6.0 RECOMMENDED WATERSHED MANAGEMENT MEASURES FOR THE NIANTIC RIVER WATERSHED

This recommendations section of the plan begins with the identification of management goals to guide the implementation of this plan. These goals and related objectives attempt to be as specific as possible and linked to existing water quality standards. In the absence of federal or state criteria, qualitative targets are presented. This holds true for social or programmatic targets as they are measured as more qualitative indicators.

6.1 Management Goals and Objectives

Management goals and associated objectives and targets are presented in Table 6.1. These goals are derived from the watershed management issues of concern studied by this project.

Indicators and targets are derived from various sources. Indicator bacteria targets are taken from CT Water Quality Standards (CTDEP, 2002c). Nutrient targets are merely suggestions derived from literature values and national guidance (Burkholder, 2004; USEPA, 2001). Currently, there are no national and state nutrient criteria for estuaries. The USEPA has published recommended nutrient criteria for rivers and streams that could be used for the tributaries of the Niantic (USEPA, 2000). The *Connecticut Stormwater Quality Manual (CTDEP, 2004a)* provides guidance for controlling stormwater quantity to reduce impacts from peak flow on streams.

Table 6.1. Watershed Management Goals, Objectives, Indicators, and Targets

Goal	Management Objective	Indicator/Target
Support designated uses for shellfishing.	Reduce bacterial loads from stormwater outfalls, runoff, and direct discharges.	Fecal coliform: Geometric Mean less than 14/100ml; 90% of Samples less than 43/100ml (CTDEP, 2002c).
Support designated uses for primary contact recreational uses.		Enterococci: Geometric Mean less than 35/100ml; Single Sample Maximum 500/100ml
Support designated uses for aquatic life.	Reduce nutrients loading from stormwater outfalls and runoff.	Total Nitrogen: Maximum of 30% annual N loading to the Niantic River OR Inorganic Nitrogen: minimize loadings to below recommended eelgrass threshold (0.3 mg/l) (USEPA, 2000).
Protect and restore natural stream channels.	Minimize flooding impacts by improving peak and volume [stormwater] controls from impervious surfaces.	Peak flow volume and velocity: Minimized peak velocity for 1-yr, 24-hr storm events (CTDEP, 2004a).
Educate key stakeholders about watershed management issues and good housekeeping responsibilities.	Raise stakeholder awareness by implementing a watershed management information and education campaign.	*See* Section 7.1.1
Establish a sustainable coalition of partners to manage the Niantic River Watershed.	Create a coalition of watershed stakeholders to take a leadership role for the implementation of this plan.	A sustainable, engaged watershed management coalition.
Improve water quality and biological monitoring for the Niantic River and its tributaries.	Establish a comprehensive, long-term water quality monitoring program for the Niantic River Watershed.	* EPA-approved water quality and biological monitoring program. * Funded and staff water quality monitoring program.

6.2 The priority actions to address Watershed Management Strategies

Watershed management strategies must directly address the objectives listed above and strive to hit the targets associated with them. With the exception of the three last programmatic objectives, the management objectives that guide the strategic approach and implementation of this plan involve many of the same management

measures: minimize impervious surfaces, retrofit old storm sewer systems and protect and restore wetlands and riparian corridors.

Several watershed management strategies are proposed to meet these objectives. They focus on addressing the adverse effects of future development and managing problems associated with existing stormwater management systems. Together the strategies provide the framework of a comprehensive approach for the targeted management measures, which constitute the actual steps for implementation. Below is a list of the key management strategies for the Niantic River Watershed.

- Mitigating the impacts of increased/increasing impervious surfaces from development.
- Enforcing state-of-the-art stormwater management practices for all development (both during and post-construction).
- Implementing municipal Stormwater Management Program Plans according to the General Permits for MS4s (CTDEP, 2004d), including retrofits for existing stormwater drainages and outfalls on the river.
- Requiring developers to incorporate low-impact site preparation and development techniques.
- Elevating the importance of homeowners' and business' "housekeeping" responsibilities.
- Protecting existing and restoring degraded vegetative and riparian buffers ("critical areas") where needed.

There are several ways in which to act on these management strategies. The toolbox of planning and zoning techniques available to all municipalities includes dozens of possible measures that can be applied to watershed protection goals. A comprehensive look at the toolbox is included in matrix form in Appendix F, which outlines possible protection tools, their assessed protection value, and their ease of implementation in Connecticut. The matrix was developed based on the 24 watershed protection issues (or threats) identified by the Eight Mile River Watershed Study. (Eight Mile Wild & Scenic Study Committee, 2005) Not all of the issues are directly relevant to water quality

protection and in many cases ease of implementation and protection value would vary by municipality; hence the table is provided as a reference but not a directive. The toolbox was referenced in this study during evaluation of priority recommendations, but other inputs were also used to focus on the most effective tools for water quality protection and enhancement, in terms of "bang for the buck".

What would bring about the greatest change, on the ground, for water quality protection, of all the tools available? The most immediate and valuable tools are believed to be those that are relatively easy to implement in Connecticut and that also have a good to excellent protection value (positive impact). For this study, recommended measures concentrate on developable land; areas that will not be preserved through acquisition or preservation. Each town has the discretion to pursue land preservation as a way to avoid development, but the focus of this study is to guide municipalities under the most prevalent "threat" scenario (development) in order to mitigate water quality impacts where/when they occur.

Sections 6.2.1 through 6.2.6 lists the priority actions, or goals, with recommendations for the most effective management actions. While preferred actions would be ones that are relatively easy for towns to implement, it would be fruitless to select easy measures if they were not effective for water quality protection. Fortunately, most of the actions considered by this study to be strongest in terms of bang for the buck <u>are</u> also relatively "easy", in the sense that they are authorized by law, have good precedents, and/or involve voluntary measures. These measures also work no matter what the zoning, or type of development; they can be applied to any part of town under any land use scenario.

6.2.1 <u>Mitigating the Impacts of Increased/Increasing Impervious Surfaces from Development</u>

- Protect existing wetlands, vernal pools and watercourses to maximum extent practicable (*i.e.* no alteration of areas with good existing functions and values)

- Protect or establish a vegetated buffer beyond wetland and watercourse boundaries (50-foot minimum width within which no alteration or vegetative removal is permitted in areas with existing established vegetation)
- Encourage and enforce non-structural, non-piped stormwater handling techniques wherever possible (*e.g.* surface flows, vegetative filter strips)
- Encourage porous pavements and other non-impervious solutions in all developments or redevelopment projects
- Require mitigation for any and all wetland/riparian impacts, to re-establish vegetative filtration zones in appropriately placed locations (even if upland locations are the only options)
- Encourage site development practices that provide for allowable densities with the minimum footprint
- Utilize design review to evaluate options for minimizing water quality impacts, no matter what type of development proposal is submitted, no matter what zoning
- Support and carry out municipal best management practices including regular street cleaning and maintenance/repair of municipal stormwater facilities
- Lot coverage/impervious surface restrictions
- Development restrictions on steep slopes (slope restrictions) or steep slope overlay zone establishing design criteria
- Education for developers, town staff and the public

6.2.2 Enforcing State-of-the-art Stormwater Management Practices for All Development (Both During and Post-construction)

- Codify & enforce use of the *Connecticut Stormwater Quality Manual* (CTDEP, 2004a) (stormwater management guidelines) and best management practices (BMPs) in all new developments or redevelopments (recommend implementation for control of both peak flow and volume for stormwater controls along with BMPs for water quality).

- Codify & enforce use of the *Connecticut Guidelines for Erosion and Sedimentation Control* in all new developments or redevelopments (CTDEP, 2002a)
- Embrace stormwater BMPs for all municipal roadway construction and other municipal projects
- Codify and enforce use of best site development practices, including construction staging and soil stabilization techniques
- Educate developers and town staff

6.2.3 Implementing Municipal Stormwater Management Program Plans (SWMPPs) According to the General Permits for MS4s (CTDEP, 2004d)

- Create a stormwater management utility for MS4s in order fund control measures
- Target resources to implement minimum control measures as outlined in the SWMPPs

6.2.4 Steering Developers Toward and/or Regulating Low-impact Site Design

- Utilize design review to evaluate options for minimizing water quality impacts, no matter what type of development proposal is submitted or zoning designation
- Codify and enforce use of best site development practices, including construction staging and soil stabilization techniques
- Develop incentive-based programs for developers to maximize protection and use of vegetative buffers (defined here as vegetative strips positioned to capture runoff from development positioned between the development and receiving wetlands/waters or stormwater conveyance structures)
- Codify and enforce lot coverage/impervious surface restrictions
- Develop slope restrictions or steep slope overlay zone establishing design criteria

6.2.5 Elevating the Importance of Homeowners' and Business' "Housekeeping" Practices

- Educate homeowners and targeted businesses (potentially businesses on large sites)
- Establish and/or enforce annual septic pump-out requirements and inspections

6.2.6 Restoring Vegetative and Riparian Buffers Where Needed

- Modify or enforce wetland regulations to require mitigation for any and all wetland/riparian impacts, with emphasis on re-establishing vegetated buffers (water quality filtration zones) in appropriately placed locations
- Use of incentive-based program(s) for developers to restore or establish vegetative buffers as part of site development
- Partner with the ConnDOT on state roadway projects in the Watershed to request Transportation Enhancement funding (available for habitat/ecological restoration projects under SAFTEA-LU)
- Educate developers, town staff, and the public