



Economic Impact Analysis Virginia Department of Planning and Budget

9 VAC 25-260 – Water Quality Standards Department of Environmental Quality September 06, 2000

The Department of Planning and Budget (DPB) has analyzed the economic impact of this proposed regulation in accordance with Section 9-6.14:7.1.G of the Administrative Process Act and Executive Order Number 25 (98). Section 9-6.14:7.1.G requires that such economic impact analyses include, but need not be limited to, the projected number of businesses or other entities to whom the regulation would apply, the identity of any localities and types of businesses or other entities particularly affected, the projected number of persons and employment positions to be affected, the projected costs to affected businesses or entities to implement or comply with the regulation, and the impact on the use and value of private property. The analysis presented below represents DPB's best estimate of these economic impacts.

Summary of the Proposed Regulation

Current Water Quality Standards classify waters as impaired if the level of dissolved oxygen falls below a specific critical level. The numerical dissolved oxygen criteria do not take account of whether the waters are below the standards due to natural conditions, manmade conditions, or both. All waters below the numerical criteria are defined as "impaired" and consequently must be scheduled for development of a treatment plan to bring the water body up to water quality standards. The State Water Control Board proposes to amend the standards to recognize that dissolved oxygen concentrations may fall below established criteria due to naturally occurring circumstances. Under such circumstances, the waters in question will not be categorized as impaired.

Estimated Economic Impact

Under the current regulations, water quality is assessed according to specific numeric criteria. However, the regulations do not recognize that dissolved oxygen concentrations in

some waters may fall below the established criteria due to natural conditions. According to the Department of Environmental Quality (DEQ), some of the waters in Virginia that are currently listed on the Clean Water Act 303(d) list of impaired waters do not meet the dissolved oxygen criteria due to natural conditions. Under the proposed regulations, waters with low dissolved oxygen concentrations due to natural conditions would not be considered impaired. Thus, these waters could be removed from the 303(d) list of impaired waters.

DEQ will have to take necessary measures in the future to diagnose and improve the quality of the waters on the 303(d) list so that they meet the existing numerical water quality standards. This will be done via the development of a total maximum daily load (TMDL). According to DEQ, TMDL's for the waters on 303(d) list must be developed by 2010. The costs of the diagnosis and development of TMDL's would be paid from state and federal funds. DEQ estimates that the state's contribution for this would be above \$3 million for the 47 waters that are impaired due to natural causes. The cost of the implementation of the TMDL is expected to be much larger. A rough estimate suggests that the treatment required by the TMDL could potentially cost hundreds of millions of dollars for treatment of naturally impaired waters.¹ This ballpark estimate does not include the additional expenditures to keep the water quality at the acceptable natural level. The maintenance of the water quality at the acceptable natural level would still be necessary, as the natural conditions will reduce the quality of these waters below the acceptable standards over time. Thus, the proposed regulatory change would potentially save hundreds of millions of dollars in state expenditures.²

Under the current regulations, DEQ could be required to create environmental damage by aerating waters that naturally have low dissolved oxygen levels. For example, the current regulation may require human interference to a swamp whose dissolved oxygen level is naturally below the existing standard, and remediation measures such as aeration may be required to increase dissolved oxygen levels in a swamp. Under the proposed regulations, DEQ would not be required to aerate waters that naturally have low dissolved oxygen levels. Thus, implementation of the proposed regulations may help prevent damage to natural ecosystems by this type of human interference.

¹ Sources: Virginia Association of Municipal Wastewater Agencies and Department of Environmental Quality

² This figure is the estimated savings for only those waters where it is feasible to achieve the numeric dissolved oxygen criteria. Attempts to treat waters where it is infeasible to achieve the criteria would be even more costly.

The main costs introduced by the proposed amendments are the assessment costs of determining whether the low dissolved oxygen levels are due to natural conditions. These may include the costs related to evaluation, data collection, experiments, and computer modeling. Also, these costs are not fixed and must be incurred on a regular basis since the assessments will be done periodically. DEQ's ballpark estimate indicates that 920 hours of staff time will be devoted for initial diagnostics. Another 960 hours of staff time will be devoted every four years for periodic assessment.

The identification of the benefits and costs depends on the feasibility of correctly applying the new narrative water quality criterion. According to DEQ, there are several methods to identify natural water quality. An evaluation of aquatic life uses, habitat, available monitoring data, available computer modeling results and other accepted scientific principles are possible ways of determining natural water quality. Although these several methods are designed to ensure that a correct assessment is done, the absence of a unique method indicates an unknown degree of uncertainty in assessing the natural water quality. Since assessment of low dissolved oxygen levels is an imprecise endeavor, there exist the possibility that DEQ will overestimate the contribution of nature to low dissolved oxygen levels. If this were to happen, then some water treatment that would have been environmentally beneficial may not occur due to the regulatory change. Thus, the correct determination of natural water quality is critically important and has direct consequences on the benefits and costs of the proposed regulation.

In summary, if implemented the proposed regulation would likely produce significant net benefits. The main portion of the benefits will come from the savings of funds that would be spent on design and implementation of TMDL's. An additional source of benefit comes from not disturbing naturally occurring ecosystems. The cost of the periodic assessment process is expected to be considerably lower than the estimated benefits. This analysis and its conclusion are based on the assumption that the assessment of the natural water quality is feasible and will be done correctly. There may be additional associated costs if the assessment of natural water quality is not done properly. The best estimate of the expected costs of the changes in the regulation is small relative to the expected benefits. This leads to an estimated net positive economic impact for the proposed regulation.

Businesses and Entities Affected

The proposed regulation may have some potential effect on a small number of environmental consulting businesses as DEQ employed the services of only two academic and one private contractors in the past to design TMDL's.

Localities Particularly Affected

The proposed changes to the regulation affect localities throughout the Commonwealth.

Projected Impact on Employment

The changes in the regulation will require less labor who are in the waste water treatment business since the treatment of waters that are low in dissolved oxygen due to natural conditions will be avoided in the future. The changes will have some positive impact on employment of diagnostic workers after the proposed amendments are effective since the assessment of the natural water quality will require additional labor. In the near term, the net impact on employment is expected to be small and positive since currently there are not any labor resources directed toward treatment of naturally impaired waters that are scheduled for development of TMDL while the diagnostic work will be done right away. But, in the longer term, the net impact would be negative when the treatment in the long run start to occur.

Effects on the Use and Value of Private Property

The demand for diagnostic services may experience an increase. The demand for treatment services is expected to decline.