

APPENDIX A: Summary of Implementation Activities

The Norwalk River Watershed Initiative Five-Year Assessment of Implementation Progress Since 2004

I. HABITAT RESTORATION

- Redding has held invasive species removal project in open space areas through cutting and burning, then planting of native species.
- NRWA has held biannual invasive removal on the river banks on open spaces along the river.
- Ridgefield Chamber of Commerce has done invasive removal in Ridgefield.
- NRCS/USDA Wildlife Habitat Incentives Program (WHIP) has 14 acres of invasive species in Ridgefield and Wilton.
- Weston has been active in Gilbert and Bennett Development plans regarding controls on the disposal of contaminated fill.
- Weston took enforcement and legal action to preserve soils adjacent to Wampum.
- Trout Unlimited constructed and maintained a dam bypass channel at Cannondale dam to allow for up stream passage, with holding pools and native plantings.
- NRCS/USDA completed the design and permitting phase for removal of the Merwin Meadows Dam.
- Norwalk has begun the design and permitting phase for removal of the Floch Process Dam.
- Trout Unlimited completed several in-stream and bank restoration projects including in-stream and bank-placed boulders and log jams with conifer revetments and native species plantings along the river off of School Road, upstream from Old Mill Road and at Schenck's Island Park in Wilton.
- Watershed Coordinator assisted with landscaping at the Maritime Center with native plantings and butterfly garden.
- NRWI coordinated Boy Scout planting event at Silvermine School.
- Norwalk and NRCS completed the Silvermine River Streambank Restoration Project behind Silvermine School.
- Trout Unlimited, NRWA and Wilton conducted spring river cleanups each year.

II. LAND USE/FLOOD PROTECTION/OPEN SPACE

- The Norwalk River Valley Trail steering committee was formed with the support of five towns to create a 27 mile Norwalk-Danbury multiuse trail and Greenway designation which will ultimately increase exposure to the river through passive recreation. A grant from FHWA administered through DEP Recreational Trails Management has been awarded for this project.
- NRWA produced a 5 site trail guide for distribution.
- Progress was made in increasing regulated areas adjacent to wetlands:
 - Wilton increased the regulated area adjacent to a wetland from 50 to 100 ft.
 - Norwalk adopted defined regulated areas of 50ft. from wetlands.
 - Ridgefield increased regulated areas to 75 ft. from wetlands.
 - New Canaan increased regulated areas from 25 to 50 ft. from wetlands.

- Development rights to a property on Chestnut Hill in Wilton were secured to help obtain an easement on a property that is bisected by the Norwalk River.

III. WATER QUALITY

- Lewisboro initiated a septic education program, including flyers to all town residents and local cable TV show.
- NRWI sent letters to municipalities to encourage them to adopt septic ordinance.
- NRWI surveyed current municipal use of road sand.
- Ridgefield, Norwalk, New Canaan, Weston and Redding have switched to chemical de-icing
- Wilton is experimenting with a winter road mix that has less sand.
- Wilton recycling center has been revamped to include a broader spectrum of recyclables.
- Georgetown wastewater treatment plant was upgraded in 2008.
- CT DEP draft Stressor ID Report was issued.
- Norwalk, under its “The Filter Project”, purchased and installed catch basins on Water Street in Norwalk.
- Lewisboro increased number of stream and lake monitoring multiple sites.
- Wilton, Norwalk and TU continue to support HW/RW & Earthplace monitoring program.
- HW/RW ‘s water quality monitoring program expanded testing with an additional 2 Norwalk River sites for a total of 12 and an additional 12 Silvermine River sites for a total of 20. They detected three failures at wastewater treatment plants which were resolved and identified several “hot spots” at the following locations:
 - Middlebrook Farm Road/Comstock Brook – Wilton
 - Moody’s Lane/Norwalk Harbor - Norwalk
 - Calf Pasture/ LIS – Norwalk
 - School Street/Norwalk River - Norwalk
 - Washington Street/Norwalk Harbor - Norwalk
 - Rt 102-Rt 7 Intersection/Cooper Brook- Ridgefield
 - James Street/Silvermine River - Norwalk
 - Wall Street/Norwalk River- Norwalk
 - Governor Street/Ridgefield Brook- Ridgefield
 - Water Street/ Norwalk Harbor – Norwalk
- Norwalk adopted an Illicit Discharge & Detection/Elimination Ordinance
- Wilton and New Canaan held events for the collection and disposal of medications, entitled “Shed Your Meds”, to raise awareness and discourage improper disposal.
- NRWI obtained and completed a grant for a goose reduction program by egg oiling including an informational brochure, workshops, and annual oiling in most watershed towns.
- New Canaan approved a “No Feeding” waterfowl ordinance.

IV. STEWARDSHIP AND EDUCATION

- NRWA maintains a website on a volunteer basis.
- Watershed Municipalities have developed greater cooperation and response to water quality issues.
- NRWI continues to support the River Study Program for 4th graders
- Maritime Aquarium has expanded its Norwalk River Watershed Exhibit.
- NRWI increased cooperation and response from municipalities to water quality issues.

- NRWI held a meeting for CEOs of watershed towns in 2006.
- Harbor Watch/ River Watch program has seen increased financial support.
- Financial support for the Coordinator position was switched from 319 to municipal funding.
- An update of the current action plan was administered by SWRPA to incorporate the Nine Elements of a Watershed Based Plan.
- NRWI had produced and distributed Informational pamphlets and brochures including a state of the Watershed report, “RiverWise: A Look at the Norwalk River Watershed”, and “Stream Corridor Restoration in the Norwalk River Watershed: Case Studies and Lesson Learned”.
- NRWI provided publicity and press releases for “The Filter Project”
- NRWI hosted a watershed event, “Restoring a River – How a Conservation Partnership Works”, at Silvermine Elementary School.
- CT DEP sponsored “Project Wet”, an educational program at Silvermine River.
- NRWI received the “Green Circle Award” in 2005 and the national award, “Clean Water Partner for 21st Century” in 2003.
- NRWI held exhibits at the Wilton Go Green Festival on topics “What Is a Watershed?”, “Non-Point Source Pollution” and “Rain Gardens” and on “Non-Point Source Pollution” annually at the Oyster festival in Norwalk.

APPENDIX B: Full List of Recommended Management Measures

Goal	Objective	Task	Objectives and Associated Action Items	Implementing Organizations												Implementation Schedule	Milestones	Outcomes	Evaluation and Performance Criteria	Scale		
				NRWI	NRWA	WM	RPA _s	HW/RV	TU	NMA	DEEP	NYSDEC	CTDOT	NRCGS	USDA/USGS						POTW	Uconn
B	4	5	Install and maintain BMPs (i.e. sediment traps) at all discharge points to the river			x												2-4 years	Identify suitable locations for BMPs	Sediment traps installed	% of discharge points with BMPs, implemented maintenance schedule	S
B	5	0	Objective B-5: Maintain, enhance and increase riparian buffer areas																			
B	5	1 a	Adopt a targeted program to correct pollution from the hotspot areas identified in D-2-3a, including but not limited to field inspections, technical guidance, monitoring and enforcement	x														2-5 years	Completion of riparian corridor analysis	Maps identifying riparian areas and conditions, with prioritization shown in color-coded format	% of watershed area completed in each WM	W
B	5	1 b	Implement riparian restoration projects based on sites identified in B-5-1a			x		x									x	2-5 years	Grant award	Riparian corridors restored or rehabilitated	# of identified areas restored (Target is one project per year)	T
B	5	2	Promote the use of grass-lined swales and other bioretention practices along both major highways and local roadways, using a prioritization process recommended in Table 5-2 with priority subwatersheds for immediate implementation of BMPs.			x	x											1-2 years	Training (Classroom and Field)	Implementation of swales and bioretention practices with high level of effectiveness for indicator bacteria load reduction	% of transportation corridor treated by BMP/LIDs, with a target of 50% in 10 years	T
B	5	3 a	Conduct a more detailed watershed-wide tree canopy analysis, based on currently available data to determine the extent of tree cover and establish baseline conditions				x											1 year	Grant award and contractor selection	Existing tree canopy maps for various municipalities	% of watershed area completed, in each WM	W
B	5	3 b	Quantify the value of urban forestry and tree programs for improving the aesthetics, energy efficiency and air quality, wildlife habitat, recreational opportunities, real estate values, and potential job opportunities using tools such as the one developed by Center for Neighborhood Technology				x											2 years	Adoption of a valuation tool for the entire watershed	Quantified values on a watershed basis for communication with public	Completion of analysis and review in a stakeholder meeting	W
B	5	3 c	Track progress in the implementation of tree canopy cover on a watershed-wide level	x		x												Every 3 years	Grant award	Comparison of tree canopy cover to quantify benefits	% increase in canopy cover, with a target of 5% every 3 years	W
B	5	4	Develop a comprehensive urban forest master plan that integrates the LID benefits and sets a watershed-wide urban tree canopy goal				x											1-2 years	Partnership among WMs to perform this work	Urban forest master plan	Completion of the plan report	W
B	5	5	Review the quantified benefits of increased buffer zones from states such as New Jersey to accelerate the buy-in and establishment of appropriate regulations. Also review the Riparian Toolbox that EPA-LISO had put together	x														1 year	Grant award to perform this review	Compiled documentation for all stakeholders' reference	Document completion	W
B	5	6	Expand existing public education program to emphasize the value of riparian buffers and improvement of regulations to protect them		x	x											x	1 year	Curriculum expansion	Education and outreach documents	% representation from each WM, in terms of geographical coverage of the watershed	W
B	5	7	Identify and evaluate effectiveness of BMPs to reduce thermal pollution					x										2-4 years	Grant award to perform evaluation	Installation and monitoring of BMP installations	a detailed analysis of trends before and after installation	W
B	5	8	Support legislation that protects and repairs riparian zones	x	x	x												1-5 years	Letters of Support	Statewide riparian protection	Legislation Passed	W
B	5	9	Continue support of projects and programs to remove trash and debris	x				x										2-4 years	-	Member participation in clean-up projects	Member participation in clean-up projects	W

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				NRVI	NRWA	WM	RPA	HW/RV	TU	NMA	DEP	NYSDEC	CTDOT	NRCS	USDA/USGS						POTW	UConn	SWCD
C	0	0	Goal C: Land Use/Flood Protection/ Open Space (Promote Balanced Growth Which Preserves Property Values and Protects and Enhances the Watershed's Resources for Future Generations)																				
C	1	0	Objective C-1: Identify appropriate areas for public access to the rivers and streams and increase public access where appropriate.																				
C	1	1	Develop a public access area inventory.						x										2-4 years	-	Documented inventory	-	W
C	1	2	Make public aware of, and promote, access to passive recreation (i.e. via signage or website)						x										2-4 years	Installation of signage	Increased use and stewardship of open areas	-	T
C	1	3	Ensure accessibility of trail maps at municipalities			x													1-2 years	-	Local trail maps at all watershed municipality town halls	% of watershed towns with local trail map guides at Town Hall, target 100% at the end of 2 yrs	S
C	1	4	Support the Norwalk River Valley Trail (NRVT) Committee for greenway designation and trail development	x															1-2 years	-	Issuance of letter of support	-	S
C	1	5	Support the creation of linear parks along the river	x															2-4 years	-	Letters of support	-	W
C	2	0	Objective C-2: Promote inclusive land use planning for natural resource conservation.																				
C	2	1	Encourage watershed-based land use planning	x		x	x											x	1-2 years	-	Round table discussion with all noted implementing organizations	-	W
C	2	2	Develop a framework and complete a comparative review of land use, open space and zoning regulations for all watershed municipalities				x												1-2 years	-	Information collection and exchange between municipalities	-	W
C	2	3	Work with state, regional, and municipal agencies and staff to minimize impervious surfaces	x		x	x					x	x						2-4 years	-	Reduction of impervious runoff generated in watershed	-	W
C	2	4	Ensure that land use planning for industrial and commercial uses includes consideration of adequate stormwater drainage and wastewater treatment systems				x												1-2 years	-	Revision of local regulations & policies to address BMPs stormwater and wastewater	-	W
C	2	5	Explore the feasibility and benefits of developing a Norwalk River overlay zone				x												2-4 years	-	Compiled documentation regarding feasibility	-	W
C	2	6	Support statewide legislation to mandate effective watercourse buffers	x															Ongoing	-	Issuance of letter of support	-	W
C	3	0	Objective C-3: Recognize the importance of maintaining and increasing open space to ensure proper functioning of the watershed.																				
C	3	1	Promote balanced growth which preserves property values and protects & enhances watershed resources for the future	x		x													1-2 years	-	Local land use decisions inclusive of watershed resource protection	-	W
C	3	2	Provide support to municipalities' and other land preservation organizations' efforts	x			x												2-4 years	-	Issuance of letter of support	-	W
C	3	3	Develop an open space map for the watershed and identify key parcels beneficial for preservation				x												1-2 years	-	Watershed-wide open space planning map	-	W
C	3	4	Identify, preserve and enhance areas important for flood storage and conveyance	x		x													1-2 years	-	Development protective of flood storage	-	W

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				NRWI	NRWA	WM	RPA _s	HW/RW	TU	NMA	DEP	NYSDEC	CTDOT	NRCGS	USDA/USGS	POTW						Uconn	SWCD
C	4	0	Objective C-4: Reduce the frequency and severity of flooding																				
C	4	1	Educate residents living within flood plains and flood prone areas of the vulnerability to flood damage and practices to protect and mitigate their property and families	x		x													2-4 years	-	Educational information for distribution	-	W
C	4	2	Continue to encourage the preservation of undeveloped lands and wetlands within the 100-year flood zone with the use of Open Space purchase, donation or conservation easement			x													Ongoing	-	Additional Acquisition and protection of flood prone properties and properties beneficial for flood storage and conveyance	-	W
C	4	3	Implement strategies identified in the current Predisaster Mitigation Strategy Documents, http://www.swrpa.org/Uploads/SWR-PDM_2011-Final_reduced.pdf ; and local and Regional Plans of conservation and development.			x													Ongoing	-	Reduced vulnerability and damage as a result of flooding	-	W
D	0	0	Goal D: Water Quality (To restore and protect surface and ground water to meet State water quality standards throughout the watershed such that the Norwalk River supports its designated and existing uses)																				
D	1	0	Objective D-1: Eliminate illicit discharges to storm sewers																				
D	1	1	Review and update municipal stormwater management plans to ensure that IDDE efforts are undertaken.			x													6 months	Updated stormwater plan to address IDDE requirements	Consistent IDDE program in the watershed	Effort completion in all 7 WMs	W
D	1	2	Continue the illicit discharge investigations and follow up for all hotspots identified during field reconnaissance/monitoring. The hotspots exhibit continuous discharges during dry weather periods and also involve exceedances of indicator bacteria criteria in the waterways during such periods			x	x												1-2 years	Completion of IDDE programs	Videos, maps to confirm sources	# of sites investigated and scheduled for immediate remedial action by all WMs. Target is 100% in 10 years	S
D	1	3	Continue work to eliminate illicit discharges			x	x												Ongoing	Improved water quality	Elimination of hotspots	# of hotspots removed from the list, comparison of pre and post-removal monitoring data to show progress - Target of 100% in 5-10 years	W
D	2	0	Objective D-2: Improve solid waste and liquid waste management throughout the watershed																				
D	2	1	Establish criteria to identify poorly-functioning on-site septic systems in the watershed to facilitate implementation of inspection and O&M programs	x		x	x												1-2 years	Acceleration of controls for septic systems	Consistent criteria for all WMs to pursue inspection and O&M	Completion of a technical memorandum on criteria based on EPA guidance and other case studies	W
D	2	2	Conduct an inventory of areas in each municipality where the greatest potential for a concentration of poorly-functioning on-site septic systems are located and include a brief description of the primary factors that contribute to these problems	x		x	x												1-2 years	Watershed wide documentation	Documentation from all WMs with previous complaints or records on poorly functioning systems	A map of potential areas with greatest number of such systems to prioritize the subsequent inspections and actions	W

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				NRWI	NRWA	WM	RPA _s	HW/RV	TU	NMA	DEP	NYSDEC	CTDOT	NRCS	USDA/USGS						POTW	Uconn
D	2	3a	Develop a combination of GIS-based and advanced technologies such as infrared photography to identify hotspots that are affected by septic system failures			x	x											2-4 years	Grant to pursue this work	Mapping of hotspots to facilitate the control and O&M programs	# of maps created in the watershed for action by individual WMs; a report with findings	W
D	2	3b	Adopt a targeted program to correct pollution from the hotspot areas identified in D-2-3a, including but not limited to field inspections, technical guidance, monitoring and enforcement			x												1-5 years	Completion of inspections and monitoring	Elimination of failed septic systems through proper O&M	# of systems brought to normal operations - Target is 100% over 5 years	S
D	2	4	Publicize and promote adequate maintenance of on-site septic systems, using a variety of media and outreach techniques	x		x												1-2 years	Outreach material	Effective communication with public on the importance of inspection and O&M aspects	% of watershed covered for public outreach - Target is 100% in 1 year; % of population that maintain their systems without failures - Target is 100% in 10 years	T
D	2	5	Develop incentives for year-round disinfection at wastewater treatment facilities			x				x								2-4 years	Activation of disinfection	Improved plant operations	Improved water quality during dry weather	W
D	2	6	Discuss with and encourage CTDEP's Municipal Facilities Section to compose a regional fact sheet for wastewater treatment facilities	x						x								2-4 years	Meeting with CTDEP	Fact sheet developed	Fact sheet Developed	T (segments adj to POTW)
D	2	7	Encourage implementation of BMPs for phosphorous reduction at wastewater treatment facilities	x						x					x			1-2 years	Meeting with POTWs	Implementation of BMPs	100% meeting attendance within first; BMPS at each treatment plant within 5 years	S (POTW)
D	2	8	Explore the use of a unified tracking system that can assist with watershed-wide monitoring of septic systems	x		x				x	x							2-4 years	Establishment of a tracking system	Watershed-wide database to assist the WMs in tracking improvements	% of watershed covered - Target of 100% over 5 years	W
D	2	9	Work with municipalities to develop a program to address potential environmental issues with poorly-functioning septic systems	x		x										x		1-2 years	Establishment of program	Training/workshop	Completion of the program for consistent use by all WMs	W
D	2	#	Evaluate the cumulative effect of discharges permitted by CT and NY on in-stream habitat and water quality								x	x						4-5 years	Detailed water quality assessment	Septic system loads to stream capacity analysis to quantify the impacts at small hydrological scales	Completion of the study on source and effects for both indicator bacteria and nutrients	W
D	3	0	Objective D-3: Reduce the impact of road sand and salt on water quality and stream habitat																			
D	3	1	Develop an implementable action plan through discussions with watershed municipalities' Department of Public Works (DPW's) to reduce the impacts of sediments from roadways on the river through, frequent cleaning of catch basins, capture using treatment technologies such as swirl separators or other BMPs prior to reaching the waterways and LID practices			x												2 years	Guidance for WMs on unified O&M procedures	Action plan document	% of catchbasins maintained per year (Target of 100% over 5 years, or 20% per year, in each municipality); estimated reductions in sediment loads based on the BMPs implemented	W

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				NRWI	NRWA	WM	RPA _s	HW/RV	TU	NMA	DEP	NYSDEC	CTDOT	NRCGS						USDA/USGS	POTW	Uconn
D	3	2	Work with DPWs to develop a regular monitoring and maintenance schedule for catch basins and drainage structures and prioritize street sweeping to maximize efforts within the watershed			x												1-2 years	Unified O&M protocol	Tracking catch basin maintenance; Targeted street sweeping to reduce O&M costs for WMs	% of catchbasins monitored and maintained on a watershed-scale (goal of 100% over 5 years or 20% per year, in each municipality)	W
D	3	3	Develop a comprehensive map of stormwater infrastructure within the watershed			x	x											1-3 years	Inventory completion	Characterization report showing outfalls and drainage areas, and the collection system for each outfall	% of watershed area characterized (goal of 100% over 5 years) - this is one of the key elements of CTDEP/NYSDEC MS4 permit	W
D	3	4	Review deicing practices regularly and adopt practices less harmful to water quality and wildlife as appropriate			x												1 year	Migration to less harmful practices	Use of best available practices	100% migration by all WMs	S
D	4	0	Objective D-4: Maintain adequate baseflows in the Norwalk River and its major tributaries																			
D	4	1	Evaluate the potential impact of streamflow enhancement regulations from CTDEP and develop BMPs such as infiltration basins to enhance baseflows in the upper reaches of Norwalk and tributaries			x					x							2-5 years	Guidance to WMs on the impact of enhancement regulations	Maps identifying infiltration basins, and quantitative study to track improvement	Monitoring and quantification of results	T
D	5	0	Objective D-5: Eliminate or reduce the anthropogenic impacts to in-stream water quality																			
D	5	1	Develop a list of in-stream impoundments on first and second order streams and prioritize impoundments for removal based on the impacts to water quality	x							x							2-3 years	Basis for impoundment removal for WMs/CTDEP	Local monitoring data and site-specific assessments to characterize algal growth and nuisance aquatic plant growth	Number of priority impoundments recommended for removal of control practices	T
D	5	2	Continue to monitor the eutrophication concerns in ponds and reservoirs and evaluate the potential for in-lake treatment methods (e.g. nutrient reductions, aeration, weed removal/dredging) to improve water quality. Start with the Great Swamp and continue to other impoundments where algal growth and nuisance plants are of great concern				x				x							1-2 years	Grant solicitation to perform monitoring	Local monitoring data and site-specific assessments to characterize algal growth and nuisance aquatic plant growth	% Completion of monitoring efforts and development of site-specific recommendations for the impacted ponds and reservoirs	S
D	5	3	Develop targeted strategies to reduce nitrogen and phosphorus inputs to the impoundments of concern, which may be more restrictive than the strategies adopted elsewhere in the watershed			x												2-5 years	Action plan for individual impoundment	Education and guidance for undertaking more restrictive actions	Finalize guidance document and implement strategies - % of impoundments taken out of the hotspot list in Section 5 under Nutrient Concerns	S
D	5	4	Conduct additional investigations to determine DO fluctuations in water releases from the Great Swamp, and develop a plan to evaluate site-specific conditions and develop remedial measures				x											1 year	Pollution reduction plan	Establish mass balance to determine load to response relationships and develop target reductions in TN/TP	Completion of monitoring and targeted reductions for pollutants from areas surrounding the impaired impoundments	S
D	6	0	Objective D-6: Reduce nitrogen loads from groundwater																			
D	6	1	Evaluate the need and potential costs associated with treatment technologies for removing nitrogen from groundwater (e.g., Permeable Reactive Barrier, alternative septic systems, and STP expansions), in-stream wetland in upper reaches with high septic system density															5-10 years	Feasibility analysis of technologies and costs	Technology evaluation report, Sites for potential screening and application	Completion of the feasibility analysis and costs	T

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D	7	0	Objective D-7: Reduce nitrogen loads from atmospheric deposition																				
D	7	1	Review the atmospheric deposition studies being performed by EPA/EPA-LISO to quantify the potential contributions in the watershed			x													1-2 years	Guidance to WMs	Correlations between vehicular traffic and nitrogen loads; estimated %reduction	Completion of the data analysis and interpretations	T
D	7	2	Conduct a GIS-based study to develop nutrient pollution load from this source and identify sites for control measures such as diversion of runoff into BMPs and LID practices including as wetlands, swales, and bioretention for treatment. Continue to implement those practices over time				x												2-3 years for study and 10-15 years for implementation	Implementation of control measures	Maps identifying locations for control measures along the transportation corridors	% of transportation corridor treated with BMPs (goal of 100% over 20 years)	T
D	8	0	Objective D-8: Continue water quality monitoring, data collection and assessment																				
D	8	1 a	Continue the annual water quality monitoring program and modify procedures as necessary. Results can be used to track improvements from watershed-wide and site-specific pollution control measures and understand watershed responses under different hydrologic regimes					x											Annually	Successful grant applications	Data collection and water quality reports	Continued Monitoring	W
D	8	1 b	Evaluate and communicate water quality trends	x				x											Annually	Data analysis	Historical trend and comparisons	analysis completed every 5 yrs, funding permitting and results shared with stakeholders	W
D	8	1 c	Publish a yearly water quality summary report	x				x											Annually	-	Annual monitoring reports	Completion of annual report	W
D	8	2 a	Coordinate monitoring for wet and dry weather conditions to characterize potential sources of water quality impacts in hotspots for indicator bacteria and nutrients						x										Ongoing	Detection of sources	Isolation of hotspots and sources contributing pollution during dry weather determined	# of hotspots recommended for immediate remedial actions	S
D	8	2 b	Perform additional field investigations and monitoring to support efforts near hotspots, e.g., Great Swamp to reduce eutrophication and algal growth. Additional site-specific monitoring and investigations should be undertaken to characterize the incoming nutrient and sediment loads, physical configurations of these impoundments (such as storage, depth, and shape), and environmental factors (temperature, leaves from trees, etc.).							x									2-5 years	Completion of investigations	Confirm suspected pollutant sources and quantify the load reductions from corrective actions	Number of sites completed (goal is 2-3 per year based on available financial resources)	S
D	8	2 c	Continue to support 'hotspot' pollution response practices and appropriate solutions to eliminate pollution source								x								Ongoing	Detection of sources	Isolation of hotspots and sources contributing pollution during dry weather determined	remedial actions and improved water quality after remediation	S
D	8	3	Conduct targeted water quality monitoring to confirm the sources of conductivity and quantify the extent of this concern in the River and its Tributaries																2-3 years	Technical basis for addressing conductivity	Scientific report for conductivity target setting	Water quality criterion for conductivity, as appropriate	T
D	8	4	Design and implement monitoring of LID practices on a demonstration basis and develop performance data to specifically support LID planning in the Norwalk River and tributary watersheds	x															1-4 years	Performance evaluation data compilation	Field monitoring and characterization results and the associated scientific report	# of pilot projects completed (goal of 6 different LID types over 4 years)	S

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D	8	5	Seek funding to further evaluate TN and TP nutrient loading	x				x			x							2-4 years	Grants	Funding	Additional Nutrient Load Assessment	W
D	8	6	Identify and pursue appropriate measures to evaluate the impact of medical waste on water quality			x		x			x	x						4+ years	Scientific basis for medical waste management	Reviewed literature along with potential source reduction strategies and treatment methods for constituents	Completed literature and action plan for source control	W
D	8	7	Evaluate the impact of introduced chlorides on water quality					x			x	x					x	2-4 years	Toxicity evaluation	Findings of toxicity evaluation along with sensitive species in Norwalk R/tributaries	Completion of the study report	W
D	8	8	Reactivate the streamwalk program to support public outreach and also use volunteers for physical, chemical and biological assessment of stream health in the watershed	x														Ongoing	Grant/ volunteer sign-up	Annual Streamwalk	Annual Streamwalk held	W
Goal E: Non-Point Source Runoff Management (Reduce the cumulative impacts of development and non-point source pollution in runoff)																						
Objective E-1: Reduce the cumulative impacts of development and expand efforts to promote and implement Low Impact Development (LID) practices																						
E	1	1	Encourage upstream watershed municipalities to embrace aggressive BMP/LID implementation projects with the goal of not transferring the stormwater problems to downstream areas	x							x							1-2 years	Education	Watershed-wide permitting and coordination to achieve results	# of projects implemented in upper portions of the watershed	T
E	1	2a	Evaluate the feasibility, and begin design and implementation of LID elements at identified public lands owned by state, local and county governments within the watershed (Appendix).			x					x	x	x					2-10 years	Site scale evaluation and design for identified properties; funding secured; implementation; construction complete	Completed site designs, LID elements and practice incorporated into the local landscape	Number of properties in each WM, taken to design and implementation stages with appropriate grant/other financial support. Target is 1-2 properties per WM per year	T
E	1	2b	Begin to work with owners of large privately owned lands, to incorporate LID practices into their existing landscapes, rehabilitation and the future development projects. Targeting properties identified as suitable candidates for LID retrofits (Figure 5-11)			x					x	x						2-10 years	Outreach and buy-in from property owners, site scale evaluation and design for identified properties; funding secured; implementation; construction complete	Property owner buy-in, completed site designs, LID elements and practice incorporated into the local landscape	Number property owners contacted and met with, percent of properties in each WM, taken to design and implementation stages with appropriate grant/other financial support. Target is 1-2 properties per WM per year	T
E	1	2c	Identify projects from E-1-2a and b that would serve as appropriate demonstration projects			x					x	x						2-10 years	Demonstration projects initiated and promotional and educational materials developed	Demonstration projects in place in each watershed municipality	# of demonstration projects completed	
E	1	3	Conduct monitoring programs to track the effectiveness of implemented LIDs. Also develop a watershed-wide database to track implementation projects undertaken and completed in municipal/state owned properties in the watershed			x												2-5 years	Performance Evaluation Data	Monitoring data, comparison to literature and statistical analyses to show effectiveness and a database to track implementation projects	Number of seasonal and continuous monitoring programs implemented. Target is 1 to 2/year	T

Goal	Objective	Task	Objectives and Associated Action Items	Implementing Organizations												Implementation Schedule	Milestones	Outcomes	Evaluation and Performance Criteria	Scale		
				NRWI	NRWA	WM	RPA	HW/RV	TU	NMA	DEP	NYSDEC	CTDOT	NRCS	USDA/USGS						POTW	UConn
E	1	4	Work with municipalities to determine how best to promote smart growth in urbanized areas including compact and preferred development areas based on availability of existing sewer, water, stormwater and transportation infrastructure. Using GIS to identify preferred areas for development and incorporate into POCD recommendations			x												1-5 years	Adoption of smart growth elements in development/ redevelopment initiatives	Maps of preferred areas and associated public outreach to promote smart growth	# of Municipalities adopting smart growth elements. Target is 100% at the end of 5-years	W
E	1	5	Explore the feasibility of a stormwater utility (fee assessed based on stormwater contributions from a property), borrowing lessons learned from the recent CTDEP stormwater utility pilot projects and the ongoing work by the CTDEP to incorporate LID into state permits and policy															2-5 years	Funding mechanism	A guidance document for the feasibility of utility fee	Establishment of a steady funding vehicle to support stormwater management efforts (utility, dedicated stormwater tax, etc.)	W
E	1	6	Develop a municipal rain barrel giveaway/incentive program			x												1-2 years	Secure funding or grants	Rain barrels implementation in all WMs	Effectiveness of rain barrels and compilation of O&M needs, frequency of training programs for homeowners. Target is 200 barrels per WM over 2 years	W
E	1	7	Conduct an evaluation study of the long-term program costs and financing alternatives for developing incentives for private property owners to implement LID practices (e.g., stormwater fee discounts for the disconnected impervious area)			x					x							1-2 years	Business model LID implementation in private properties	Guidance document on program costs, barriers to implementation	# of WMs adopting LIDs to achieve MS4 permit requirements. Target is 100% in 2 years	W
E	1	8	Publicize opportunities for engineers, architects, developers, and contractors to learn more about LID practices	x		x					x							2-4 years	Information posted online, calendar of events, Brochures & training	Workshops provided to targeted audience	% of target audience who put these practices to use in their projects. Target is 100% in 5 years	W
E	1	9a	Conduct a GIS-based inventory of medium to high density areas (0.25 to 1.0 acre lots) that can be targeted for roof leader disconnection programs and design visual inspections to quantify the potential benefits				x	x										1-2 years	Inventory of opportunities	Maps showing priority areas for roof leader disconnection for each WM	% watershed area completed for inventory and tracking,	W
E	1	9b	Promote the reduction of rooftop runoff and reuse of stormwater using rain barrels, rain gardens or other LID practices	x	x	x					x							2 years	Completion of brochure/ training material	Brochures and guidance manual to public, financial incentive program for implementation	# of households and businesses adopting the reuse concept (target 25% over 10 years for each WM)	T
E	1	9c	Track the implementation of rooftop disconnection programs on a watershed-wide scale	x														5-10 years	% of disconnections over time	Monitoring program to track effectiveness, Compilation of database of installations	% of roofs with rain barrel, cistern, rain garden controls. % of households disconnected with a Target of 50% in 10-years and 100% over 40 years	W
E	2	0	Objective E -2: Ensure municipal regulations support the implementation of LID practices																			
E	2	1a	Review the municipal codes and ordinances of seven watershed municipalities and incorporate specific recommendations to embrace a watershed-wide implementation of LID elements, giving preference to process-based LID practices that promote nutrient uptake (e.g., rain garden, bioretention)	x		x	x											6 months to 1 year	Consistency in control practices in all WMs	A report reviewing all municipal ordinances and making recommended changes to codes and ordinances	Completion of the report and submission to WMs	W

Goal	Objective	Task	Objectives and Associated Action Items	Implementing Organizations												Implementation Schedule	Milestones	Outcomes	Evaluation and Performance Criteria	Scale		
				NRWI	NRWA	WM	RPAAs	HW/RW	TU	NMA	DEEP	NYSDEC	CTDOT	NRCGS	USDA/USGS						POTW	Uconn
E	2	1 b	Review land use regulations in neighboring states to identify innovative practices appropriate for the Watershed	x														1-2 years	Summary or Regulations	Guidance or inventory of innovative practices	Completion of the review and submission of a memorandum to stakeholders	W
E	2	1 c	Implement changes to codes and ordinances to promote process-based LID practices on a watershed-wide scale as recommended by the results of E-2-1a			x												1-2 years	Adoption of changes	Consistent codes and ordinances on a watershed basis	# of WMs formally adopting changes	W
E	2	2	Modify the Stormwater Runoff section of municipal zoning regulations to include a set of stormwater management standards, including consideration of multiple targets for stormwater control; and establish clearer, specific performance standards for projects. Such standards can include LID practices that recognize stormwater as resource rather than a waste to be conveyed to the waterways instantaneously			x					x	x						1-2 years	Modified zoning regulations	Consistent codes and regulations for the watershed	Adoption and associated revision in regulations in all WMs. Target is 100% at the end of 2-years	W
E	2	3	All the seven watershed municipalities in CT and NY, as part of their Municipal Separate Storm Sewer System (MS4) permits, should consider integrating LID elements into their capital improvement planning process to further reduce runoff volume, peak flow rates and stormwater pollution from their respective drainage areas			x												1-2 years	Guidance to WMs	Modification of protocols used within WMs to achieve this goal.	All municipalities adopting LIDs in capital improvement planning. Target is 100% over 1-2 years.	W
E	2	4	Provide education to local land use agencies regarding LID practices so that they can promote and implement these practices			x										x		1-2 years	Training Session for local board and commission members	Adoption of LID practices in regulations by all WMs	Timeframe for all WMs to adopt new regulations	W
E	2	5	Encourage revision of local land use regulations to address the impacts of new development on the natural environment including provisions that require that new construction result in a net zero increase in stormwater runoff from the site, both during and after construction	x	x	x												2-4 years	Revised land use regulations, Draft revised regulations	Consistent codes and regulations to achieve net zero increase in stormwater runoff for all watershed municipalities	CTDEP/NYSDEC stormwater regulations have this criteria. Any revisions to make sure that this is adopted by 100% of applicants in all 7 WMs	W
E	3	0	Objective E-3: Advocate for a state and local permitting framework that best protects water resources from the impacts of non-point source runoff																			
E	3	1	Support & recommend increased capacity for inspection and enforcement of current and future stormwater general permits in the watershed	x	x						x	x						1-2 years	Request made to CTDEP and legislators, Letters of support provided	Enforcement program developed, Streamlined permit review for all WMs	Completion of the general permit review protocol and communication with WMs	W
E	3	2	Establish watershed-based permitting aimed at effectively reducing the cumulative impacts of stormwater								x	x						1-2 years	Support of watershed based permitting	watershed based permitting established	Stakeholder-driven process to issue the permit to WMs	W
E	3	3	Work with state agencies and local municipalities to ensure flood plains are considered as part of the design and review of stormwater management methods, and the interactions between both systems are evaluated	x		x												2-4 years	Training held for municipal boards and commissions	Reduction of improperly functioning stormwater systems and protection of the flood plain	-	W
E	4	0	Objective E-4: Adopt land use practices that reduce the impacts of non-point source runoff																			

Goal	Objective	Task	Objectives and Associated Action Items	Implementing Organizations												Implementation Schedule	Milestones	Outcomes	Evaluation and Performance Criteria	Scale			
				NRWI	NRWA	WM	RPA	HW/RW	TU	NMA	DEP	NYSDEC	CTDOT	NRCGS	USDA/USGS						POTW	Uconn	SWCD
E	4	1	Expand municipal commitment to use organic land care practices on municipal owned property through regulations or make specific recommendations to support an ordinance concerning the use of pesticides or fertilizers	x		x													1-2 years	Program established by municipalities Reduced use of pesticides or fertilizers	Outreach materials (pamphlets, letters to lawn mowing contractors)	Estimated load reduction from adoption of ordinances - the reductions can vary based on the acreage of public property in each sub-basin	W
E	4	2	Support statewide legislation regulating fertilizer and pesticide usage	x	x	x													1-5 years	Submission of letters	Letters of support	Legislation passed	W
E	4	3	Educate homeowners, businesses and golf course operators regarding the impact of excess fertilizer and nutrient enrichment products on water quality and communicate benefits of environmentally-sound ground keeping practices	x		x													1-2 years	Education materials developed and distributed	Outreach materials (pamphlets, letters to lawn mowing contractors)	Estimated load reduction from adoption of ordinances (reported to be in the 1-2% range watershed-wide, but can be much higher at the scale of local impoundments with eutrophication concerns	W
E	4	4	Strengthen the landscape provisions of the Zoning Regulations by requiring maximum tree preservation, replacement and diversity of tree species																2-5 years	Modified zoning regulations	Watershed-wide approach to improving urban greening	Adoption and associated revision in regulations in all WMs. Target is 100% at the end of 2-5 years	W
E	4	5	Modify parking regulations to reduce the effective impervious cover and encourage implementation of porous or permeable pavers in parking lots			x	x												2-5 years	Modified parking regulations	Watershed-wide approach to reducing impervious covers	Adoption and associated revision in regulations in all WMs. Target is 100% at the end of 2-5 years	T
E	5	0	Objective E-5: Manage bacterial contamination from waterfowl and domestic/farm animals																				
E	5	1	Adopt a local ordinance to prevent feeding of water fowl			x													2-5 years	Adoption of ordinance	Consistent ordinance among all WMs	Ordinance adopted by all 7 municipalities	W
E	5	2	Post signs and conduct education programs to stop feeding using the program developed by New Canaan as a guide	x		x													2 years	Education outreach program completion	Signage completion and monitoring to track progress	Reduction in waterfowl populations and associated improvement in water quality in the waterways	S
E	5	3	Employ effective methods to significantly reduce the non-migratory goose population			x					x								2 years	Testing to confirm effectiveness of methods	Guidance document for different methods and their effectiveness	Reduction in waterfowl populations/ improvement in water quality in impoundments with current waterfowl problems. Target of 30% on a watershed-basis over a period of 10 years.	W
F	0	0	Goal F: Stewardship and Education (Educate the community about the boundaries and functions of the Norwalk River Watershed, the specific need for protection or, and improvement to, the river system, the benefits of a healthy watershed to individuals and communities, and the opportunity to speak out on issues and to participate in the stewardship of the watershed.)																				
F	1	0	Objective F-1: Develop a mechanism to monitor The Action Plan, implement such a mechanism, and foster watershed stewardship.																				
F	1	1	Maintain representation and participation from watershed stakeholders including federal and state agencies, businesses, individuals, and community, environmental and educational organizations	x															Ongoing	Attendance by a representative from each identified stakeholder at a meeting at least once per year.	Increased participation for initiative group members	attendance at monthly meetings	W

Goal	Objective	Task	Objectives and Associated Action Items	Implementing Organizations												Implementation Schedule	Milestones	Outcomes	Evaluation and Performance Criteria	Scale			
				NRWI	NRWA	WM	RPA's	HW/RW	TU	NMA	DEP	NYSDEC	CTDOT	NRCS	USDA/USGS						POTW	UConn	SWCD
F	1	2	Maintain Watershed Coordinator position to assist in monitoring plan implementation and coordination activities. Secure funding for contracting on a two-year basis	x		x													Ongoing	Secure funding for coordinator position	position contracted	position maintained	W
F	1	3	Hold formal annual meetings to review progress and communicate results	x															Ongoing	-	Meeting held each year	Target 100% representation from watershed stakeholders	W
F	1	4	Conduct an evaluation of the Action Plan every five (5) years	x															5 years	Plan assessment in 2016	Analysis and implementation summary	Initiation of plan update (F-1-5) or if no changes needed reassess in 2018	W
F	1	5	Based on evaluation results, the action plan will be revised to improve the effectiveness of implementation efforts or if monitoring shows no improvements post BMP implementation.	x															4+ years	Review summary produces as part of F-1-4, funding secured, Plan update steering committee	Plan updated by 2018 if warranted based on the results of F-1-4	Update completed following state approved watershed based planning guidance	W
F	1	6	Identify and secure appropriate funding sources for specific tasks/activities	x															Ongoing	Funding applied for, projects identified for each plan year	initiation of project implementation	target funding and initiation of 50% of recommendation strategies based on implementation schedule	W
F	1	7	Develop an outline to assign implementation actions to address identified impaired segments	x															1-2 years	-	Matrix of BMPs by Segment	-	T
F	2	0	Objective F-2: Provide information and education about the Norwalk River Watershed.																				
F	2	1	Develop a comprehensive public relations plan/program to engage, public entities, private interest groups (i.e. local Chambers of Commerce) and professional organizations in stewardship of the watershed	x															1-2 years	Planning Committee Assembled	Formal public involvement plan developed	Increased watershed stewardship, measured through reductions in NPS targets and increased participation in meetings and activities	W
F	2	2	Create and maintain a user-friendly website for the Norwalk River Watershed to include information on the Initiative's Action Plan, updates on Implementation Activities, and information related to protecting and restoring the health of the river	x															1-2 years	Website platform and design established	Website up and running	number of 'hits' the site receives	W
F	2	3 a	Identify a means to support and fund environmental education programs outside the classroom																1 year	Grant award	Program development and location identification (e.g., NMA)	Educational curriculum and materials	W
F	2	3 b	Develop a framework for youth organizations (e.g. NRWA badge programs for scouts) and local schools (e.g. NRWA River Study Program, Roots and Shoots extracurricular program in NJ schools) that highlights the comprehensive relationships between local, regional and global water issues and builds programs for local environmental stewardship	x															1-2 years	Grant award and volunteer identification	Education materials development	Completion of the materials; # of training/outreach programs conducted (Target of 3-4 programs/year)	W
F	2	4	Develop a program to guide citizens, land use boards and businesses regarding the positive impacts of using native plants and species of concern in landscaping and the detrimental effects of non-native invasive species	x															4+ years	-	Educational materials developed and distributed	-	W
F	2	5	Identify audience and topics of interest. Coordinate workshops & public lectures and develop related resources as appropriate	x															1-2 years	List of topics developed, Public events organized and target audience identified	Public events held	Attendance at public events, targeting at least 1 event per year	W

Goal	Objective	Task	Objectives and Associated Action Items	Implementing Organizations												Implementation Schedule	Milestones	Outcomes	Evaluation and Performance Criteria	Scale		
				NRWI	NRWA	WM	RPA's	HW/RW	TU	NMA	DEP	NYSDEC	CTDOT	NRCS	USDA/USGS						POTW	Uconn
F	2	6	Increase watershed stewardship efforts (watershed, stream, stormwater pollution prevention, and catch basin markings) and create educational displays in highly visible, strategic locations throughout the watershed		x	x					x							2 years	Grant award and partnerships among WMs	Publications and displays, kiosks, surveys to track awareness and stewardship among public	# of people trained # of surveys done and review of survey responses (goal of one every summer) ; # of kiosks setup and the frequency of their usage	W
F	2	7	Develop a public education campaign using the lower Silvermine watershed as a model for implementation of residential BMPs	x			x											1-2 years	program developed, funding identified and outreach initiated	Program developed, funding secured and campaigned completed	increased community involvement and reduction in waste and NPS runoff from residents	T
F	2	9	Develop an education program regarding BMPs for appropriate management of yard and pet waste			x												1-2 years	-	Educational materials developed and distributed	-	W
F	3	0	Objective F-3: Expand coordination and communication with watershed municipalities.																			
F	3	1	Promote information transfer between municipal boards and commissions throughout the watershed to ensure all municipalities are aware of the issues, concerns, and implementation actions occurring within the watershed															2-4 years	-	Summary reports/newsletter circulated to municipal boards and commission members	-	W
F	3	2	Encourage articulation of the Action Plan's watershed protection goals as a goal in municipal & state Plans (POCDs).			x												4+ years	-	Goals and Recommendations incorporated in to POCD updates	-	W
F	3	3	Educate and encourage municipal Public Works staff to employ BMP techniques regarding watercourse planning and maintenance			x												1-2 years	-	Regular meetings with appropriate municipal departments	-	W
F	3	4	Meet with watershed town officials on an annual basis to provide an update on implementation activities and discuss issues of concern	x														1-2 years	-	Annual meeting with all watershed CEO's	-	W
F	3	5	Work with the CT NEMO program to hold courses/conferences/lectures for municipal boards and commissions regarding their opportunity to regulate with watershed health in mind	x														2-4 years	-	Watershed courses held	-	W

APPENDIX C: Additional Information on Pollutant Load Model

As indicated in Section 4 on Estimation of Pollutant Loads and Reductions, the approach in this project was to resurrect and update the existing models to enable their use for pollutant load assessments at a sub-watershed scale and apply expected pollutant reduction performances of management practices to estimate load reductions. The Connecticut Watershed Modeling effort undertaken by Connecticut Department of Environmental Protection (CTDEP) (AQUA TERRA and HydroQual, 2001) and the recent LIS BMP effort completed by Long Island Sound Office of USEPA (Farley and Rangarajan, 2006) characterized the Norwalk River watershed and its tributaries as one of the calibration watersheds. Both of these studies focused on the quantification of TN and/or TP loads from various non-point sources of pollution. An AVGWLF modeling framework developed by Farley and Rangarajan (2006) for the Norwalk River watershed was adopted for this project, in order to minimize any new effort on model calibrations or development of pollutant load estimates for nutrients and TSS (surrogate parameter chosen for sediments). This section provides additional details on the hydrologic and pollutant estimation aspects of TN derived from previous studies and updated in this project.

C.1 Model Description and Inputs

The AVGWLF is a user-friendly interface in ArcView GIS platform for the Generalized Watershed Loading Functions (GWLF) model. Model capabilities discussed here pertain to the GWLF model developed by Cornell University (Haith et al., 1992). For estimation of the nutrient and sediment loads, the GWLF is among the mid-range watershed models that can represent the climatic and physiographic aspects better than simple spreadsheet-based tools such as the Center for Watershed Protection's Watershed Treatment Model (Caraco, 2001). On the other hand, complex models such as HSPF (AQUA TERRA and HydroQual, 2001) and Agricultural Non-point Source Pollution (AGNPS) are parameter-intensive and also require significant technical experience and resources for their successful application. A description of GWLF along with its computational aspects and input file definitions is provided here. This information is compiled from the AVGWLF 4.0 User Manual (Evans et al., 2003) and the GWLF Version 2.0 User Manual (Haith et al., 1992).

GWLF has the ability to simulate runoff, sediment, TN and TP loads from a watershed/sub-watershed for a given source area (that defines a specific land use type, namely, agricultural, forested, low density, and commercial). The built-in algorithms can account for pollutant loads from septic system failures and infiltration and point source discharges (municipal wastewater treatment plants and industries).

It is a continuous simulation model which uses daily time steps for weather data and mass balance calculations. Sediment and TN loads are estimated on a daily basis and tallied on a monthly basis, allowing monthly comparison of monitored and modeled TN loads. A GIS-interface (developed in ArcView) is AVGWLF that provides useful pre and post-processing utilities for the effective use of the GWLF model. The relevant algorithmic components used in this project are summarized below.

Hydrology: Daily weather data (e.g., precipitation, temperature) are used to generate the surface runoff component of stream flow using Soil Conservation Services (SCS) curve numbers. Evapotranspiration is computed using daily weather data and a cover factor dependent on land use and cover type. Daily water balances are computed for an unsaturated zone and the saturated sub-surface zone (see Figure 4-1 in Section 4 on Estimation of Pollutant Loads). Infiltration is calculated as the difference between precipitation and snowmelt and other hydrologic components such as initial unsaturated zone storage, maximum available zone storage, surface runoff and evapotranspiration.

Erosion: Erosion and sediment yield are computed using monthly erosion calculations based on the Universal Soil Loss Equation (USLE) with the following set of parameters: monthly rainfall-runoff coefficients, monthly composite of soil erodibility factor, topographic factor, crop management factor, and conservation practice values for each source area. A sediment delivery ratio based on the watershed size, and a transport capacity based on the average daily runoff, are then applied to estimate the sediment yield for each source area.

Nutrient Loading: Surface nutrient losses are determined by applying dissolved nitrogen (N) and phosphorus (P) concentrations to surface runoff for each agricultural source area. Point source discharges can also contribute to dissolved losses and are specified in terms of kilograms per month. Manured areas and septic systems can explicitly be considered. All urban nutrient inputs are assumed to be solid-phase – the model uses exponential accumulation and washoff function for these loadings. Sub-surface losses are calculated using dissolved N and P concentrations for shallow groundwater contributions to stream nutrient loads, and the sub-surface sub-model considers the entire watershed or sub-watershed as a lumped parameter contributing area.

Input Data Files: The model needs three input files containing weather, nutrient loading and transport-related data. The weather data file (WEATHER.DAT) specifies daily average temperature and total precipitation values for each simulation year. Multiple stations are specified for large watersheds, and the model chooses applicable weather stations based on the proximity to a watershed. The nutrient loading file (NUTRIENT.DAT) includes the loading parameters for the various source areas specified in the model such as number of septic systems, urban source area accumulation rates based on land uses, groundwater concentrations, and manure concentrations. Finally, the transport file (TRANSPORT.DAT) defines the necessary parameters for each source area being considered such as watershed size, curve number, and slope. It must be emphasized that the in-stream processes are not explicitly included.

The latest version available is AVGWLF 7.2.3 which was last modified on April 24 2009. Major changes include the incorporation of new routines for more direct simulation of loads from hobby farm animals, a indicator bacteria load estimation routine, as well as a more specialized modeling routine for heavily urbanized watersheds. Penn State had fixed errors in the LS calculation for sediment erosion calculation (version 7.2.2) and evapotranspiration calculation (version 7.2.3). The latest version 7.2.3 of the AVGWLF was used in this project.

C.2 Model Calibration

The UCONN MAGIC land use data used in this project is shown in Figure C-1. The northern

portion of the watershed is dominated by forested land cover. The southern portion from downstream of the South Norwalk Reservoir to the Norwalk Harbor is highly developed. For the entire watershed, 62% of the watershed is forest, 17% is low intensity urban, and 13% is high intensity urban (Figure C-2). A portion of the forested land cover can be associated with low density residential properties (e.g., 2 to 5 acres). It is likely that only a fraction of the pervious portions of these properties are landscaped and maintained on a regular basis. Therefore, the land cover information from this dataset should be very close to how they function in reality and contribute pollutant loadings to the Norwalk River and its tributaries.

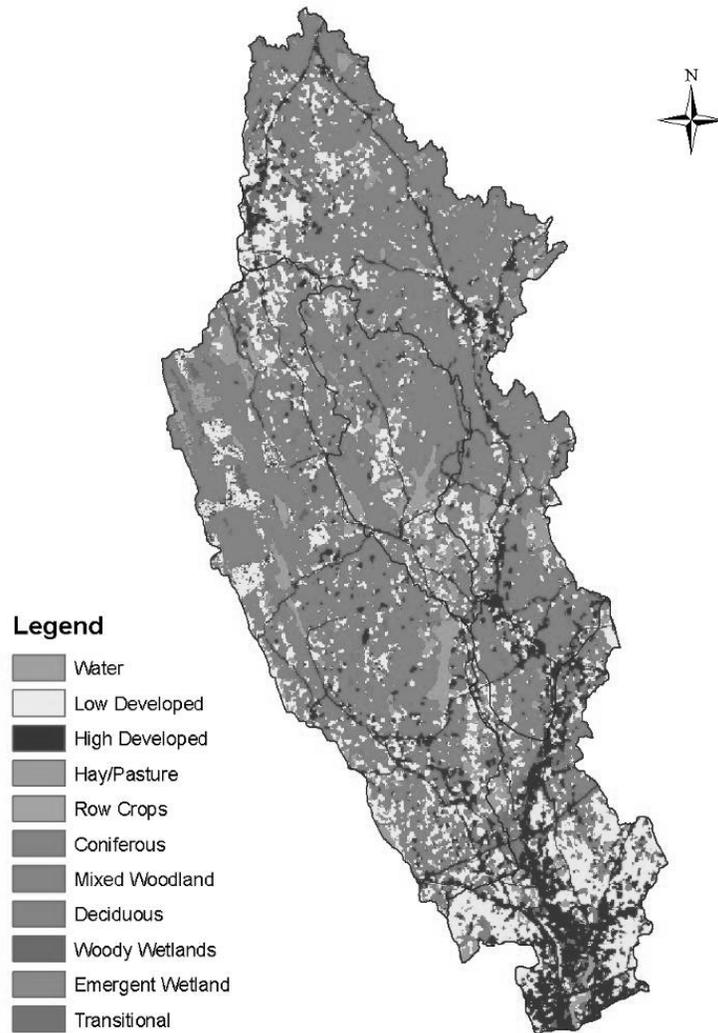


Figure C-1. Land Use Distribution in the Norwalk River Watershed

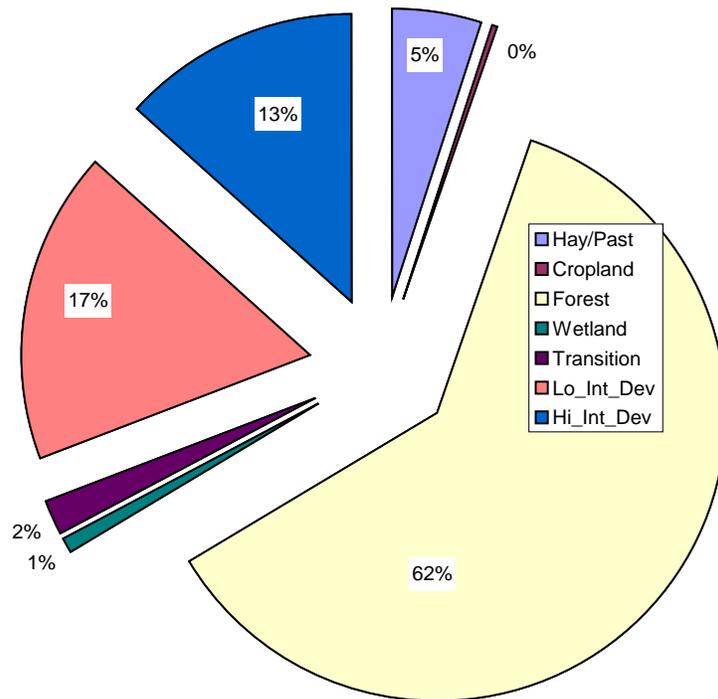


Figure C-2. Percentages of Various Land Uses in the Norwalk River Watershed

A major requirement for GWLF application to large watershed such as the Norwalk River is that each sub-watershed must be configured separately in terms of input file setup, association of model parameters and calibration. Therefore, watersheds are delineated based on where the flow or water quality data are available to support model calibration and validation. There are two United States Geological Survey (USGS) flow or water quality monitoring locations (USGS01209700 and USGS01209710) in the Norwalk River watershed. Therefore, the overall watershed was divided into four large sub-watersheds where flow or water quality calibrations can be performed in AVGWLF based on data from these two USGS gages.

Figure C-3 shows the four sub-watersheds for which the GWLF models were developed: Comstock Brook, Silvermine River, Norwalk River Upstream of the USGS gaging station, USGS01209700 (designated as Upstream Norwalk River), and the Norwalk River watershed portion downstream of this station (referred to as Downstream Norwalk River). The detailed sub-watershed delineations shown in Figure 3-4 are sub-sets of these four major sub-watersheds used only to support the AVGWLF model calibration and validation. The pollutant loads for nutrients and TSS generated from these sub-watersheds are disaggregated to sub-watershed levels (shown in Figure 3-4) based on the relative distribution of land uses.

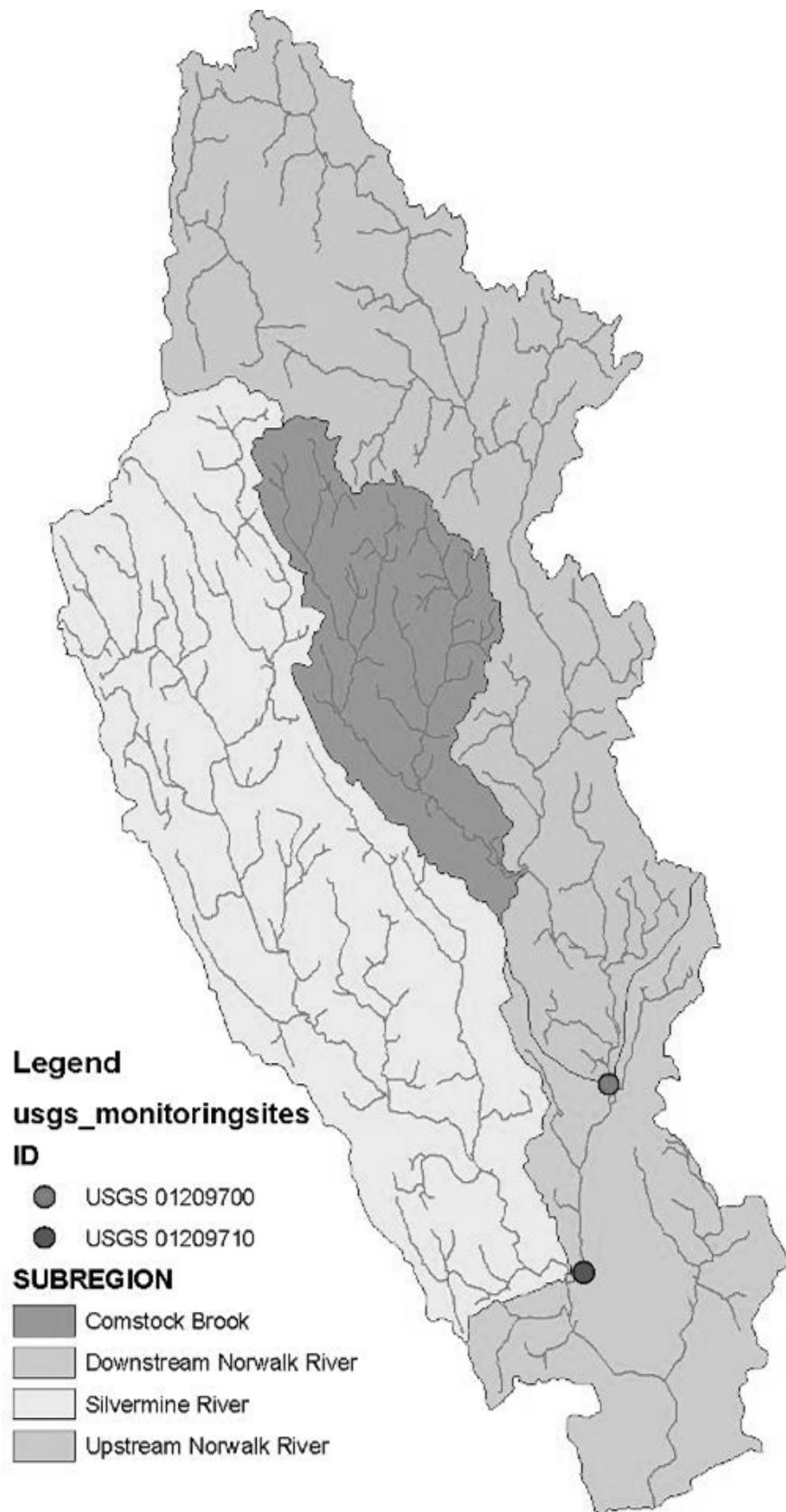


Figure C-3. GWLF Sub-watersheds of the Norwalk River Watershed

The USGS01209700 gage that records flows is located in South Wilton and the other at Winnipauk (#01209710) records water quality measurements. Both stations are on the main stem of Norwalk River and Table C-1 summarizes the historical data available at these stations. Daily flow data and water quality measurements are used here to support model calibration and validation.

Table C-1. USGS Water Monitoring Stations

USGS ID	Location	Drainage Area (mile ²)	Readily Available Data
01209700	South Wilton	30	<ul style="list-style-type: none"> • Real-time (Previous 120 days) • Daily Data (09/01/1962 – 06/15/2010) • Peak Streamflow (10/16/1955 – 04/16/2007) • Field/Lab water-quality samples (11/27/1962 – 08/25/2009)
01209710	Winnipauk	33	<ul style="list-style-type: none"> • Field/Lab water-quality samples (10/24/1980 – 06/10/2010)

Hydrologic calibration in AVGWLF was performed for a 15-year period from January 1981 through December 1995 at the South Wilton USGS monitoring station. Specific comparisons between simulated and observed flow values were prepared to assess the adequacy of calibration. These visual comparisons included: (a) time-series comparison of daily streamflow volumes (cubic feet per second, cfs); and (b) cumulative flow volumes (cfs x day). The simulated flow at this USGS location was the sum of flows from the Upstream Norwalk River and Comstock Brook sub-watersheds. The flow from Comstock Brook was reduced by 15% to take into account the amount of water diverted for use by the Norwalk Second Taxing District (based on discussions with Tom Villa with the 2nd taxing district, 2005).

For model validation, the data for a 14-year period from January 1996 through December 2009 from the South Wilton USGS monitoring station were used, and similar comparisons between modeled and monitored values were made for daily flow volumes. During this period, the flow diversions from Comstock Brook were not available, however the comparisons seem to indicate that there was little diversion during this period.

The parameters used for hydrologic model calibration are summarized in Tables C-2 and C-3. Comparisons between monitored and simulated daily flow values for the calibration and validation periods are shown in the following figures: time-series for the 1981-1995 period (Figure C-4), cumulative flow for 1981-1995 (Figure C-5), time-series for 1996-2009 (Figure C-6), and cumulative flows for 1996-2009 (Figure C-7). Simulated time-series of flows for both calibration and validation periods matched well in terms of the timing and accumulated water volume over the entire period of calibration or validation. Simulated peak flows for some storm events were much higher than the observed values. One of the major reasons for this is the lack of distributed rainfall data that can represent the spatio-temporal variations over the entire watershed. Another reason can be attributed to reservoir routing and diversion, both of which cannot be explicitly modeled using AVGWLF.

Table C-2. TRANSPORT Parameters

Land Use Type	Curve Number*	Soil Erodibility (K)	Length-Slope Factor (LS)	Cropping Management Factor (C)	Erosion Control Factor (P)
Hay/Pasture	63	0.229	0.41	0.030	0.45
Cropland	75	0.227	0.29	0.420	0.45
Forest	60	0.233	0.329	0.002	0.45
Low Intensity Urban	80	0.233	1.62	0.080	0.20
High Intensity Urban	90	0.234	2.28	0.080	0.20

Table C-3. Other TRANSPORT Parameters

Month	Evapo-transpiration Coefficient	Daylight Hours*	Growing Season*	Erosivity Coefficient
January	0.63	9.3	No	0.18
February	0.68	10.3	No	0.18
March	0.71	11.7	No	0.18
April	0.72	13.2	No	0.28
May	0.83	14.4	Yes	0.28
June	0.89	15	Yes	0.28
July	0.93	14.7	Yes	0.28
August	0.95	13.7	Yes	0.28
September	0.96	12.3	Yes	0.18
October	0.87	10.8	No	0.18
November	0.82	9.6	No	0.18
December	0.79	9	No	0.18

1981 - 1995 Norwalk River Timeseries Flow at South Wilton, CT

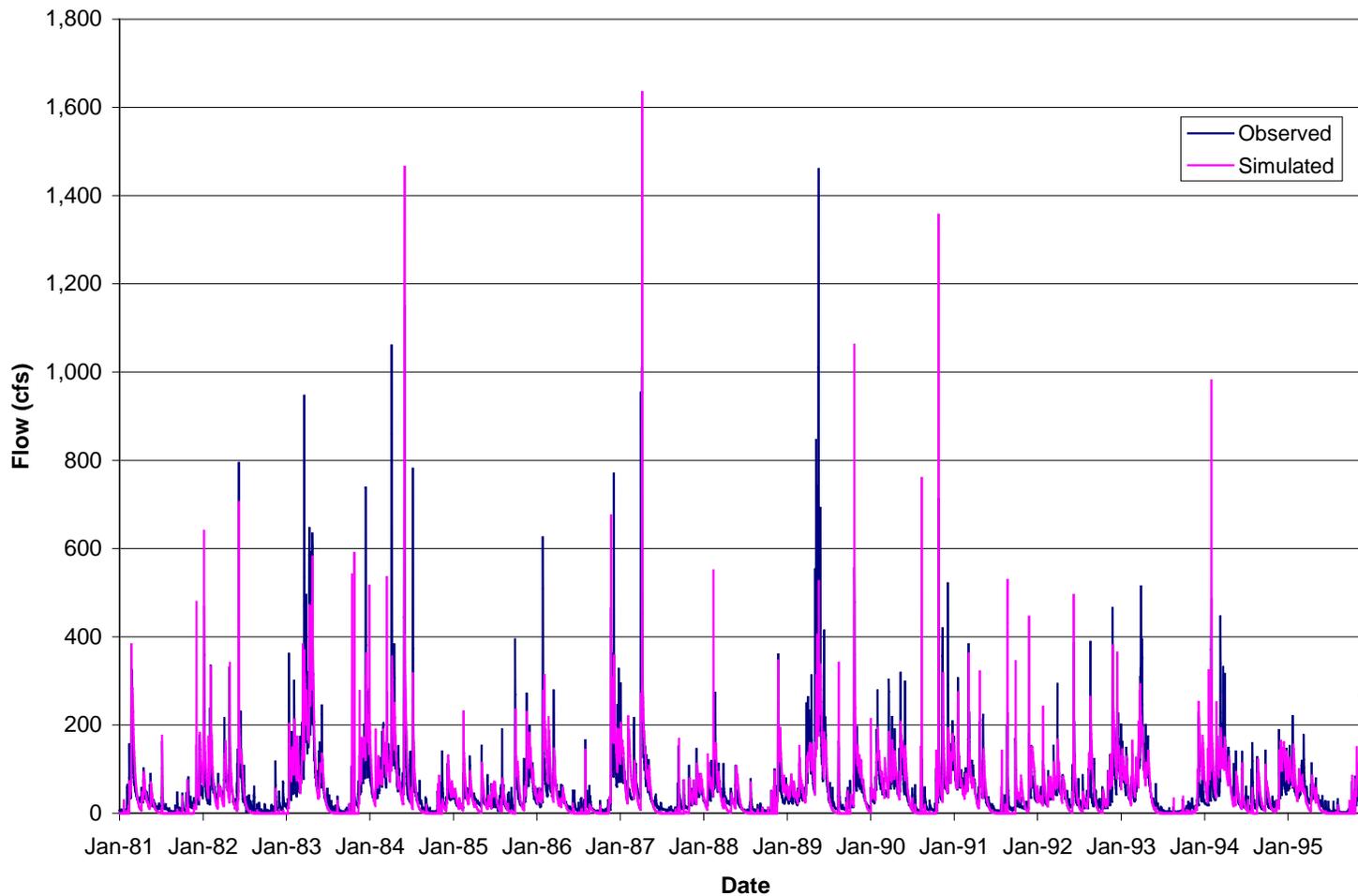


Figure C-4. Daily time-series comparison at South Wilton (1981-1995)

1981-1995 Norwalk River Cumulative Flow at South Wilton

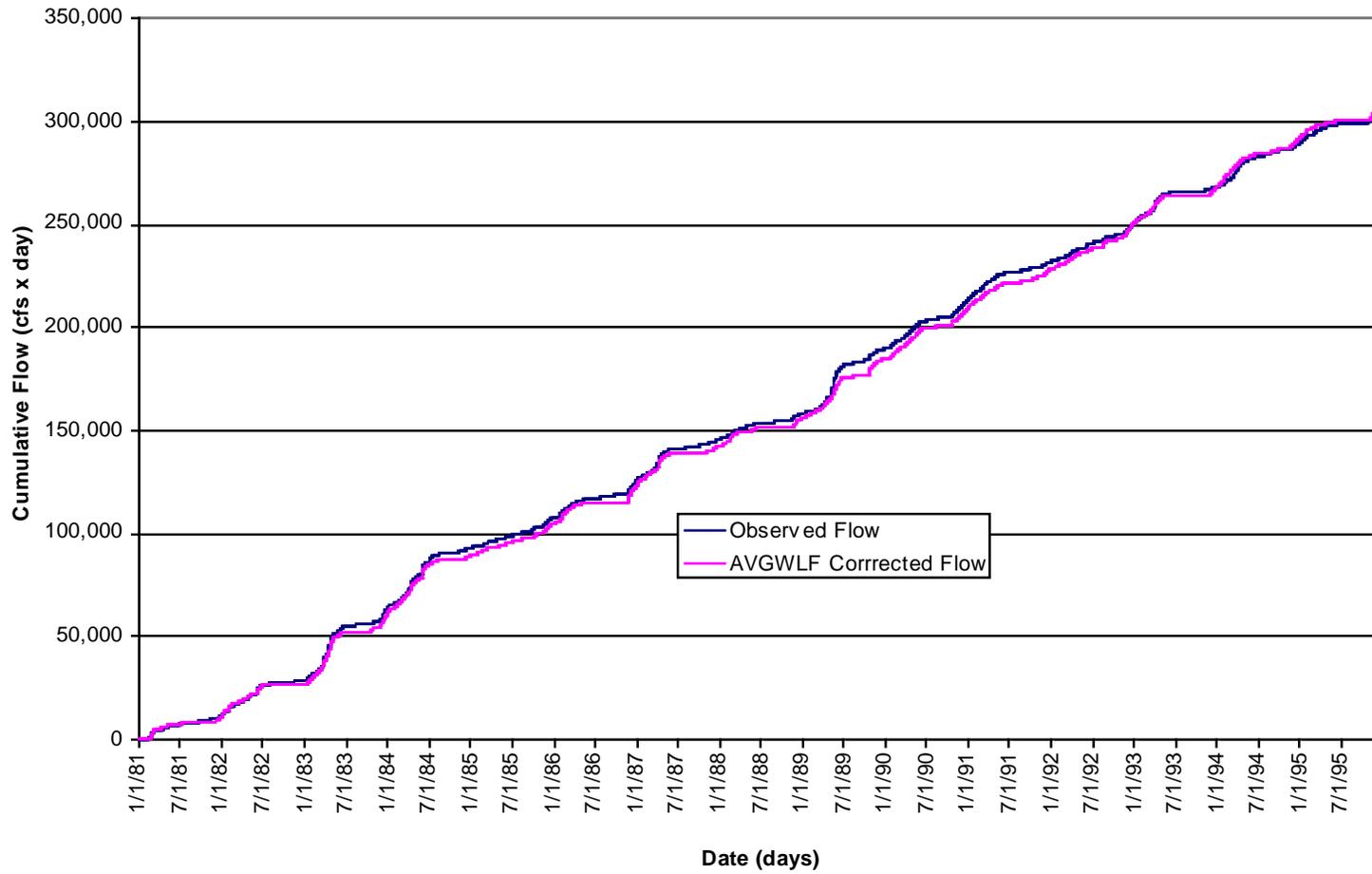


Figure C-5. Cumulative flow comparison at South Wilton (1981-1995)

1996-2009 Norwalk River Time-Series at South Wilton, CT

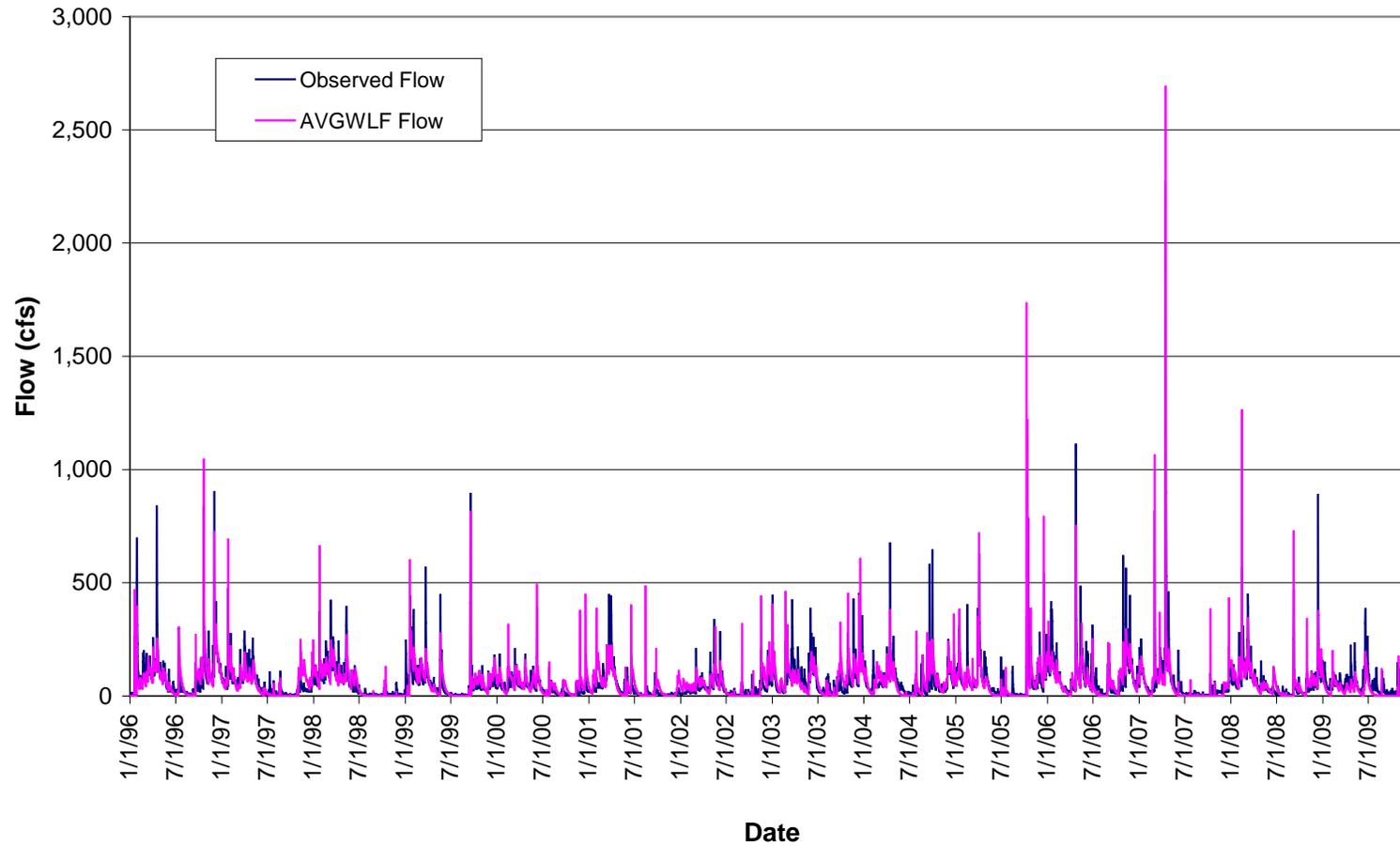


Figure C-6. Daily Time-series Comparison at South Wilton (1996-2009)

1996 - 2009 Norwalk River Cumulative Flow at South Wilton, CT

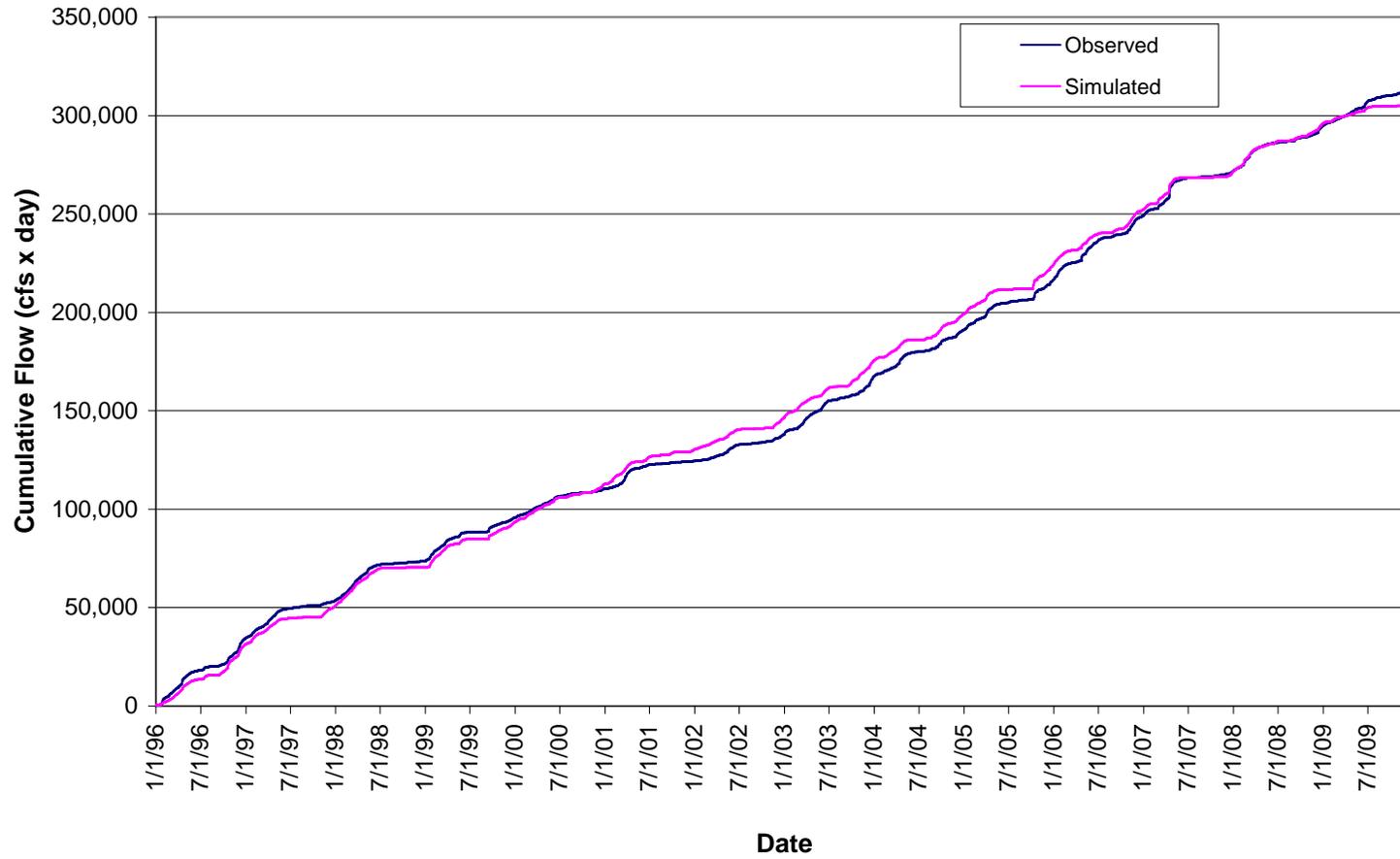
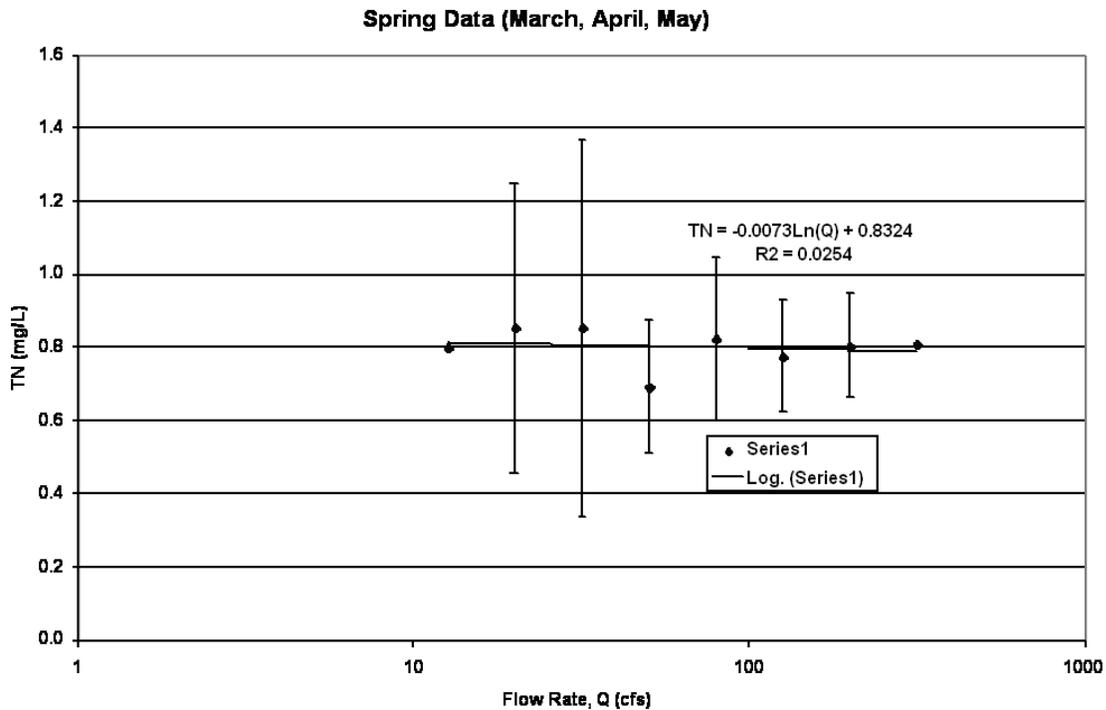
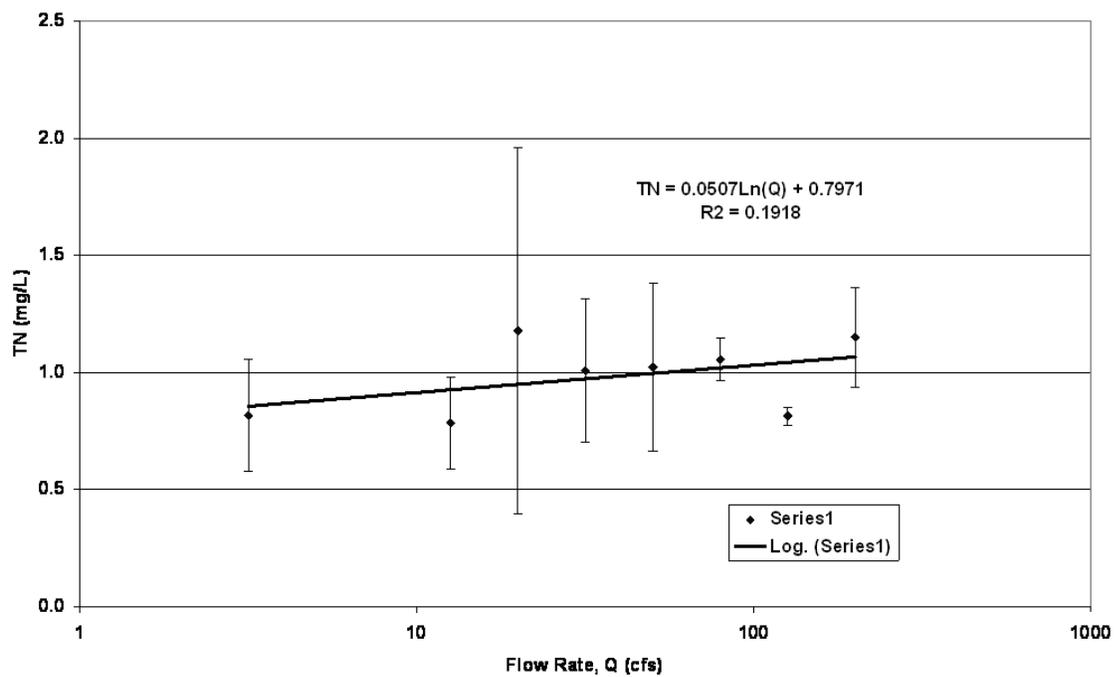


Figure C-7. Cumulative flow comparison at South Wilton (1996-2009)

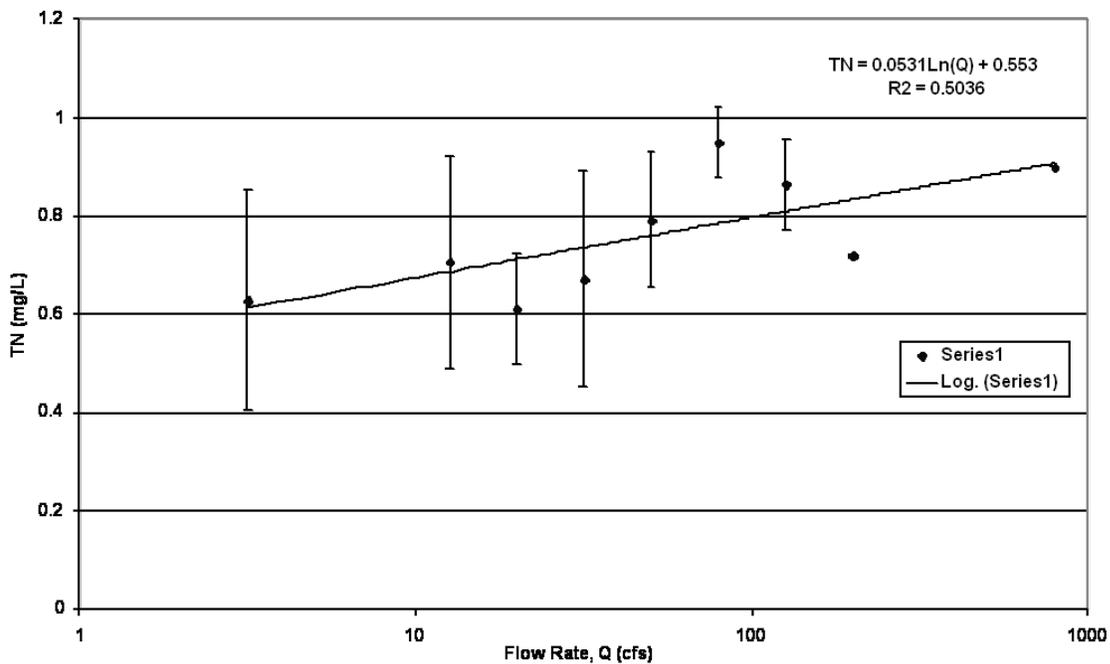
Subsequent to hydrologic calibration, the AVGWLF input files were developed to support the calibration and validation for Total Nitrogen (TN). Although the model can be calibrated for TN, TP and TSS, the previous studies (AQUA TERRA and HydroQual, 2001; Farley and Rangarajan, 2006) focused on TN pollutant loads due to the LIS TMDL target of 10% for the non-point sources of pollution. Therefore, the detailed calibration and validation in this study was limited to total nitrogen. The TN concentrations were monitored at Winnipauk USGS monitoring station on a monthly basis and the monitoring frequency is not enough to use this one observation as monthly representative to estimate monthly TN loadings. In order to estimate monthly TN loading, a relationship between observed flow rate and TN concentration was developed for each season. A similar methodology was used in the LIS TMDL study performed in the late 1990s. Four seasons were used to determine the varying concentrations of TN, namely, Spring (March–May), Summer (June–August), Fall (September–November), and Winter (January–March). Observed flow at South Wilton on each TN monitoring day was categorized using ranges of flow rates (e.g., first flow range from 1-10 cfs). For each flow range and for each season, average TN concentration and standard deviation were calculated and the average TN concentration was compared with representative flow rate. The median log(Q) value for each flow range was used as representative flow rate. Figures C-8(a) through C-8(d) show the relationship between measured TN concentration and flow rate for each season.



Summer Data (June, July, August)



Fall Data (September, October, November)



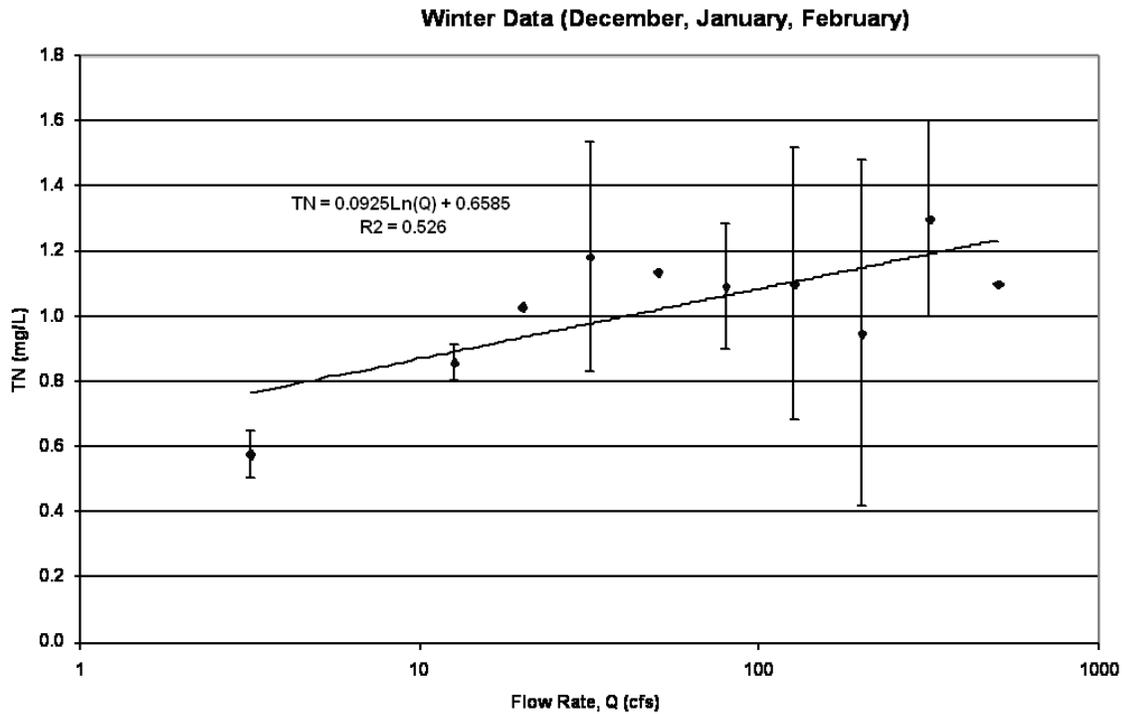


Figure C-8. Relationships between TN and flow rate for (a) spring, (b) summer, (c) fall, and (d) winter.

There is a general trend for TN concentrations to increase with the flow rates for all seasons except for spring. Seasonal regression relationships between TN and $\ln(Q)$ were derived to estimate TN concentrations based on the observed daily flow rates.

Figure B-9 shows the comparison of monthly TN loads between AVGWLF and observed values. The current version of AVGWLF does not calculate the TN loads for septic systems accurately. Therefore, these loads were computed offline using the literature suggested value of 12 grams of TN unit loading value per day per capita and 1.6 grams of TN uptake by plants during the growing season (May through October). There are five known water pollution control facilities or wastewater treatment plants (WPCFs) in the Norwalk River watershed (Figure C-10). Information available or assumed for these plants is shown in Table C-4.

Calculated annual TN loading for all non-point sources (including permitted urban stormwater discharges) from each sub-watershed is summarized in Table C-5 and the loading contributions from various land uses are illustrated in Figure C-11. The results were calculated using the AVGWLF validation period (1996-2009).

There was no detailed model calibration and validation performed to characterize TP and TSS loads in the Norwalk River watershed. The default unit loading values built in AVGWLF were used to generate annual average loads summarized in Section 4 on the Estimation of Pollutant Loads.

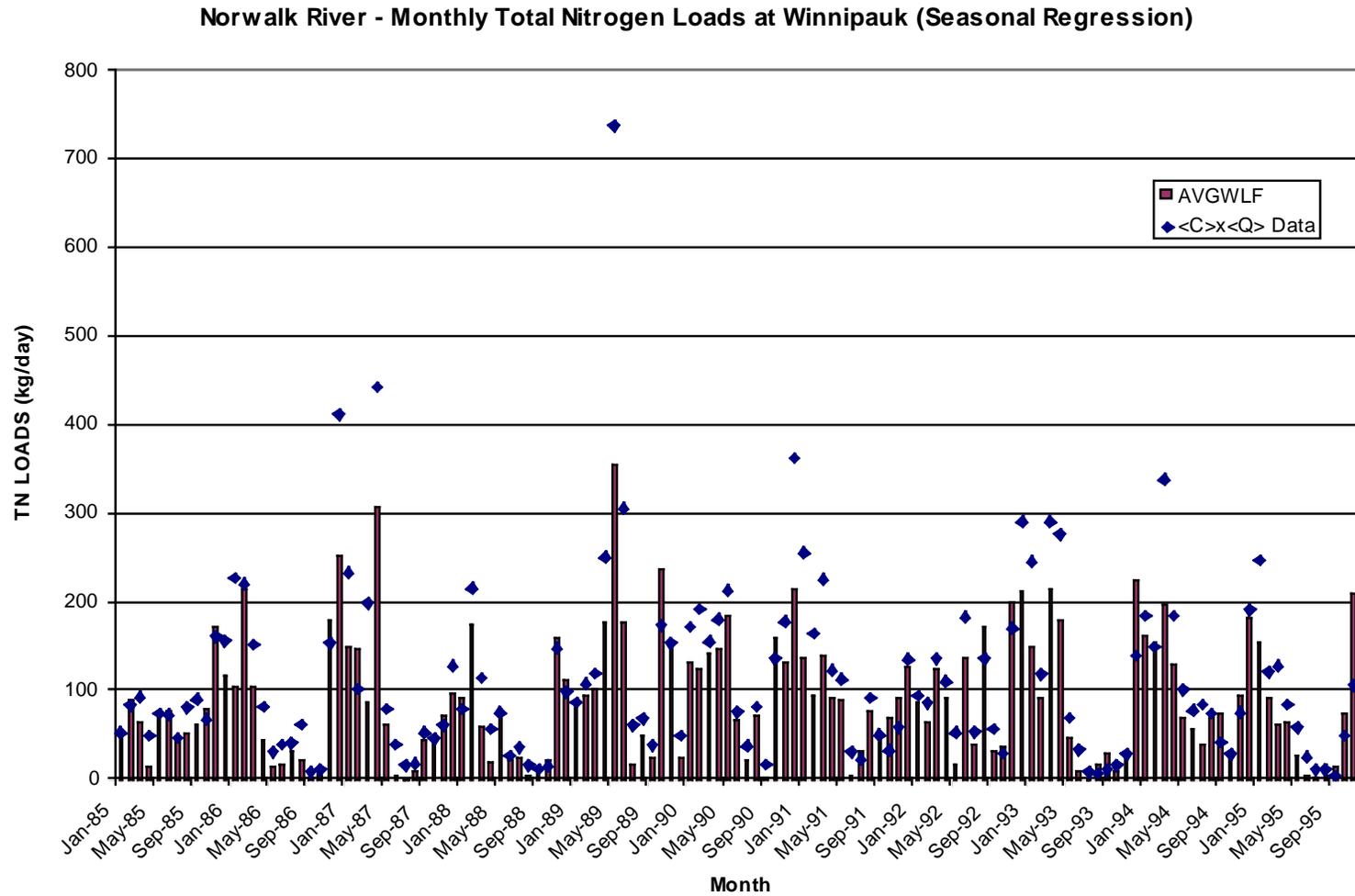


Figure C-9. Comparison of Observed and Simulated TN Loads

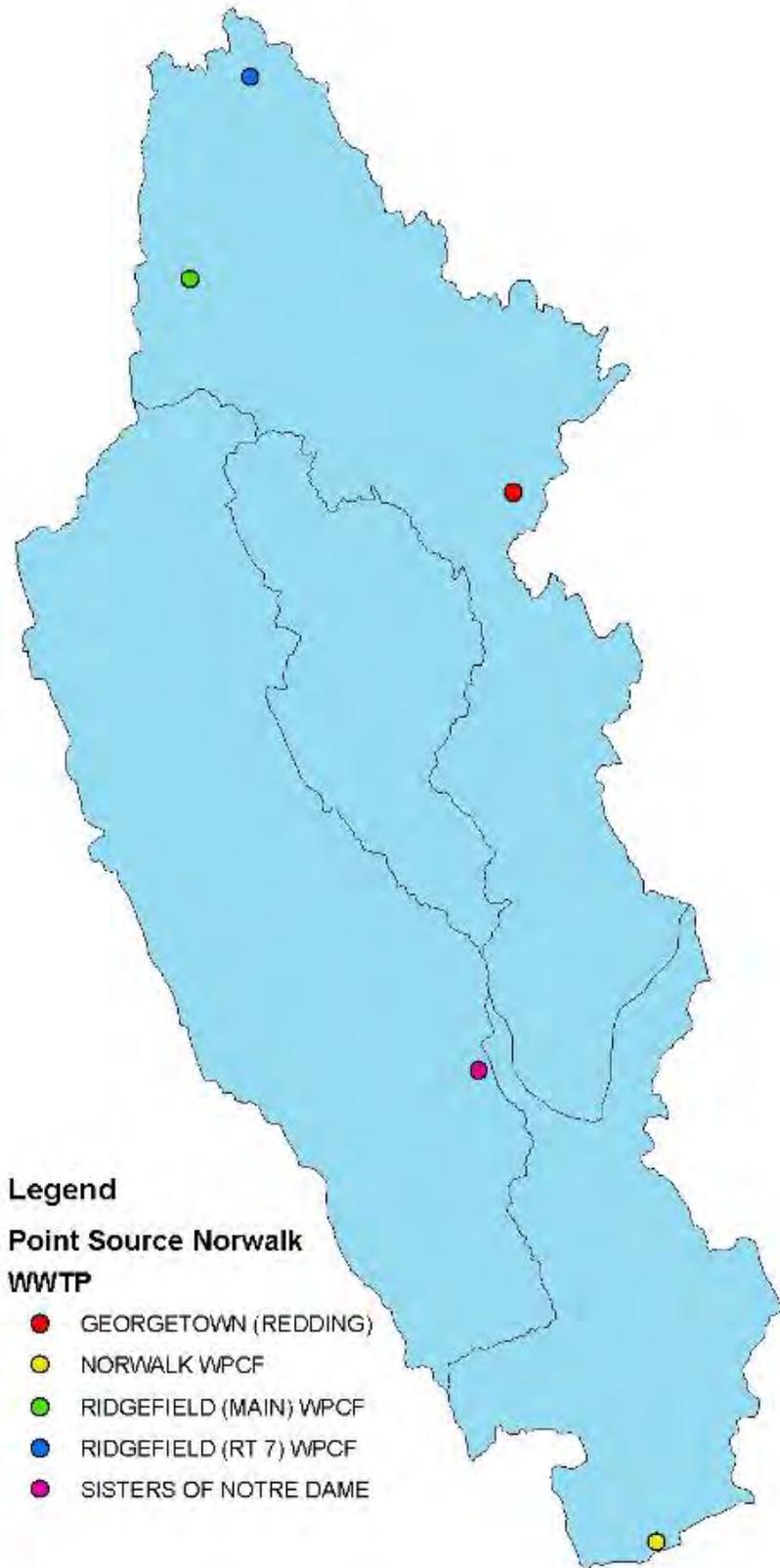


Figure C-10. WPCF locations in the Norwalk watershed

Table C-4. List of WPCFs and the reported TN concentrations

WPCF	NPDES	Design Capacity (gallons per day)	Total N (mg/L)	TN (kg/day)	TN (lb/yr)	Sub-watershed
Norwalk WPCF	CT0101249	15,000,000	6	340.2	273,509	DS of Norwalk
Sisters of Notre Dame		20,000	6 *	0.5	365	Silvermine
Georgetown (Redding)	CT0101770	17,000 (to be expanded to 75,000)	6	0.4	310	US of Norwalk
Ridgefield (Main) WPCF	CT0100854	840,000	6	19.1	15,316	US of Norwalk
Ridgefield (Route 7) WPCF	CT0101451					

* No data available, assumed to be 6 mg/L, the permit limit.

Table C-5. Annual Pollutant Loads for Each Sub-watershed

Source	US Norwalk (lb/yr)	DS Norwalk (lb/yr)	Comstock (lb/yr)	Silvermine (lb/yr)	Total (lb/yr)
Hay/Past	940	308	850	2,274	4,372
Cropland	81	254	75	394	804
Forest	965	121	312	898	2,296
Wetland	49	6	8	68	131
Transition	3,980	3,821	1,132	2,531	11,463
Lo_Int_Dev	980	1,047	294	1,235	3,556
Hi_Int_Dev	9,568	12,776	1,665	8,050	32,059
Stream Bank	416	265	65	470	1,216
Groundwater	41,039	20,186	13,092	39,542	113,859
Point Source	15,629	273,509	-	362	289,500
Septic Systems	33,066	17,139	11,490	34,743	96,437
Total	106,712	329,431	28,983	90,567	555,693

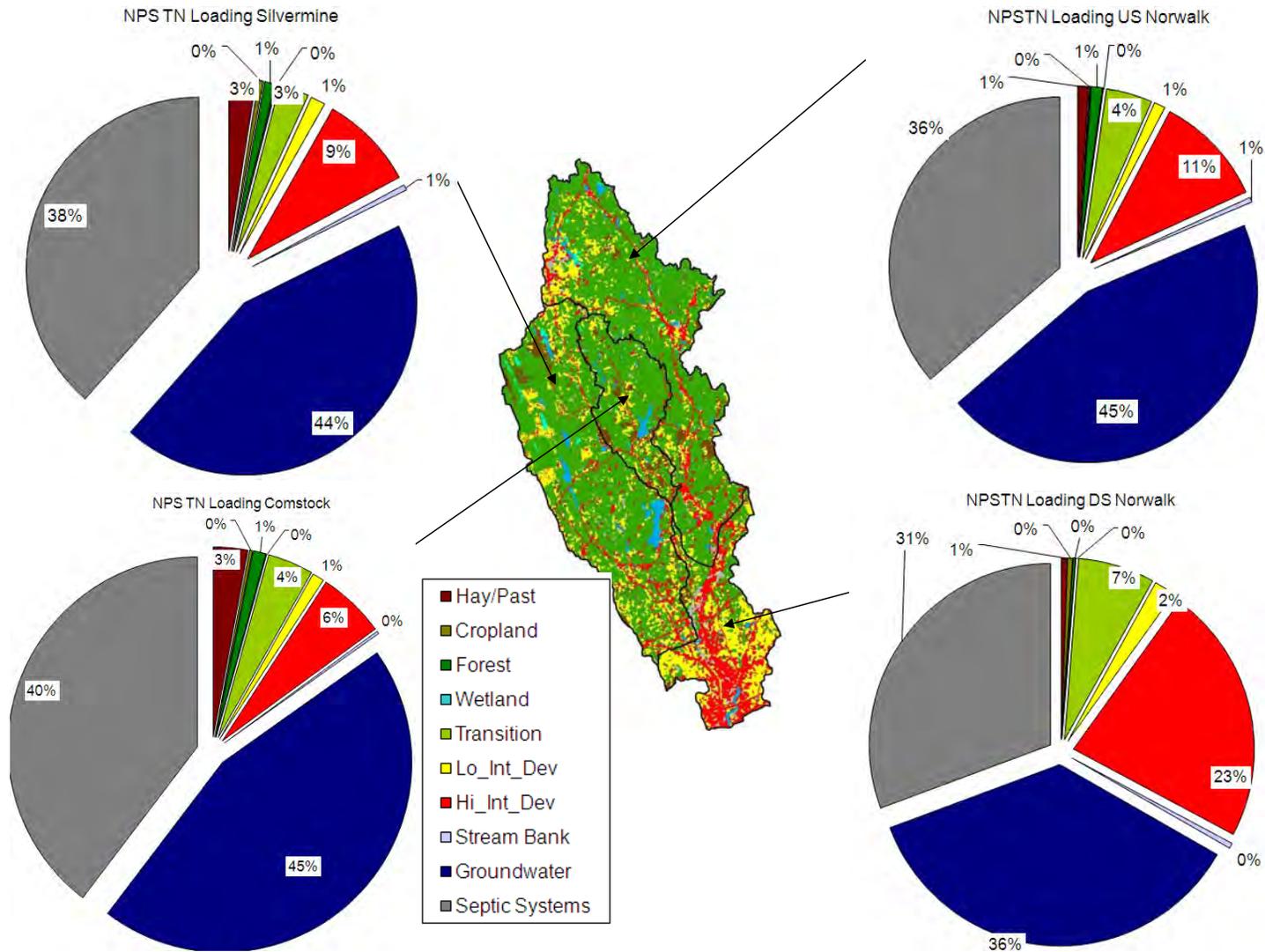


Figure C-11. Calculated TN Loads from Various Non-point Pollution Sources

APPENDIX D: Publicly Owned – LID/BMP Candidate Properties

Publicly Owned LID/BMP Candidate Properties

Town	Owner	Description	Address	Focus
Lewisboro	Lewisboro	Public Parks, Parkway Lands	111 Elmwood Rd	Mid Term
Lewisboro	Lewisboro	Public Parks, Parkway Lands	10 East St	Mid Term
Lewisboro	Lewisboro	Public Parks, Parkway Lands	500 Smith Ridge Rd	Long Term
New Canaan	Town of New Canaan		165 Heather Dr	Short Term
Norwalk	Norwalk City Of		4 North Water St	Short Term
Norwalk	Norwalk City Of	Park - Irving Freese	1 Main St	Short Term
Norwalk	Norwalk City Of	Right Of Way	Perry Av	Short Term
Norwalk	Norwalk City Of		46 Wall St	Short Term
Norwalk	Norwalk City Of	Vacant Land	Creeping Hemlock Dr	Short Term
Norwalk	Norwalk City Of	Right Of Way	85 Old Kings Hwy	Short Term
Norwalk	Norwalk City Of	Vacant Land	559 Main Av	Short Term
Norwalk	Norwalk City Of		10 Burnell Blvd	Short Term
Norwalk	Norwalk City Of		157 Perry Ave	Short Term
Norwalk	Norwalk City Of	Park - Broad River	102 New Canaan Ave	Short Term
Norwalk	Norwalk City Of	Park - Woods Pond	East Rocks Rd	Short Term
Norwalk	Norwalk City Of	Vacant Land	Margaret St	Short Term
Norwalk	Norwalk City Of		90 New Canaan Ave	Short Term
Norwalk	Norwalk City Of	School - Cava	350 Main Ave	Short Term
Norwalk	Norwalk City Of		2 South Smith St	Short Term
Norwalk	Norwalk City Of		20 Main St	Short Term
Norwalk	Connecticut State Of	Leased - Vacant Land	22 Riverside Ave	Short Term
Norwalk	Norwalk City Of	Park - Reserve	87 Burlington Ct	Short Term
Norwalk	Norwalk City Of	Vacant Land	99 Silent Grove Ct	Short Term
Norwalk	Norwalk City Of	School - Roosevelt/ Senior Center	11 Allen Rd	Short Term
Norwalk	Connecticut State Of	Armory	New Canaan Av	Short Term
Norwalk	Norwalk City Of		49 Odonnell Rd	Short Term
Norwalk	Norwalk City Of		Ann St	Short Term
Norwalk	Norwalk City Of	Housing Authority	Main Av	Short Term
Norwalk	Norwalk City Of	School - Silvermine	Perry Av	Short Term
Norwalk	Connecticut State Of	Vacant Land	36 Riverside Ave	Short Term
Norwalk	Norwalk City Of	Park - North Avenue	North Av	Short Term
Norwalk	Norwalk City Of	Parking - South Maritime	Marshall St	Short Term
Norwalk	Norwalk City Of		2 Isaacs St	Short Term
Norwalk	Connecticut State Of	DMV	542 Main Ave	Short Term
Norwalk	Norwalk City Of	Housing Authority	27 Chapel St	Short Term
Norwalk	Norwalk City Of	Housing Authority-Ft Pt	Fort Point St	Short Term
Norwalk	Norwalk City Of	Museum - Town House	30 E Wall St	Short Term
Norwalk	Norwalk City Of	Park - Reserve	325 Grumman Ave	Short Term
Norwalk	Norwalk City Of		1 Charles Marshall Dr	Mid Term
Norwalk	Norwalk City Of	City Hall	125 East Ave	Mid Term
Norwalk	Norwalk City Of	Park-Cranbury-Water Tower	357 Grumman Ave	Mid Term
Norwalk	Connecticut State Of	Courthouse	Belden Av	Mid Term
Norwalk	Norwalk City Of		31 Putnam Ave	Mid Term
Norwalk	Norwalk City Of	School - Honeyhill	50 Midrocks Drive	Mid Term
Norwalk	Norwalk City Of	Park - Mathews	300 West Ave	Mid Term
Norwalk	Norwalk City Of	Park - Mathews	295 West Ave	Mid Term
Norwalk	Norwalk City Of	Housing Authority-Shostk-Sr	Ward St	Mid Term
Norwalk	Norwalk City Of		21 Hunters Lane	Mid Term
Norwalk	Norwalk City Of		1 Cottage St	Mid Term
Norwalk	Norwalk City Of		23 Isaacs St	Mid Term
Norwalk	Norwalk City Of	Housing Authority-Elmwood	77 Elmwood Ave	Mid Term
Norwalk	Connecticut State Of	Parking - Commuter Lot	5 Hendricks Ave	Mid Term
Norwalk	Connecticut State Of	Right Of Way	69 Mulberry Ln	Mid Term

Town	Owner	Description	Address	Focus
Norwalk	Connecticut State Of	Vacant Land	58 Springview Ave	Mid Term
Norwalk	Norwalk City Of	Vacant Land	50 Dr Martin Luther King Jr Drive	Mid Term
Norwalk	Norwalk City Of	Fire Department	121 Connecticut Ave	Mid Term
Norwalk	Norwalk City Of		55 Dr Martin Luther King Jr Drive	Mid Term
Norwalk	Norwalk City Of	Housing Authority-Asc Bldg	42 School St	Mid Term
Norwalk	Norwalk City Of	Housing Authority-West/Sr	West Av	Mid Term
Norwalk	Norwalk City Of	Vacant Land	Ponus Av	Mid Term
Norwalk	Norwalk City Of	Housing Authority-Frld Ave	38 Fairfield Ave	Mid Term
Norwalk	Norwalk City Of	Housing Authority-Sr Ct/Sr	Union Ave	Mid Term
Norwalk	Connecticut State Of	Leased - House	62 Creeping Hemlock Dr	Mid Term
Norwalk	Norwalk City Of	Norwalk Library	1 Belden Ave	Mid Term
Norwalk	Norwalk City Of		100 Fairfield Ave	Mid Term
Norwalk	Norwalk City Of		36 Beacon St	Mid Term
Norwalk	Norwalk City Of	School - Franklin	165 Flax Hill Rd	Mid Term
Norwalk	Norwalk City Of	Vacant Land	350 West Ave	Mid Term
Norwalk	Norwalk City Of	Vacant Land	60 Dr Martin Luther King Jr Dr	Mid Term
Norwalk	Norwalk City Of	Vacant Land	93 Stuart Ave	Mid Term
Norwalk	Norwalk City Of	Vacant Land	Comstock Hill Av	Mid Term
Norwalk	Norwalk City Of	Andrew's Field	County St	Mid Term
Norwalk	Norwalk City Of		81 West Rocks Rd	Mid Term
Norwalk	Norwalk City Of	School - Jefferson	75 Van Buren Ave	Mid Term
Norwalk	Norwalk City Of	School - Tracey	24 Camp St	Mid Term
Norwalk	Norwalk City Of	Housing Authority-Freese/Sr	Ward St	Mid Term
Norwalk	Norwalk City Of		6 Crescent St	Mid Term
Norwalk	Norwalk City Of		14 Putnam Ave	Mid Term
Norwalk	Norwalk City Of		45 West Ave	Mid Term
Norwalk	Norwalk City Of	Park - Reserve	35 Ledgewood Dr	Mid Term
Norwalk	Norwalk City Of	Vacant Land	22 Chapel St	Mid Term
Norwalk	Norwalk City Of	Vacant Land	40 Willow St	Mid Term
Norwalk	Norwalk City Of	Vacant Land	70 Stuart Ave	Mid Term
Norwalk	Norwalk City Of	Park - Cranbury	300 Grumman Ave	Mid Term
Norwalk	Norwalk City Of		180 Westport Ave	Mid Term
Norwalk	Norwalk City Of		Blake St	Mid Term
Norwalk	Connecticut State Of	Right Of Way	186 W Rocks Rd	Mid Term
Norwalk	Norwalk City Of	Housing Authority-Elmwood	71 Elmwood Ave	Long Term
Norwalk	Norwalk City Of	Park - Reserve	40 Ledgewood Ct	Long Term
Norwalk	Norwalk City Of	Vacant Land	5 Willow St	Long Term
Norwalk	Norwalk City Of		20 Washington St	Long Term
Ridgefield	Ridgefield	Branchville Station	Ethan Allen Highway	Short Term
Ridgefield	Ridgefield	Cemetery	10 Ridgefield Ln	Short Term
Ridgefield	Ridgefield	Branchville El	40 Florida Rd	Short Term
Ridgefield	Ridgefield	School	195 Danbury Rd	Short Term
Ridgefield	Ridgefield	Great Pond Beach	Ethan Allen Hwy & Great Pond Road	Short Term
Ridgefield	Ridgefield	Public Library	472 Main Street	Short Term
Ridgefield	Ridgefield	Farmingville El	324 Farmingville Rd	Short Term
Ridgefield	Ridgefield	Municipal Parking	Governor & Prospect	Short Term
Ridgefield	Ridgefield	Old High school	80 East Ridge Street	Short Term
Ridgefield	Ridgefield	Veterans Elementary	20 Governor St	Short Term
Ridgefield	Ridgefield	Undeveloped	90 Farmingville Rd	Short Term
Ridgefield	Ridgefield	East Ridge Rec Area	100 Prospect Ridge	Short Term
Ridgefield	Ridgefield	East Ridge Middle	10 East Ridge Rd	Mid Term
Ridgefield	Ridgefield	Ballard Park	480 Main St	Mid Term
Ridgefield	Ridgefield	Fire Department	6 Catoonah Street	Mid Term

Town	Owner	Description	Address	Focus
Ridgefield	United States	Us Post Office	26 Catoonah Street	Mid Term
Weston	Vacant	Other Urban/Open Space	20 Wampum Hill Rd	Mid Term
Wilton	Wilton Town Of		131 Old Mill Rd	Short Term
Wilton	Connecticut State Of		Ridgefield Rd	Short Term
Wilton	Wilton Town Of		7 Horseshoe Rd	Short Term
Wilton	Connecticut State Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		15 Wolfpit Rd	Short Term
Wilton	Connecticut State Of		34 Wolfpit Rd	Short Term
Wilton	Connecticut State Of		Danbury Rd	Short Term
Wilton	Wilton Town Of		30 Ridgefield Rd	Short Term
Wilton	Wilton Town Of		Cannon Rd	Short Term
Wilton	Wilton Town Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		3 Wolfpit Rd	Short Term
Wilton	Wilton Town Of		Cannon Rd	Short Term
Wilton	Wilton Town Of		3 5 Horseshoe Rd	Short Term
Wilton	Connecticut State Of		182 Danbury Rd	Short Term
Wilton	Connecticut State Of		30 Kent Hills La	Short Term
Wilton	Connecticut State Of		408 Danbury Rd	Short Term
Wilton	Connecticut State Of		6 Wolfpit Rd	Short Term
Wilton	Connecticut State Of		Cherry La	Short Term
Wilton	Connecticut State Of		Cherry La	Short Term
Wilton	Connecticut State Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		Ridgefield Rd	Short Term
Wilton	Connecticut State Of		Wolfpit Rd	Short Term
Wilton	Wilton Town Of		68 Ridgefield Rd	Short Term
Wilton	Connecticut State Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		Kent Rd	Short Term
Wilton	Connecticut State Of		71 Dumplin Hill Rd	Short Term
Wilton	Connecticut State Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		115 Mountain Rd	Short Term
Wilton	Wilton Town Of		91 Danbury Rd	Short Term
Wilton	Wilton Town Of		Old Ridgfld Rd	Short Term
Wilton	Connecticut State Of		184 Danbury Rd	Short Term
Wilton	Connecticut State Of		67 Cherry La	Short Term
Wilton	Wilton Town Of		45 Lovers La	Short Term
Wilton	Connecticut State Of		17 Wolfpit Rd	Short Term
Wilton	Connecticut State Of		66 Mountain Rd	Short Term
Wilton	Wilton Town Of		Old Ridgfld Rd	Short Term
Wilton	Connecticut State Of		159 Danbury Rd	Short Term
Wilton	Wilton Town Of		Danbury Rd	Short Term
Wilton	Wilton Town Of		Old Ridgfld Rd	Short Term
Wilton	Connecticut State Of		31 Wolfpit Rd	Short Term
Wilton	Wilton Town Of		52 Lovers Ln	Short Term
Wilton	Connecticut State Of		99 Cherry La	Short Term
Wilton	Connecticut State Of		48 Raymond La	Short Term
Wilton	Connecticut State Of		Westport Rd	Short Term
Wilton	Connecticut State Of		59 Dumplin Hill Rd	Short Term
Wilton	Connecticut State Of		155 Sharp Hill Rd	Short Term
Wilton	Wilton Town Of		10 Old Mill Rd	Short Term
Wilton	Connecticut State Of		Raymond La	Short Term
Wilton	Wilton Town Of		22 Linden Tree Rd	Short Term
Wilton	Connecticut State Of		178 Danbury Rd	Short Term
Wilton	Connecticut State Of		24 Wolfpit Rd	Short Term

Town	Owner	Description	Address	Focus
Wilton	Connecticut State Of		38 Wolfpit Rd	Short Term
Wilton	Connecticut State Of		95 Skunk La	Short Term
Wilton	Connecticut State Of		Gaylord Dr	Short Term
Wilton	Connecticut State Of		Sharp Hill Rd	Short Term
Wilton	Connecticut State Of		76 Mountain Rd	Short Term
Wilton	Wilton Town Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		Kent Hills La	Short Term
Wilton	Connecticut State Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		Lovers La	Short Term
Wilton	Wilton Town Of		872 Danbury Rd	Short Term
Wilton	Wilton Town Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		Raymond La	Short Term
Wilton	Wilton Town Of		Old Danbury Rd	Short Term
Wilton	Connecticut State Of		Raymond La	Short Term
Wilton	Wilton Town Of		8 School St	Short Term
Wilton	Connecticut State Of		Sharp Hill Rd	Short Term
Wilton	Wilton Town Of		31 New St	Short Term
Wilton	Wilton Town Of		Borglum Rd	Short Term
Wilton	Connecticut State Of		Saunders Dr	Short Term
Wilton	Connecticut State Of		129 Sharp Hill Rd	Short Term
Wilton	Connecticut State Of		349 Olmstead Hill Rd	Short Term
Wilton	Wilton Town Of	Lovers Lane	Route 7	Short Term
Wilton	Connecticut State Of		58 Raymond La	Short Term
Wilton	Wilton Town Of		60 Lovers Ln	Short Term
Wilton	Connecticut State Of		3 Kent Hills La	Short Term
Wilton	Connecticut State Of		7 Kent Hills La	Short Term
Wilton	Wilton Town Of		Kellogg Dr	Short Term
Wilton	Wilton Town Of		Olmstead Hill Rd	Short Term
Wilton	Wilton Town Of		49 Old Danbury Rd	Short Term
Wilton	Connecticut State Of		42 Berch Ct	Short Term
Wilton	Wilton Town Of		Cherry La	Short Term
Wilton	Wilton Town Of		Scarlet Oak Dr	Short Term
Wilton	Connecticut State Of		113 Mountain Rd	Short Term
Wilton	Connecticut State Of		156 Danbury Rd	Short Term
Wilton	Connecticut State Of		186 Sharp Hill Rd	Short Term
Wilton	Connecticut State Of		40 Berch Ct	Short Term
Wilton	Connecticut State Of		48 Berch Ct	Short Term
Wilton	Connecticut State Of		63 Saunders Dr	Short Term
Wilton	Connecticut State Of		91 Mountain Rd	Short Term
Wilton	Connecticut State Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		Saunders Dr	Short Term
Wilton	Connecticut State Of		Sharp Hill Rd	Short Term
Wilton	Wilton Town Of		441 Danbury Rd	Short Term
Wilton	Wilton Town Of		50 Ruscoe Rd	Short Term
Wilton	Wilton Town Of		Boulderbrook Rd	Short Term
Wilton	Wilton Town Of		Danbury Rd	Short Term
Wilton	Wilton Town Of		Mayapple Rd	Short Term
Wilton	Connecticut State Of		Sharp Hill Rd	Short Term
Wilton	Wilton Town Of		Kellogg Dr	Short Term
Wilton	Connecticut State Of		149 Sharp Hill Rd	Short Term
Wilton	Connecticut State Of		46 Berch Ct	Short Term
Wilton	Connecticut State Of		Penn Central Rr	Short Term
Wilton	Connecticut State Of		132 Mountain Rd	Short Term

Town	Owner	Description	Address	Focus
Wilton	Wilton Town Of		380 Danbury Rd	Short Term
Wilton	Connecticut State Of		20 Gilly La	Short Term
Wilton	Connecticut State Of		101 Mountain Rd	Short Term
Wilton	Wilton Town Of		31 Old Danbury Rd	Short Term
Wilton	Connecticut State Of		Penn Central Rr	Short Term
Wilton	Connecticut State Of		78 Undercliff Dr	Short Term
Wilton	Wilton Town Of		Quail Ridge	Short Term
Wilton	Connecticut State Of		101 Skunk La	Short Term
Wilton	Connecticut State Of		17 Kent Rd	Short Term
Wilton	Connecticut State Of		22 Gilly La	Short Term
Wilton	Connecticut State Of		Kent Rd	Short Term
Wilton	Wilton Town Of		Walnut Pl	Short Term
Wilton	Connecticut State Of		121 Mountain Rd	Short Term
Wilton	Connecticut State Of		410 Danbury Rd	Short Term
Wilton	Connecticut State Of		Gaylord Dr	Short Term
Wilton	Connecticut State Of		419 Danbury Rd	Short Term
Wilton	Connecticut State Of		151 Sharp Hill Rd	Short Term
Wilton	Connecticut State Of		Danbury Rd	Short Term
Wilton	Connecticut State Of		127 Mountain Rd	Short Term
Wilton	Connecticut State Of		153 Danbury Rd	Short Term
Wilton	Wilton Town Of		Middlebrook Farm	Short Term
Wilton	Wilton Town Of		44 Wild Duck Rd	Short Term
Wilton	Connecticut State Of		14 Kent Hills La	Short Term
Wilton	Connecticut State Of		21 Chipmunk La	Short Term
Wilton	Connecticut State Of		Danbury Rd	Short Term
Wilton	Wilton Town Of		Lovers La	Short Term
Wilton	Wilton Town Of		Olmstead Hill Rd	Short Term
Wilton	Wilton Town Of		Wolfpit Rd	Short Term
Wilton	Wilton Town Of		Danbury Rd	Mid Term
Wilton	Connecticut State Of		Olmstead Hill Rd	Mid Term
Wilton	Connecticut State Of		24 Gilly La	Mid Term
Wilton	Connecticut State Of		41 Arrowhead Rd	Mid Term
Wilton	Connecticut State Of		Danbury Rd	Mid Term
Wilton	Connecticut State Of		64 Dumplin Hill Rd	Mid Term
Wilton	Wilton Town Of		Millstone Rd	Mid Term
Wilton	Wilton Town Of		404 Danbury Rd	Mid Term
Wilton	Connecticut State Of		4 Wolfpit Rd	Mid Term
Wilton	Wilton Town Of		18 Linden Tree Rd	Mid Term
Wilton	Connecticut State Of		17 Winton Terr	Mid Term
Wilton	Connecticut State Of		23 Winton Terr	Mid Term
Wilton	Connecticut State Of		27 Chipmunk La	Mid Term
Wilton	Connecticut State Of		117 Mountain Rd	Mid Term
Wilton	Connecticut State Of		Skunk La	Mid Term
Wilton	Connecticut State Of		Spectacle La	Mid Term
Wilton	Connecticut State Of		Mountain Rd	Mid Term
Wilton	Wilton Town Of		Linden Tree Rd	Mid Term
Wilton	Connecticut State Of		425 Danbury Rd	Mid Term
Wilton	Wilton Town Of		248 Danbury Rd	Mid Term
Wilton	Connecticut State Of		1 Gaylord Dr	Mid Term
Wilton	Connecticut State Of		109 Mountain Rd	Mid Term
Wilton	Connecticut State Of		164 Danbury Rd	Mid Term
Wilton	Connecticut State Of		19 Winton Terr	Mid Term
Wilton	Connecticut State Of		2 Gaylord Dr	Mid Term

Town	Owner	Description	Address	Focus
Wilton	Connecticut State Of		2 Kent Hills La	Mid Term
Wilton	Connecticut State Of		21 Winton Terr	Mid Term
Wilton	Connecticut State Of		249 Danbury Rd	Mid Term
Wilton	Connecticut State Of		4 Gaylord Dr	Mid Term
Wilton	Connecticut State Of		78 Westport Rd	Mid Term
Wilton	Connecticut State Of		Brother Davids Trl	Mid Term
Wilton	Connecticut State Of		Danbury Rd	Mid Term
Wilton	Connecticut State Of		Fawn Pl	Mid Term
Wilton	Connecticut State Of		Gaylord Dr	Mid Term
Wilton	Connecticut State Of		Off Cannon Rd	Mid Term
Wilton	Wilton Town Of		19 Banks Dr	Mid Term
Wilton	Wilton Town Of		Banks Dr	Mid Term
Wilton	Wilton Town Of		Hurlbutt St	Mid Term
Wilton	Wilton Town Of		Raymond La	Mid Term
Wilton	Connecticut State Of		Mountain Rd	Mid Term
Wilton	Wilton Town Of		Patrick La	Mid Term
Wilton	Wilton Town Of		32 Old Danbury Rd	Mid Term
Wilton	Wilton Town Of		Branch Brook Rd	Mid Term
Wilton	Wilton Town Of		240 School Rd	Mid Term
Wilton	Connecticut State Of		Danbury Rd	Mid Term
Wilton	Connecticut State Of		Mountain Rd	Mid Term
Wilton	Wilton Town Of		Wren Thicket	Mid Term
Wilton	Wilton Town Of		32 Vista Rd	Mid Term
Wilton	Connecticut State Of		154 Sharp Hill Rd	Mid Term
Wilton	Connecticut State Of		8 Chipmunk La	Mid Term
Wilton	Connecticut State Of		Danbury Rd	Mid Term
Wilton	Wilton Town Of		Patrick La	Mid Term
Wilton	Connecticut State Of		20 Winton Terr	Mid Term
Wilton	Connecticut State Of		42 Arrowhead Rd	Mid Term
Wilton	Connecticut State Of		4 Chipmunk La	Mid Term
Wilton	Wilton Town Of		13 Dumplin Hill Rd	Mid Term
Wilton	Wilton Town Of		125 Honey Hill Rd	Mid Term
Wilton	Wilton Town Of		430 Danbury Rd	Mid Term
Wilton	Connecticut State Of		39 Chipmunk La	Mid Term
Wilton	Connecticut State Of		418 Danbury Rd	Mid Term
Wilton	Connecticut State Of		Danbury Rd	Mid Term
Wilton	Connecticut State Of		Gaylord Dr	Mid Term
Wilton	Wilton Town Of		Honey Hill Area	Mid Term
Wilton	Wilton Town Of		Hurlbutt St	Mid Term
Wilton	Connecticut State Of		653 Danbury Rd	Mid Term
Wilton	Connecticut State Of		18 Gilly La	Mid Term
Wilton	Wilton Town Of		Old Farm Rd	Mid Term
Wilton	Connecticut State Of		2 Chipmunk La	Mid Term
Wilton	Wilton Town Of		Olmstead Hill Rd	Mid Term
Wilton	Connecticut State Of		Skunk La	Mid Term
Wilton	Wilton Town Of	Millbrook School	170 Ridgefield Rd	Mid Term
Wilton	Connecticut State Of		18 Chipmunk La	Mid Term
Wilton	Connecticut State Of		46 Chipmunk La	Mid Term
Wilton	Wilton Town Of		Tamarack Pl	Mid Term
Wilton	Connecticut State Of		70 Undercliff Dr	Mid Term
Wilton	Wilton Town Of		School Rd	Mid Term
Wilton	Connecticut State Of		24 Chipmunk La	Mid Term
Wilton	Connecticut State Of		Undercliff Dr	Mid Term

Town	Owner	Description	Address	Focus
Wilton	Connecticut State Of		Twin Oak La Ext	Mid Term
Wilton	Connecticut State Of		14 Chipmunk La	Mid Term
Wilton	Wilton Town Of		34 Whipple Rd	Mid Term
Wilton	Wilton Town Of		217 Wolfpit Rd	Mid Term
Wilton	Connecticut State Of		140 Pimpewaug Rd	Mid Term
Wilton	Connecticut State Of		Sharp Hill Rd	Mid Term
Wilton	Connecticut State Of		50 Berch Ct	Mid Term
Wilton	Wilton Town Of		19 Charter Oak Dr	Mid Term
Wilton	Connecticut State Of		148 Pimpewaug Rd	Mid Term
Wilton	Connecticut State Of		161 Spectacle La	Mid Term
Wilton	Connecticut State Of		168 Pimpewaug Rd	Mid Term
Wilton	Connecticut State Of		34 Chipmunk La	Mid Term
Wilton	Connecticut State Of		420 Danbury Rd	Mid Term
Wilton	Connecticut State Of		64 Undercliff Dr	Mid Term
Wilton	Connecticut State Of		Gaylord Dr	Mid Term
Wilton	Connecticut State Of		Gaylord Dr	Mid Term
Wilton	Connecticut State Of		Sharp Hill Rd	Mid Term
Wilton	Connecticut State Of		Westport Rd	Mid Term
Wilton	Connecticut State Of		Westport Rd	Mid Term
Wilton	Wilton Town Of		700 Ridgefield Rd	Mid Term
Wilton	Wilton Town Of		Belden Hill Rd	Mid Term
Wilton	Wilton Town Of		Corner Of Town Rdgfd	Mid Term
Wilton	Wilton Town Of		Tamarack Pl	Mid Term
Wilton	Wilton Town Of		Whipstick Rd	Mid Term
Wilton	Wilton Town Of		Partrick La	Mid Term
Wilton	Connecticut State Of		Parish Rd	Mid Term
Wilton	Connecticut State Of		357 Olmstead Hill Rd	Mid Term
Wilton	Connecticut State Of		Danbury Rd	Mid Term
Wilton	Wilton Town Of		50 Ledgewood Dr	Mid Term
Wilton	Connecticut State Of		Danbury Rd	Mid Term
Wilton	Connecticut State Of		Pimpewaug Rd	Mid Term
Wilton	Connecticut State Of		102 Twin Oak La	Mid Term
Wilton	Connecticut State Of		429 Danbury Rd	Mid Term
Wilton	Connecticut State Of		627 Danbury Rd	Mid Term
Wilton	Wilton Town Of		160 Mather St	Mid Term
Wilton	Connecticut State Of		14 Gilly La	Mid Term
Wilton	Connecticut State Of		150 Pimpewaug Rd	Mid Term
Wilton	Connecticut State Of		111 Skunk La	Mid Term
Wilton	Connecticut State Of		14 Black Birch Dr	Mid Term
Wilton	Connecticut State Of		28 Chipmunk La	Mid Term
Wilton	Connecticut State Of		54 Mcfadden Dr	Mid Term
Wilton	Connecticut State Of		Old Belden HI Rd	Mid Term
Wilton	Connecticut State Of		108 Twin Oak La	Mid Term
Wilton	Connecticut State Of		Pimpewaug Rd	Mid Term
Wilton	Connecticut State Of		422 Danbury Rd	Mid Term
Wilton	Connecticut State Of		50 Scribner Hill Rd	Mid Term
Wilton	Connecticut State Of		Pimpewaug Rd	Mid Term
Wilton	Connecticut State Of		52 Berch Ct	Mid Term
Wilton	Connecticut State Of		11 Winton Terr	Mid Term
Wilton	Connecticut State Of		Pimpewaug Rd	Mid Term
Wilton	Connecticut State Of		Mountain Rd	Mid Term
Wilton	Connecticut State Of		32 Bristol Pl	Mid Term
Wilton	Connecticut State Of		Scribner Hill Rd	Mid Term

Town	Owner	Description	Address	Focus
Wilton	Connecticut State Of		Scribner Hill Rd	Mid Term
Wilton	Connecticut State Of		Laurelwood Rd	Mid Term
Wilton	Connecticut State Of		30 Bristol Pl	Mid Term
Wilton	Connecticut State Of		46 Scribner Hill Rd	Mid Term
Wilton	Connecticut State Of		116 Twin Oak La	Mid Term
Wilton	Connecticut State Of		18 Black Birch Dr	Mid Term
Wilton	Connecticut State Of		28 Bristol Pl	Mid Term
Wilton	Connecticut State Of		46 Fenwood La	Mid Term
Wilton	Connecticut State Of		58 Scribner Hill Rd	Mid Term
Wilton	Connecticut State Of		94 Scribner Hill Rd	Mid Term
Wilton	Connecticut State Of		Twin Oak La Ext	Mid Term
Wilton	Connecticut State Of		Westport Rd	Mid Term
Wilton	Wilton Town Of		Collinswood Rd	Mid Term
Wilton	Wilton Town Of		Nod Hill Rd	Mid Term
Wilton	Wilton Town Of		Pipers Hill Rd	Mid Term
Wilton	Wilton Town Of		Powder Horn HI	Mid Term
Wilton	Wilton Town Of		Spruce Meadow Ct	Mid Term
Wilton	Wilton Town Of		64 Wild Duck Rd	Mid Term
Wilton	Connecticut State Of		129 Mountain Rd	Mid Term
Wilton	Wilton Town Of		131 School Rd	Mid Term
Wilton	Connecticut State Of		Mcfadden Dr	Mid Term
Wilton	Connecticut State Of		Undercliff Dr	Mid Term
Wilton	Connecticut State Of		Dorado Ct	Mid Term
Wilton	Connecticut State Of		Cold Spring Rd	Mid Term
Wilton	Wilton Town Of		Pin Oak La	Mid Term
Wilton	Wilton Town Of		Linden Tree Rd	Mid Term
Wilton	Wilton Town Of		257 Hurlbutt St	Mid Term
Wilton	Connecticut State Of		10 Black Birch Dr	Mid Term
Wilton	Connecticut State Of		Mountain Rd	Long Term
Wilton	Wilton Town Of		Hunting Rdg La	Long Term
Wilton	Wilton Town Of		161 Thunder Lake Rd	Long Term
Wilton	Wilton Town Of		493 Ridgefield Rd	Long Term
Wilton	Wilton Town Of		Ryders La	Long Term
Wilton	Wilton Town Of		School Rd	Long Term
Wilton	Wilton Town Of		Spruce Meadow Ct	Long Term
Wilton	Connecticut State Of		Parish Rd	Long Term
Wilton	Wilton Town Of		Partrick La	Long Term
Wilton	Wilton Town Of		School Rd	Long Term
Wilton	Wilton Town Of		Hucklbery HI Rd	Long Term
Wilton	Connecticut State Of		27 Bristol Pl	Long Term
Wilton	Wilton Town Of		School Rd	Long Term
Wilton	Wilton Town Of		Linden Tree Rd	Long Term
Wilton	Wilton Town Of		Charter Oak Dr	Long Term
Wilton	Wilton Town Of		Weston Town Line	Long Term
Wilton	Connecticut State Of		Scribner Hill Rd	Long Term
Wilton	Wilton Town Of		Spruce Meadow Ct	Long Term
Wilton	Wilton Town Of		Whipstick Rd	Long Term
Wilton	Connecticut State Of		Blue Ridge Rd	Long Term