoint pollution must come from enforceable local ordinances that create such liability. Under the Clean Water Act, the state must develop a Water Quality Management Plans (WQMs) which details the state's focus and priority on implementing measures leading to compliance. 40 C.F.R. §130.6(c)(1-4). These plans must address the following elements: 1)TMDLs; 2) Effluent limitations, including water quality based effluent limitations and schedules of compliance; 3) Municipal and industrial waste treatment; and 4) Nonpoint source management and control.

Thus, the war between the nonpoint and point pollution sources will begin at the outset of the WQMs, when the NPDES permit must reflect and consider the loading capacity for that segment of the river. Historically, permits have been issued on an industry specific basis without consideration of how much total pollutant the river could hold. The state could issue as many permits as were applied for without appraising the total effect on the river. Under the TMDL program, however, if a river segment is listed then all permits on that segment must be water quality based. The result could be that the permitting process is seriously extended because the state agency can no longer solely rely on industry-wide standards to set discharge limits. In addition, the agency's consideration of water quality will most likely result in serious reductions of discharge limits. Although permits are valid for five years, EPA regulations require that the permitting process be reopened to prevent violations of water quality standards. 40 C.F.R. §122.5(a); 40 C.F.R. §122.62. Thus, if an allowable discharge would contribute to a TMDL violation, the permit may be modified. 40 C.F.R. §122.64. It is questionable whether a validly issued and unexpired permit could be altered without a taking by the state agency. Lee Dehihns, Suits Over Water Quality Spark Action, 3/16/98 Nat'l. L.J. B7, (col. 1). Such a challenge must overcome the EPA's NPDES permit regulations at 40 C.F.R. §122.5(b), and boilerplate language in the permits themselves, which state that the permit creates no property rights. However, there may also be arguments of contract interference and reliance.

Nonetheless, this is how the regulatory encouragement policy of the TMDL program will take place, as point sources will put political pressure on state and local government not to have their permit limits reduced and the governments will attempt to respond so that industry and employment is not lost.

Under the nonpoint source management and control measure of a state's WQM, the plan must describe the regulatory and non-regulatory programs, activities and Best Management Practices (BMPs) which the state has chosen as the means to control nonpoint source pollution's. The plan must specifically identify the best management practices for residual waste, land disposal, agricultural and silvicultural, mines, construction, saltwater intrusion, and urban stormwater. 40 C.F.R. §130.6(c)(4)(iii)(A-G). While this initially sounds as if this would lead to the traditional enforce-

ment mechanisms of civil or criminal penalties, none are prescribed in the Clean Water Act. Instead, it is left to the states to decide what the means shall be, and most states have failed to implement any enforcement mechanisms on most nonpoint sources. Instead, they rely on the non-regulatory programs, which leave the discretion to the local governments to decide how to comply with the state program. Currently, Georgia has issued no best management practices directly related to the implementation of TMDLs.

However, Georgia does have currently have statutes that address nonpoint pollution from some sources. Georgia's water pollution control law requires a permit from any person desiring to "erect or modify facilities or commence or alter an operation of any type which will result in the discharge of pollutants from a nonpoint source into the waters of the state..." O.C.G.A. §12-5-30(b). However, the regulations limit this provision, as they only require written approval and use of best management practices, but not issuance of a permit unless the EPD has issued one to the same person for a point source discharge. Ga. Comp. R. & Regs. §391-3-6-.06(3). Thus, runoff from construction may be controlled in some very limited situations, as injunctive relief and civil penalties of up to $50,000 per day are provided for by the statute. O.C.G.A. §§12-5-48, 12-5-52, 12-5-53.

For agriculture, soil and water conservation districts have the authority to adopt enforceable regulations to prevent soil erosion. O.C.G.A. §2-6-35. Such regulations may require particular cultivation methods or even retirement from cultivation of highly erosive areas. O.C.G.A. §2-6-37(a). The regulations are binding on all landowners in the district, and violations may result in injunctive relief, with the district having the power to go on the land to perform he work and recover its expenses with interest. O.C.G.A. §§2-6-36, 2-6-38, 2-6-39. However, this power is stymied because enforceable regulations may only be issued with approval by referendum of the owners of the lands within the district.

Another statute dealing with nonpoint sedimentation pollution is Georgia's Erosion and Sediment Control Act, which established a permit process for land-disturbing activities. Under the statute, counties and municipalities are direct to adopt comprehensive ordinances requiring best management practices for all land-disturbing activities. O.C.G.A. §§12-7-4, 12-7-6. The problem is that agriculture and forestry operations are wholly exempt from the statute and any activity on sites of 1.1 acres or less is also exempt unless they are within 200 feet of lakes or perennial streams. O.C.G.A. §12-7-17.

These are a few examples of statutes that may have an effect on nonpoint source pollution control under the TMDL program. However, the better picture to get from the statutes is their lack of broad ranging coverage of nonpoint source pollution. While they may tend to control some nonpoint pollution, the provisions of these statutes are not designed to consider the loading capacity of the river. They, too, have been administered in a manner similar to the NPDES permit. In order to make these provisions truly applicable to water quality standards under the TMDL program, their provisions must be revised so as to include water quality based limitations on activities undertaken pursuant to these statutes. The current lack of broad coverage of the many different types of nonpoint pollution shows once again how the state will most likely leave the enforcement-type laws to the local governments.

This result is how regulatory encouragement is envisioned to reduce nonpoint pollution. Once the loading capacity is set for a river, all sources of pollution, both nonpoint and point, will have to work together to meet any needed reduction. If the state chooses to lower the allowable discharges of the permitted point sources, then these sources would be forced to make extremely expensive renovations and upgrades to meet these new parameters. As a result, the natural thing for the point sources to do is to put political pressure on the state government to not reduce their allowable discharges. This pressure encourages the state to maintain the level of point source discharge

and force the local governments to implement strategies to lower the nonpoint sources of the pollution.

Once the effluent limits are set for the point source discharges, any growth in the area must be offset by reductions in existing pollution contribution. The municipality or county must either maintain its own level of discharge coming from various sources within its boundaries, and eliminate NPDES permitted discharges in the area, or reduce these discharges so that industry can remain. In addition, no new industries could locate to the area without reductions elsewhere because no additional discharges would be allowed once the loading capacity has been reached. A city would thus be encouraged to implement strategies to reduce nonpoint pollution so that it would be able to attract new industries to the area. This "encouragement" from the state and federal governments to issue ordinances and regulations to control nonpoint pollution is how any major reductions in such pollution will be attained.

This is especially true in Georgia, where all wastewater treatment plants are owned by municipalities. Thus, many of the permitted point sources are themselves also sources of the nonpoint pollution. If the municipality wants to grow in population, they must reduce their nonpoint pollution in order to do so. To address these nonpoint sources, the city will have to implement enforceable ordinances that control land use planning and, more importantly, what comes into their sewer systems and storm water drains. It is here where nonpoint pollution must be reduced, for if the city does not achieve this, it will soon violate its NPDES permit. Only then will citizens be able to sue to enforce the water quality standards under the TMDL program. Although citizens can pressure local and state governments to implement certain strategies, it is only when the city, as a point source, violates its NPDES permit that a citizen can sue for monetary penalties under the Clean Water Act. Any other suit to make the state or local government take any specific action will be hard to come by, as the citizen can only sue the EPA or state agency claiming inadequate implementation of the program itself. The legal standards for this are much higher, and are quite subjective.

However, this is precisely how Georgia and numerous other states are being forced to implement the TMDL provisions of the Clean Water Act. If a state fails to implement the TMDL plan, the U.S. EPA is required to step in and do it for them. While citizens can sue to force EPA to take such action, once the EPA does claim responsibility; there is much discretion in what action the agency takes. The EPA may (a) require the state to adopt implementation measures on a statewide or specific watershed basis; (b) redirect federal grant dollars towards those states that provide reasonable assurances that load allocation will be achieved; (c) review and possibly object to NPDES permits that regulate any pollutant covered by the TMDL; (d) deny a state's status to implement Section 319 grants and conduct more rigorous oversight on such grants; or (e) even eventually revoke a state's authority to implement the NPDES permitting program for point source discharges. Nonetheless, this again is a very indirect enforcement mechanism on nonpoint sources of pollution, and the discretion is wide at every level.

Another way that nonpoint pollution may be controlled in the future is the reclassification of such sources to point sources, and thus within the control of the NPDES permitting process. For example, the EPA will soon release regulations classifying the large concentrated animal feeding operations as point sources requiring permits. About five percent of these operations will not be covered by the NPDES permitting process, and there are signs that EPA will consider lowering the standards needed to qualify as a concentrated animal feeding operations in the future. In addition, EPA will soon include overhaul the regulations effecting stormwater runoff from municipalities and construction sites. Permits for these facilities will complement the stormwater permits now in effect for large cities and industrial facilities.

5 REGULATION OF NONPOINT-SOURCE POLLUTION

After twenty-five years of federal and state efforts under the Clean Water Act, water quality remains a serious problem. This is largely due to pollution coming from non-point sources. State 305(b) reports indicate that the single most significant cause of today's water quality problems is runoff from diffuse or nonpoint sources of pollution. In Georgia, nonpoint sources cause over 80% of the stream miles with water quality violations. A particular problem is the presence of sediments, nitrates, and phosphorous in our waters, which often run directly into surface waters, and create costs which are annually in the billions.

The continuing problem with nonpoint pollution is the result of a lack of regulation provisions, combined with a lack of knowledge and experience in dealing with these sources of pollutants. While the problems associated with point sources have been greatly ameliorated under the NPDES permitting system of the Clean Water Act, the Act does not provide an effective means of regulating the three largest sources of stormwater and nonpoint source pollution; agriculture, silviculture, and urban runoff from municipalities. Other areas that need more stringent regulations include mining, septic systems, landfills and hazardous waste sites, and construction areas.

In addition to the lack of legal remediation measures, there is also insufficient knowledge in the public sector about the problems such sources of pollution are creating in our waterways. Many citizens have not yet realized that modern factories are less polluting than farms, streets, or parking lots. It is very likely, however, that a reauthorized Clean Water Act will focus on additional regulatory measures for controlling nonpoint source pollution and stormwater contamination. Numerous proposals have already been put forth establishing much more stringent management requirements. In the interim, public focus is going to be shifting sharply to the area of nonpoint sources in the wake of a flood of litigation, which has spurred action in the area of TMDLs. As EPA is forced to take the creation of TMDLs for impaired waters seriously, local governments and citizens will have to begin to take compliance seriously. The only way for these areas to meet the ambient water quality standards is to establish an effective and cooperative program to deal with nonpoint source pollution.

5.1 Alternative Legal Enforcement

The implementation of urban and industrial stormwater permitting under the 1987 Water Quality Act amendments encouraged state legislatures to take a more comprehensive approach to controlling nonpoint pollution. Many adopted innovative land use and sedimentation control programs to deal specifically with the problem. Others began to explore the possibility of regulation through older laws that may provide an indirect route to get to the source of the problems. The benefit of using these laws is that most of them are not limited to the language of the Clean Water Act, which deals expressly with discharges from point sources. Examples of such alternative laws are litter laws, nuisance laws, fish and game laws, and public health provisions.

There are numerous general laws, which prohibit the discharge of any "wastes" into the waters. For example, a Connecticut law forbids the discharge of any "substance or material into the waters of the state without a permit...whether or not such substance causes pollution."

Most states also have extensive fish and game laws, which prohibit all discharges which may be harmful to fish. Other states have provisions, which criminalize the pollution of any drinking water or public water supply.

A method of enforcement which has been successful against nonpoint sources is the use of public and private nuisance laws. Pollution, which impairs the usefulness of waters, adversely affects human health, or impairs the rights of others, may be abatable under state nuisance laws. It is

possible to create laws, which make water pollution specifically a nuisance, or to rely on the general existing provisions, which define a nuisance as something harmful or noxious to the public or offensive to the senses.

These laws are widely available to individuals and groups who seek a direct legal means to deal with nonpoint sources of pollution, the only limitation to such actions is that while prohibitions under state pollution control laws may carry penalties of up to $10,000-$25,000 and criminal sanctions, litter laws, public health laws, and nuisance actions are generally considered petty crimes and misdemeanors and carry much smaller fines. They do, however, allow for abatement orders and injunctions to halt the cause of the violation.

5.2 Best Management Practices

Common strategies at the state and local level are usually a part of voluntary best management practices, but some have taken the extra step and implemented these measures by law. Others try to encourage best management practices by a series of incentives such as technical or financial assistance, cost sharing, or taxbreaks. All regulatory, control, and sanction approaches are best handled by state and local agencies and groups. There are a wide range of best management techniques to deal with the different areas of nonpoint pollution, and there are many different ways of implementing them.

For sedimentation and erosion problems, regulatory measures are often established. Delaware has provided that no person shall engage in land disturbing activities without submitting a sediment and stormwater management plan to the appropriate authority and obtaining a permit to proceed. Pennsylvania has an erosion and sedimentation plan for all earthmoving activities, and permits are required for all disturbances of 25 acres or more. In addition, notice is mandatory for all building permit activities of more than five acres.

Sedimentation from construction sites often has erosion rates, which are ten to twenty times greater than those of agricultural lands. Runoff from construction sites and urban areas often contains such pollutants as; fertilizers, pesticides, animal wastes, asphalt, tar, oil, gasoline, litter, salt and sand, and toxics like lead, mercury, and ammonia. Such contaminants are picked up by water running over streets, parking lots, roofs, lawns, or golf courses, and often travel directly into surface water. On-site septic systems can have untreated waste overflows, adding bacteria, pathogens, BOD, nutrients, and chemicals to that mix. Ground water is also threatened by contaminants, which leach out of landfills (like those located along the Etowah River in Cherokee and Forsyth Counties, below).

Ways of limiting nonpoint source pollution from urban areas include:

-Removing loose dirt and debris from construction sites, and protecting disturbed areas from rain and flow.

-Installing concrete basins to capture urban stormwater, or using wetlands and diversion ditches to control runoff.

-Careful planning and use of vegetative buffers and controls.

-Soil stabilization (mulching, seeding, and ground cover).

-Modify street cleaning practices, and limit impervious surfaces.

-Management of chemicals used in parks and public lands.

-Solid waste and litter control measures.

-Constructing and maintaining safe landfills.

-Land-use regulations, and local zoning to prevent development of sensitive areas.

-Site plan reviews that include pollution control elements, and approving development on a point system which penalizes polluters.

-Downzoning (limiting future uses of land).

-Include guidelines addressing nonpoint pollution within contracts for construction of public buildings and roads.

-Subdivision control ordinances with standards like holding basins, cluster development, and greenspaces.

-Long-term leases, swaps, and purchase of development rights.

-Maintenance and inspection of on-site sewage disposal systems.

Best management practices for agriculture include:

-Designing terraces to slow runoff.
-Integrated pest management.
-Cover cropping.
-Improved tillage practices.
-Controlled erosion.
-Cropland conversion.

-Chemical management.

For silviculture;

-Better planned roads.
-Revegetation.
-Closing roads after use.
-Buffer zones along streams.
-Directional felling.

For mining;

-Regrading.
-Replacing topsoil.
-Sealing old mines.
-Mixing materials to stabilize or neutralize leachings from tailings.
-Removing wastes.

Many of the practices for mining, agriculture, and silviculture can be linked to enforcement mechanisms such as required operating plans and permits. Some of the relative benefits and burdens of different management techniques are listed below.

5.3 Watershed Protection Approach

Because of the wide range of regulations that are available, and the specificity with which they will apply to different regions depending upon their particular location and problems, the 1990's saw a movement towards a watershed approach to managing nonpoint source and stormwater pollution. Nonpoint source water pollution is less amenable to numerical effluent standards, and so TMDLs provide a better means of measuring ambient water quality. However, to be effective, management practices must be tailored for each individual watershed. In 1992, Georgia passed a law which put into place a river basin management planning (RBMP) approach. RBMP tasks include water quality monitoring and program design, landuse and nonpoint pollution assessment, identification and prioritization of pollution sources, data management and G.I.S. use. Other activities that might be incorporated into a Watershed Plan are listed below.

The Etowah Alliance is in a very good position to implement and make the most of a watershed program for the monitoring of nonpoint source water pollution. Some of the specific problems that have been identified as threatening the Etowah include excessive sedimentation as well as trace metals—which are best attacked on a basin-wide basis. It has been estimated that urbanization could increase sedimentation to streams by as much as 100% in the years ahead. Watershed authorities provide a coordinated union of citizens, businesses, and government to help deal with the dangers of unsustainable development—this has already been created among the five counties of the Upper Etowah. The Etowah river system is a prime example of an area with widespread environmentally degrading land practices, which could best be addressed by the planned decisions of a watershed authority. Many areas are regulating nonpoint problems through such an implementation with great success.

The Massachusetts Plan:

The Charles River watershed is highly developed, and drains into Boston Harbor. There have been numerous concerns about fecal coliform levels and quantities of river flows which both stem from increased development in the area. In response, state water regulation divisions (supplying, permitting, etc.) have been reformed around watershed boundaries, as well as drawing basin teams from agencies like Fish and Wildlife and EPA. Permitting has been coordinated with the data collection, which is also performed by the watershed authority. Multidisciplinary teams have been formed within the basin, which facilitate data analysis and planning. The Charles River Watershed Authority is a nonprofit citizen group, which has collected water, samples over five years, developed models, and developed management plans. The group uses local academic resources and citizen volunteers, and is funded by government grants and stakeholder support. The Authority provides a fair arbitration panel to present unbiased data, and to make decisions bases upon a holistic approach. The Authority is focusing its efforts on regulating development, household wastewater, and urban runoff in the wake of realization that the control of nonpoint sources is the only way to bring the basin into compliance with water quality standards.

The North Carolina Plan:

Nutrient loading led to serious water quality degradation in the Nuese and Tar-Pemilco watersheds. Following the developments of TMDLs, the state established a system of pollutant trading for both of the basins. The trading program allows the regulated entity (the discharger) and

the unregulated ones (nonpoint sources) to coordinate, and allows the point sources to use leverage and pressure on nonpoint sources that state and federal agencies often cannot get to. The state has a targeted effluent nutrient concentration for the NPDES-registered dischargers. If the targeted amounts are exceeded, penalties are paid into a fund, which is used to control nonpoint sources.

***The California Plan*:**

Non-compliance in the San Francisco Bay basin resulted from copper loadings, and led to a TMDL calling for reductions of 950 pounds per year. Because the major point sources in the area were already regulated for copper, the regional board decided that the control of nonpoint sources (especially sediment transport in stormwater) would be the most successful and cost-efficient solution to the problem. Other options that were investigated were the curtailment of copper sulfate application for aquatic weed control and removal of copper from automobile brake pads. The basin plan provided for the trading of copper loading from nonpoint to point sources, but bound wastewater treatment dischargers to their existing effluent limits. Although this plan was later overturned by the State Water Quality Control Board because of the technical basis for the TMDL, the major municipal dischargers have reduced their copper loading by 50% through better management of indirect dischargers and optimization of their treatment processes.

The Washington Plan:

The State of Washington has also reorganized its permitting process around watersheds by synchronizing permits, establishing schedules for basin investigations, and by modeling and evaluation. TMDLs were set for a number of toxics and nutrients, and led to innovative methods on the part of the watersheds and the State Department of Ecology. DOE modeled its watershed approach on the Clean Lakes Program which has a greater potential for buy-ins by the regulated parties in pollutant trading, and has a greater possibility of leading to cost-sharing because the stakeholders choose the management scheme they want to follow. A large part of the success of this watershed plan is that it involves nonpoint sources to a large degree, allowing substantial improvements with less expenditure.

The North Oconee Plan:

Here in Georgia, we are in the midst of having TMDLs established for many of our rivers. A Community Watershed Project (CWP) has been established on the Oconee River as a pilot project to help areas in Georgia coordinate and comply with the TMDL process. The idea is for communities to help themselves, while working closely with government agencies. While many of the activities that the watershed performs are basic best management practices, they are done in a coordinated and enforceable manner in a local area. The CWP has taken on such activities as economic analysis of sourcewater protection, citizen organization, educational primers on TMDL and watershed approaches for citizens, computer mapping of watershed land use and water quality, predictive computer modeling, and providing information about financial and technical resources available to citizens. The program focuses especially on educating citizens and stakeholders about nonpoint source pollution. Large-scale community events have been held to inform and involve citizens on the status of their watershed, and numerous presentations have been made to local government authorities. Below are listed some of the steps and participants involved in the implementation of such a management plan.

Comprehensive and coordinated action on the local level will prove to be the most effective way to preserve water quality in the face of burgeoning development, as well as the only way to attain compliance with TMDL standards in the coming wave of increased focus and regulation of nonpoint source pollution. In recognition of this, a variety of funding sources have emerged in recent years which are available to states and local groups establishing nonpoint source pollution control programs. There are also provisions within the Clean Water Act itself, which create grants specifically to promote these programs (the Ettowah Alliance has already become the recipient of such a grant in the area of nonpoint source pollution). Further information on funding and grants is attached.

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