

E.1 The Tankerhoosen – A Key Inland Watershed

The Tankerhoosen River watershed is an approximately 12.9 square-mile sub-regional basin within the larger Hockanum River and Connecticut River watersheds in north-central Connecticut. Approximately 70% of the watershed is located within the Town of Vernon, with the remaining portions within the Towns of Tolland, Bolton, and Manchester.



The upper Tankerhoosen River is a cold water stream supporting self-sustaining native trout populations that rank among the best of their kind in the state.

The Tankerhoosen River has long been recognized as an important natural resource and a key inland watershed critical to the health of Long Island Sound. The high water quality (classified as A) in the upper regions of the Tankerhoosen River sustains a significant natural resource of the State of Connecticut – the Belding Wild Trout Management Area, one of only two Class I wild trout areas east of the Connecticut River. The importance of these small, high-quality watersheds to the downstream health of the larger river basins, and therefore to Long Island Sound, is well recognized. Of utmost importance to these high quality watersheds is protection of the headwaters regions.

The importance of protecting the Tankerhoosen is recognized by both local and state agencies. The State Plan of Conservation and Development identifies the riverway as a proposed preservation and conservation area. The Vernon Open Space Plan proposes a greenway plan of 2000 preserved acres along the Tankerhoosen. Most recently, The Nature Conservancy has identified several key watersheds in the state that it considers particularly important to the future protection of Long Island Sound, including the Tankerhoosen River watershed.

E.2 Potential Threats to Water Quality

The headwaters region of the Tankerhoosen River is bisected by Interstate 84. Development pressure in this headwaters region at the Exit 67 interchange in Vernon poses a major threat to the long-term health of the watershed. Further stresses on the headwaters have been created by development of an industrial park in Tolland through which a key headwater stream flows, as well as the presence of the highway itself, which continues to generate increasing traffic loads from development along the I-84 corridor. There has also been declining water quality in the lower reaches of the Tankerhoosen River in recent years. The lower region of the watershed is classified as “B”, and was cited as impaired in the Connecticut Department of Environmental

Protection's (DEP) most recent list of water bodies not meeting water quality standards.

E.3 The Need for a Comprehensive Watershed Plan

The need for local decision-makers to consider the environmental consequences of development proposals that would impact the Tankerhoosen River has been expressed by the watershed towns, local advocacy groups including the Friends of the Hockanum River Linear Park and the Hockanum River Watershed Association, The Nature Conservancy, and the DEP.

An informal partnership was formed in 2005 to build upon the successful community-based river monitoring and assessment program of the Connecticut River Watch Program and the Hockanum River Watch Program. Led by the Friends of the Hockanum River Linear Park, this group also included representatives of the Hockanum River Watershed Association, the Belding Wildlife Management Area, the North Central Conservation District, the Town of Vernon, and other local volunteers. Their objective was to address the immediate and long-term threats to water quality and natural resources in the Tankerhoosen River watershed by developing and implementing a comprehensive, scientifically-based watershed management plan.

In 2007, the Friends of the Hockanum River Linear Park retained Fuss & O'Neill, Inc. to develop a management plan for the Tankerhoosen River watershed. The goal of the watershed management plan is to identify recommendations that will help maintain and enhance water quality and ecological health in and along the Tankerhoosen River and its tributaries. Funding for the project has been provided by the National Fish and Wildlife Foundation, Long Island Sound Futures Fund, Rivers Alliance of Connecticut, and the Town of Vernon. A Technical Advisory Committee was also formed to guide the development of the plan, including representatives of the previously mentioned groups. This plan reflects the combined efforts of Fuss & O'Neill, the Technical Advisory Committee, stakeholders, and state and local resource agencies.

E.4 Plan Development Process

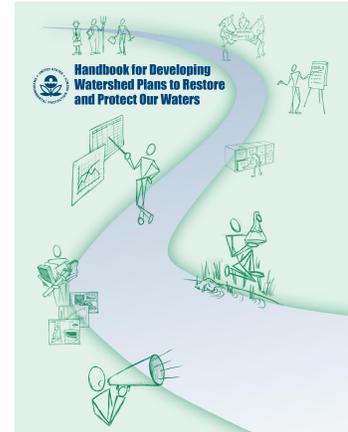
The Tankerhoosen River Watershed Management Plan is the culmination of desktop analyses and field assessments performed by the project team under the direction of the Technical Advisory Committee. The plan synthesizes information from earlier studies and reports on the watershed, Geographical Information System (GIS) mapping and analyses, review of land use regulations, and detailed field assessments to document baseline watershed conditions, the potential impacts of future development in the watershed, and recommended actions to protect and restore water quality and natural resources.

The plan has also been developed consistent with EPA's guidance for the development of watershed-based plans, which includes nine key elements that establish the structure of the plan. These nine elements include specific goals, objectives, and strategies to

protect and restore water quality; methods to build and strengthen working partnerships; a dual focus on addressing existing problems and preventing new ones; a strategy for implementing the plan; and a feedback loop to evaluate progress and revise the plan as necessary. Following this approach will enable implementation projects under this plan to be considered for funding under Section 319 of the Clean Water Act

Development of the watershed management plan consisted of the following five major tasks:

1. Assessment of baseline and potential future watershed conditions,
2. Review of land use regulations in the watershed,
3. Field inventories of stream corridors and upland areas in the watershed,
4. Identification of watershed management goals, objectives, and potential management strategies to address watershed issues,
5. Development of watershed-wide, targeted, and site-specific watershed management recommendations.



The management plan was developed to satisfy EPA's criteria for watershed-based plans.

The initial task was to develop an understanding of the current conditions of the Tankerhoosen River watershed. To accomplish this, the project team reviewed existing watershed data, studies, and reports; compiled and analyzed GIS mapping of the watershed and various subwatersheds; and developed pollutant loading and impervious cover models to evaluate areas in the watershed that are most at-risk from future development.

A comparative subwatershed analysis was also performed to identify the Tankerhoosen River subwatersheds that 1) are more sensitive to future development and should be the focus of watershed conservation efforts to maintain existing high-quality resources and conditions and 2) are likely to have been impacted and have greater potential for restoration to improve or enhance existing conditions. The results of the baseline assessment were documented in the report, *Baseline Watershed Assessment, Tankerhoosen River Watershed*, dated May 28, 2008 (Fuss & O'Neill, Inc.).

The results of the comparative subwatershed analysis were used to target individual subwatersheds for detailed field inventories. Using screening-level assessment procedures developed by the Center for Watershed Protection and EPA, field crews assessed approximately 8.7 miles of stream corridors, potential hotspot land uses, and representative residential neighborhoods, streets, and storm drainage systems. The field inventories identified a number of common issues and problems, as well as potential candidate sites for stormwater retrofits, stream restoration, and other targeted projects.

The project team also reviewed municipal land use regulations and planning documents within the watershed towns, focusing on Vernon and Tolland, which comprise the majority of the land area in the Tankerhoosen River watershed and have the greatest

potential for future development. The land use regulatory review identified a number of recommendations to improve stormwater management, encourage or require the use of Low Impact Development (LID), reduce the amount of impervious cover generated by future development, and better protect watercourses, wetlands, and riparian areas.

The combined results of the watershed field inventories and land use regulatory review are described in the report, *Watershed Field Inventories and Land Use Regulatory Review, Tankerhoosen River Watershed*, dated October 2008 (Fuss & O'Neill, Inc.).

The project team then developed a series of goals, objectives, and potential management strategies for the watershed based upon the results of the watershed inventory and evaluation phases of the project. Potential management strategies were further refined with input from the Technical Advisory Committee, culminating in the plan recommendations that are presented in this document.

E.5 Watershed Management Goals

The Tankerhoosen River Watershed Management Plan is intended to be an affordable and effective plan that can be implemented by the watershed municipalities, residents, and other stakeholders. The overall goal of the plan is to maintain and enhance water quality and ecological health in and along the Tankerhoosen River and its tributaries, which is essential to the economic well-being, environmental and public health, recreational opportunities, and quality of life for the residents, local governments, and visitors of the Tankerhoosen River watershed. This can be achieved by:

- Protecting the upper region of the Tankerhoosen River watershed, including high-quality headwater streams that sustain significant natural resources such as the Belding Wild Trout Management Area, from existing pollutant sources and future threats related to new development and redevelopment.
- Restoring and enhancing the water quality and ecological health of impacted portions of the Tankerhoosen River and its tributaries to support designated uses for fish and wildlife habitat and recreational uses.

E.6 Plan Recommendations

A set of specific objectives and recommended actions were developed to satisfy the management goals for the watershed. The plan recommendations include watershed-wide recommendations that can be implemented throughout the Tankerhoosen River watershed, targeted recommendations that are tailored to issues within specific subwatersheds or areas, and site-specific recommendations to address issues at selected sites that were identified during the watershed field inventories. Recommendations can be viewed as short-term, mid-term, and long-term according to their implementation priority.

- *Short-Term Recommendations* are initial actions to be accomplished within the first one to two years of plan implementation. These actions establish the

framework for implementing subsequent plan recommendations. Such actions include development of local regulations and stormwater design guidance, discharge investigations, education program planning, and field inventories within previously unassessed subwatersheds. Small demonstration restoration projects could be completed during this phase, however construction of larger retrofit practices and stream restoration projects requiring extensive design, engineering, and permitting should be planned for later implementation.

- *Mid-Term Recommendations* involve continued programmatic and operational measures, delivery of educational and outreach materials, and construction of one or two larger retrofit and/or stream restoration projects over the next two to four years. Progress on land conservation, LID implementation, and discharge investigation follow-up activities should be completed during this period, as well as project monitoring and tracking.
- *Long-Term Recommendations* consist of continued implementation of any additional projects necessary to meet watershed objectives, as well as an evaluation of progress, accounting of successes and lessons learned, and an update of the watershed management plan. Long-term recommendations are intended to be completed during the next 5- to 10-year timeframe and beyond.

Table ES-1 summarizes the management recommendations for the Tankerhoosen River watershed. The recommendations are organized by implementation priority (short-, mid-, and long-term) and scale/location (watershed, targeted, or site-specific). Successful implementation of this plan will require a cooperative effort and commitment from the key watershed stakeholders, including a recommended watershed coalition consisting of the Friends of the Hockanum River Linear Park and other members of the Technical Advisory Committee, the watershed municipalities and citizens, state and federal agencies, and other groups. The table also identifies the watershed stakeholders who should be involved in implementing the plan recommendations in either a lead or support role.

Table ES-1. Watershed Management Plan Recommendations Summary

Key Actions	Priority	Scale/Location	Who Should be Involved (L = lead, A = assist)										
			Watershed Towns	Friends of HRLP	Watershed Coalition	Landowners	NCCD	HRWA	Belding WMA	ConnDOT	CTDEP	NRCS	USEPA
Objective 1. Build a Foundation for Implementing the Plan													
Form sustainable partnership or coalition	S	W	A	L			A	A	A		A		
Adopt watershed management plan	S	W	L		A								
Identify potential funding sources and submit grant applications	S	W	L		L	A	A	A	A	A	A	A	
Objective 2. Enhance In-Stream and Riparian Habitat													
Conduct fish passage assessments	S	T	A		L		A	A					
Revise local stream crossing & stormwater design standards	S	W	L										
Belding Pond Dam removal feasibility evaluation	S	T			A					A	L		
Priority stream restoration projects	M/L	S	A		L						A		
Objective 3. Protect/Restore Riparian Buffers													
Priority riparian buffer restoration projects	M/L	S	A		L	A			A		A		
Adopt stream buffer regulations, pending enabling legislation	M	W	L										
Revise riparian buffer recommendations (Tolland)	S	W	L										
Develop and implement invasive species management plan	M	W			L		A	A		A			
Objective 4. Identify and Eliminate Illicit Discharges													
Targeted illicit discharge investigations	S	T	L		A		A						
Implement municipal IDDE programs	M	W	L										A
Priority stream cleanup efforts	S	S			L			A					
Develop education/outreach materials	S	W			L		A			A			
Deliver education/outreach to the public	M	W	L				A						
Objective 5. Residential Management Practices													
Increase watershed stewardship signage in residential areas	M	W	L		A		A	A					A
Encourage disconnection of rooftop runoff	M	W	L		A		A						
Develop education/outreach materials	S	W			L		A						
Deliver education/outreach to the public	M	W	L				A						
Objective 6. Municipal and Business Management Practices													
Review municipal facility compliance	S	W	L										
Improve municipal stormwater management programs	S/M	W	L										
Implement street sweeping and catch basin cleaning	M	W	L						L				
Develop education/outreach materials	S	W			L		A						

