



Raritan Basin Watershed Management Project

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Draft Strategies for Surface Water Quality & TMDLs

Many of the WMA Goals & Objectives address surface water quality and TMDL development in some manner. To assist the WMA Committees with strategy development, the following general strategies are provided. Please note that these are not “recommended” or “required” strategies, but rather are just some alternatives available. WMA Committees should feel free to add, delete or modify from these approaches. In other words, think of this paper as an “idea dump” – the ideas are here to reuse, recycle or leave in the dump.

It is important to remember that what the Clean Water Act and NJDEP regulations calls a “Total Maximum Daily Load” (TMDL) is the total pollutant load (the concentration limit times the flow) that could exist in a surface water body without violating the Surface Water Quality Standards (SWQS). A TMDL for a watershed is allocated among all point sources (called wasteload allocations), all nonpoint sources (called load allocations), a margin of safety (related to data and model uncertainty) and a reserve capacity (optional, but can address future needs of point or nonpoint sources or for ecosystem needs).

$$\text{TMDL} = \text{WLA} + \text{LA} + \text{MOS} + \text{RC}$$

Strategy Options – Investigations

- See Strategies for Nonpoint Source Pollution Control
- Establish special or supplemental monitoring of surface water quality to assess whether SWQS are violated under various flow and seasonal situations, or whether there are emerging water quality issues related to parameters not currently addressed by the SWQS
- Establish special monitoring to determine whether waters actually support the designated uses, such as aquatic life support
- Establish special monitoring of wastewater treatment plant effluent quality and flow to evaluate whether the point sources themselves are likely to “cause or contribute to violations of the surface water quality standards (SWQS)”
- Establish special monitoring of various land use or land cover types in the watershed to determine more accurate nonpoint source loading rates (also called loading coefficients)
- Establish “first-cut” models to help identify the most appropriate water quality and flow monitoring locations and schedules for assessments
- Establish qualitative or semi-quantitative models for impaired watersheds entirely dominated by nonpoint source loads, to determine priorities for remedial activities and “percent reduction” targets for initial implementation
- Establish qualitative or semi-quantitative models for non-impaired watersheds entirely dominated by nonpoint source loads, to ensure through master plans, wastewater management plans, zoning, site plan, subdivision, public health

and environmental ordinances that future land use changes do not impair the watersheds

- Establish quantitative models for impaired watersheds with a mix of point and nonpoint source loads, to determine TMDLs and all their components
- Spot check existing stormwater outfalls to identify water quality problems (similar to Sewage Infrastructure Improvement Act in coastal areas)
- Establish a monitoring system to track TMDL implementation success
- Establish a system to assess the cumulative impact of hazardous waste sites on surface water quality in watersheds with concentrations of such sites and assess the cumulative success of management efforts
- Assess the suitability of existing surface water quality criteria and antidegradation policies for surface waters of a watershed, and determine whether surrogate targets might be necessary where key factors lack criteria
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Strategy Options – Physical Implementation

- See Strategies for Nonpoint Source Pollution Control
- Improve wastewater treatment plants to reduce pollutant loads in compliance with permit requirements, including TMDL requirements
- Improve wastewater treatment plants to reduce pollutant loads to levels lower than required for compliance with permit requirements
- Implement wastewater treatment options to temporarily improve effluent quality for specific parameters of concern during extreme low flows (usually will involve a tradeoff of increases in some other pollutants)
- Replace effluent discharges to surface water with effluent discharges to ground water (generally applicable to smaller facilities)
- Route effluent discharge location to a different surface water body location that is better able to dilute or attenuate the pollutant loads
- Strategically replace densely packed septic systems with public sewerage
- Improve wastewater treatment plants to treat key pollutants that lack criteria but raise substantive health issues (e.g., endocrine disruptors)
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Strategy Options – Regulatory

- See Strategies for Nonpoint Source Pollution Control
- Adopt TMDLs for all water quality-impaired waters to meet SWQS
- Adopt TMDLs for all water quality-impaired waters to result in a quality that is better than SWQS
- Adopt TMDLs for all non-impaired waters to retain and ensure a quality that is better than SWQS
- Allocate within the TMDL a portion of the reserve capacity (essentially, a reduction of the pollutant load that can be allocated to point or nonpoint sources) to protection of sensitive aquatic ecosystems
- Incorporate Wasteload Allocations into permits for municipal or industrial wastewater treatment facilities based on adopted TMDLs for impaired waters, to reduce pollutant loads from current or projected conditions

- Incorporate Wasteload Allocations into permits for municipal or industrial wastewater treatment facilities based on adopted TMDLs for non-impaired waters, to control future pollutant loads in a way that meets antidegradation requirements
- Pollutant trading or pollutant credit systems with model-validated results and enforceable results
- Implement enforceable Load Allocations through NJPDES permits, such as construction-related permits, municipal and industrial stormwater permits, and individual NJPDES permits for development stormwater systems that are not under municipal jurisdiction
- Enhance pre-treatment regulations and permits regarding the introduction of toxic substances and other problem pollutants into sewage systems
- Limit the areas to be sewered, and controls on the relative density or pollutant loads of discharges to ground water within the watershed
- Develop watershed-specific surface water quality criteria or antidegradation policies for watersheds or parameters of special concern
- Require strategic monitoring of stormwater outfalls to identify “hot spots” such as abnormally high bacterial levels
- Modify laws to increase the connection between municipal responsibilities for land use control with responsibility for water resources protection
- Require monitoring (including off-site or ambient monitoring) or contributions to a common monitoring system to prove TMDL compliance
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Strategy Options – Non-regulatory

- See Strategies for Nonpoint Source Pollution Control
- Education of businesses and residents to minimize or eliminate the introduction of non-treatable pollutants into sewage systems
- Education of governmental decision makers regarding the appropriate use of wastewater treatment alternatives and the integration of planning, infrastructure and surface water quality
- Financial incentives for treatment plant upgrades
- Integration of smart growth policies with wastewater infrastructure
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References

NJ Administrative Code 7:15-7. 1997. Water Quality Management Rules, Total Maximum Daily Loads.

NJ Statutes Annotated 58:25-23 et seq. Sewage Infrastructure Improvement Act.

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