
7.0 COMPARISON OF BENEFITS AND COSTS

This chapter provides a comparison of the monetized annual benefits and costs of the Phase II storm water rule.

7.1 Total Annual Monetized Benefits

To estimate the benefits of the rule, EPA used two different approaches: (1) water quality modeling approach and (2) water quality assessment approach. Because the approaches use different methodologies, the benefits estimates are presented separately for comparison in this chapter.

National Water Quality Model

EPA monetized benefits of water quality improvements associated with the Phase II rule in the designated uses of stream and rivers in the United States using a national water quality model. The National Water Pollution Control Assessment Model (NWPCAM) estimates the aggregate annual benefits of the Phase II rule to be \$1.63 billion. This estimate, however, does not include estuarine and marine water benefits because the NWPCAM cannot estimate them at this point in time.

National Water Quality Assessment

EPA developed a partial monetary estimate of expected benefits of both the minimum municipal measures and the construction components of the rule. As reported in Exhibit 6–20, the sum of these benefits ranges from \$671.5 million to \$1.1 billion annually. However, as noted above and in Chapter 6, this benefit range is not comprehensive because it omits several benefit categories which are difficult to monetize. For example, some of the benefits associated with water quality improvements in marine waters, although potentially significant, are not included. Furthermore, other benefits may be underestimated. The benefits associated with construction site controls, for example, may be underestimated because all beneficial aspects of construction site controls may not have been fully valued. In particular benefits associated with post-construction runoff are not included in the total benefits to be consistent with the cost analysis.

EPA expects that the benefits associated with implementation of the minimum municipal measures (excluding erosion and sediment controls for construction sites) will begin accruing approximately three years following implementation of the rule. This three year time period provides time for such measures as public outreach and education to become effective and the benefits realized. With regard to erosion and sediment controls for construction sites, EPA expects benefits to accrue immediately following implementation of the rule because the construction site controls will be immediately effective abating sediment and providing benefits.

7.2 Total Annual Monetized Costs

As described in Chapter 4, EPA estimated the annual aggregate municipal and construction compliance costs and Federal and State administrative costs for the proposed regulation to range from \$847.6 to \$981.3 million. EPA expects that costs will decrease over time because certain municipal activities should be completed during the first permit cycle. These include development of construction ordinances and BMPs for new developments, development of

ordinances prohibiting discharges other than storm water into the MS4s, assessment of the maintenance schedules for the storm water infrastructure, and the assessment of illicit connections to the MS4s. However, because EPA preferred to present one cost figure, the costs for these items were not eliminated for subsequent permit cycles.

7.3 Comparison of Benefits and Costs

Exhibit 7-1 provides an annual comparison of benefits and costs for a representative year in which the rule is implemented, one in which benefits from the minimum measures and construction controls are accruing. Because there is not an initial out lay of capital costs with benefits accruing in the future (i.e., benefits and costs are almost immediately at a steady state), it is not necessary to discount costs in order to account for a time differential. In addition, EPA did not vary the factors that comprise the benefits and costs to account for market changes over time. Therefore, the benefits and costs presented in Exhibit 7-1 reflect a constant and steady stream of annual benefits and costs. This method of comparing benefits and costs, described in EPA's Guidelines for Performing Regulatory Impact Analysis (1991), Appendix C, compares streams of benefits and costs to examine net benefits in each year. This is deemed equivalent to first discounting the costs and benefit streams to obtain their present values and then comparing them.

The two approaches to estimating the potential benefits of the rule generate a wide range of benefits. The water quality model approach obtains a higher overall benefit estimate event though it includes only a portion of freshwater benefits (i.e., lakes are included), and it excludes all marine benefits. Both approaches show that benefits could exceed \$1 billion while costs would likely be less than \$1 billion. In addition, costs are expected to decrease over time because certain components are likely to be implemented in the first permit cycle only. This increases the likelihood that actual benefits would indeed be significantly greater than the potential costs.

7.0 Comparison of Benefits and Costs

Exhibit 7-1. Comparison of Annual Benefits to Costs for the Phase II Storm Water Rule

Monetized Benefits¹	Millions of 1998 dollars²
National Water Quality Model Total Annual Benefits	\$1,628.5
National Water Quality Assessment	
Municipal Minimum Measures	\$131.0 – \$410.2
Controls for Construction Sites ^c	\$540.5 – \$686.0
Total Annual Benefits	\$671.5 – \$1,096.2
Costs	Millions of 1998 dollars²
Municipal Minimum Measures	\$297.3
Controls for Construction Sites ³	\$545.0 – \$678.7
Federal/State Administrative Costs	\$5.3
Total Annual Costs	\$847.6 – \$981.3

¹National level benefits are not inclusive of all categories of benefits that can be expected to result from the regulation.

²Detail may not add to total due to independent rounding.

³ Controls evaluated include both erosion and sediment and post-construction controls.