Connecticut Nonpoint Source Management Program Plan

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Connecticut
Department of Energy &
Environmental Protection

79 Elm Street
Hartford, CT 06106-5127
DEEP.Watersheds@ct.gov

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1.1. What is Nonpoint Source Pollution?

Nonpoint source (NPS) pollution, unlike pollution from a pipe or other easily identifiable sources, comes from many diffuse sources spread across the landscape. NPS pollution is caused when runoff picks up and carries natural and human-made pollutants, depositing them into lakes, rivers, streams, wetlands, estuaries, other coastal waters and groundwater. Because NPS pollution comes from many different sources, it can be difficult to identify and quantify. Potential sources of NPS pollution can include but are not limited to:

- Non-regulated runoff from developed land and impervious surfaces
- Agricultural runoff
- Waste from domestic animals and wildlife
- Malfunctioning or failing subsurface sewage disposal systems
- Landscape and turf management activities
- Road maintenance activities
- Marinas and boating
- Atmospheric deposition
- Hydrologic and habitat modification

Nonpoint Source Pollution

Common NPS pollutants and associated sources include:

- **Bacteria** from pet and waterfowl waste, malfunctioning or failed subsurface sewage disposal systems, and animal operations such as horse or dairy farms
- **Nutrients** (phosphorus and nitrogen) from fertilizing lawns, golf courses, and athletic fields, and from farm operations
- **Sediment** from construction sites, soil erosion, and winter sanding
- **Chloride** (salts) from winter deicing
- **Heavy metals** (lead, zinc, cadmium) and other toxic fluids from motor vehicles and industrial operations

In Connecticut, urban runoff and agriculture are the two most prominent sources of NPS pollution. Significant progress in water quality has been made over the last several decades, largely due to the control of point sources of pollution. NPS pollution is now the source of the greatest number of water quality impairments in Connecticut and nationwide.

1.2. What is a Watershed?

What is a Watershed?

A watershed includes the area of land that drains water into a stream, river, lake, estuary, bay or other body of water.

A watershed is the area of land that drains into a specific receiving waterbody. As rainwater or melted snow runs downhill in the watershed, it collects and transports sediment, nutrients, bacteria, and other materials and deposits them into the receiving waterbody (Figure 1). Watersheds can be at various scales, such as a local area that drains to a lake, or a regional area that drains to a large river. Watersheds do not follow political boundaries; for example areas of Maine, New Hampshire, Vermont, and Massachusetts and all of Connecticut drain to the Long Island Sound.

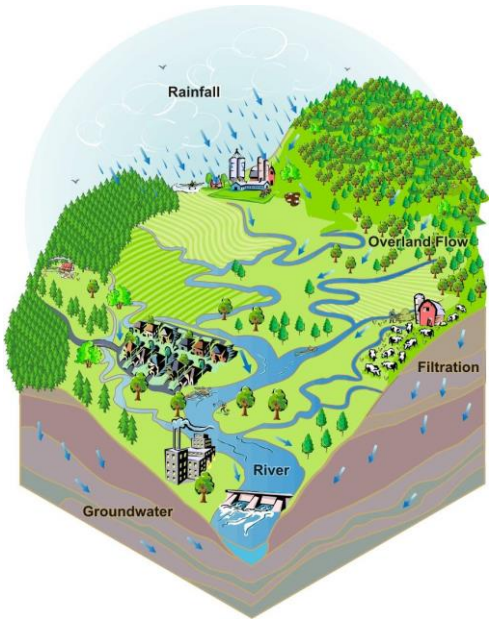

Figure 1 Conceptual Watershed

NPS pollution threats and impacts on water quality are diverse, widespread, and often interconnected. Each waterbody has distinct water quality characteristics, issues, and stakeholders. A watershed approach, which provides a flexible framework for managing water quality within hydrologically defined areas, is viewed as the most effective means to address water quality concerns on a comprehensive basis. This approach requires active stakeholder involvement, sound scientific analysis and quantification of causes and sources of water quality problems, identification of measurable water quality goals, and specific actions needed to reach the watershed goals.

1.3. Connecticut Land Use and Land Cover Trends

Because NPS pollution often results from runoff over the land surface, land use/land cover can strongly influence water quality and is a useful indicator of existing and potential NPS pollution.

Land use decisions in Connecticut are primarily made at the local level by land use boards and commissions. Encouraging, supporting, and promoting informed land use and development conversations, choices, and decisions is a complex but important challenge to address.

The changes in land cover that have occurred in Connecticut through conversion of undeveloped land to higher intensity uses, often in close proximity to surface waters, have impacted water quality as a result of NPS pollution due to increased stormwater runoff. The link between land use, landscape alteration, and water quality has been well documented by the Connecticut Department of Energy and Environmental Protection (CT DEEP), as measured by watershed impervious cover and biological assessments of streams across the state. In general, the higher the percentage of impervious cover within a watershed, the lower the water quality and support for aquatic life.

Future growth and development in Connecticut may further threaten water quality as it increases NPS pollution. The Connecticut Office of Policy and Management has updated the State Conservation and Development Policies Plan (State C&D Plan) for 2025-2030, which was adopted on May 4, 2024. The State C&D Plan emphasizes interagency collaboration in reaching its priorities, with Water Quality at the nexus of Healthy People and Places and Stewardship of Resources. It credits the State's 110 state parks, 32 state forests and over 500,000 acres of land conserved by the state and its partners for erosion and flood control, and cites the Long Island Sound for a major role in the regional economy related to tourism, aquaculture, fishing, and boating. The State C&D Plan also outlines current challenges, especially those resulting from climate change, including higher

temperature and changing precipitation patterns, increased probability of drought, more frequent and intense storms resulting in an increased risk of flooding, and a loss of air and water quality, acknowledging the vulnerability of Connecticut's coastline due to each of these. Targets of the plan include protecting ecologically sensitive waters, ensuring the efficiency and sustainability of infrastructure, and keeping in mind interstate policies when addressing water supply and wastewater disposal problems.

The Locational Guide Map for the C&D Plan provides general guidance for conservation and development in context with the policies and implementation measures of the overall State C&D Plan itself.

1.4. NPS Management Program Goals

CT DEEP is charged with conserving, improving and protecting the natural resources and the environment of the state of Connecticut as well as making cheaper, cleaner and more reliable energy available for the people and businesses of the state. The agency is also committed to playing a positive role in rebuilding Connecticut's economy and creating jobs – to foster a sustainable and prosperous economic future for the state. CT DEEP has established five strategic goals to guide work across each of its programs.

Connecticut's Nonpoint Source Management Program supports CT DEEP's mission and Strategic Goals by working to address water quality issues and prevent degradation of water quality of both surface waters and groundwater from NPS pollution through improved management practices. The goals of this program are to:

- Protect the environment and public health from the impacts of NPS pollution by restoring polluted waters and preserving healthy waters;
- Inform the public and NPS partners about the causes and impacts of NPS pollution in Connecticut;
- Set priorities for addressing NPS pollution sources in Connecticut;
- Identify long-term goals and implement long-term strategies for protecting and restoring water resources in Connecticut that are threatened or impaired by NPS pollution;
- Establish specific short-term goals, objectives, and measurable milestones that will contribute to achieving long-term NPS program goals of restoring and protecting water quality.

The Connecticut Nonpoint Source Management Program Plan is a guide for NPS program activities in the State of Connecticut.

1.5. Why Update the NPS Management Program?

CT DEEP is responsible for protecting water quality under a number of regulatory and non-regulatory programs via the U.S. Clean Water Act (CWA), including the Section 319 Nonpoint Source Program (hereinafter "Section 319") (See Appendix A). Annually the U.S. Environmental Protection Agency (EPA) awards CWA Section 319 Nonpoint Source Grants to states, territories, Tribes and the District of Columbia for the implementation of NPS management programs. Section 319 requires the state to review and update the NPS Management Program Plan every 5 years to plan, and effectively target implementation efforts to address NPS pollution.

Who carries out the activities in the NPS Management Program Plan?

The Connecticut Department of Energy and Environmental Protection (CT DEEP) is responsible for implementing the NPS Management Program Plan.

However, the success of NPS management activities in Connecticut relies on the participation of many groups including:

- The public
- Businesses
- Municipalities
- Non-governmental organizations
- Other state and federal agencies

Connecticut's first Nonpoint Source Management Program Plan was approved by the U.S. Environmental Protection Agency (EPA) in 1989, and was updated in 1999 to address changes to national NPS guidance as well as Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990, which established a coastal NPS pollution control component. The Plan was updated in 2014, and every five years moving forward, consistent with EPA's *Nonpoint Source Program and Grants Guidelines for States and Territories* (hereinafter referred to as "NPS Guidelines").

The Connecticut NPS Source Management Program Plan updates information on NPS pollution sources and control measures; identifies Connecticut's approach to prioritizing NPS management activities for the restoration and protection of specific waterbodies; and outlines goals, objectives, and measurable milestones with a schedule for completion. The Plan also includes new elements, including considerations for Equity & Environmental Justice and Climate Resiliency. This Plan is intended to be flexible, which will allow CT DEEP to modify its NPS management program over time in response to changes in NPS-related memorandums, regulations, policy, and control measures, or in the event of a natural disaster.

1.6. EPA Key Program Components

The NPS Guidelines describe the key components that characterize an effective state NPS Management Program Plan. Table 1-1 indicates how this Plan incorporates the key program components required by EPA.

Table 1-1. How the Connecticut NPS Management Program Plan Addresses the EPA Key NPS Program Components	
EPA Key NPS Program Components	Connecticut NPS Management Program Plan
1. The state program identifies water restoration and protection goals and program strategies (regulatory, nonregulatory, financial and technical assistance, as needed) to achieve and maintain water quality standards. It includes relevant, current, and trackable annual milestones for program implementation. t	Sections 2 - 4
2. The state program identifies the primary categories and subcategories of NPS pollution and a process for prioritizing impaired and unimpaired waters and how national and state priorities may align.	Sections 2 - 5
3. The state program identifies management measures (i.e., systems of practices) that will be undertaken to reduce pollutant loadings resulting from each category, subcategory, or particular nonpoint source identified in component 2 above. The measures should also consider the impact of the BMPs on groundwater quality.	Section 4
4. The state uses both watershed projects and well-integrated regional or statewide programs to restore and protect waters, achieve water quality benefits, and advance any relevant climate resiliency goals.	Sections 2 and 3
5. The state identifies and enhances its collaboration with appropriate federal, state, interstate, Tribal, and regional agencies as well as local entities (including conservation districts, private sector groups, utilities, and citizen groups) that will be utilized to implement the state program. Furthermore, the state supports capacity-building in disadvantaged, underserved, or overburdened communities.	Section 2
6. The state manages and implements its Nonpoint Source Management Program efficiently and effectively, including necessary financial management.	Section 5
7. The state evaluates its Nonpoint Source Management Program Plan at least every five years.	Sections 2 and 5

1.7. NPS Pollution Control

NPS pollution is controlled primarily through the adoption of practical and cost-effective land management practices known as Best Management Practices (BMPs). BMPs allow for everyday activities while reducing or preventing NPS pollution. BMPs can be structural, involving actual infrastructure or non-structural, involving changes in practices or behaviors, to protect water quality while allowing for growth and maintaining the economic value of Connecticut's resources. Structural BMPs may impact groundwater quality, a topic which CT DEEP will continue to evaluate;

however, due to Connecticut's industrial history and densely urbanized nature, this has not been a major concern. Connecticut's NPS Management Program uses both regulatory and nonregulatory mechanisms to achieve BMP implementation.

Connecticut's approach to controlling NPS pollution includes both focused watershed projects and statewide initiatives. Both watershed projects and statewide initiatives address diverse NPS concerns, utilize available funding sources, and may include water quality monitoring to measure efficacy.

Watershed projects in Connecticut may include both planning and implementation efforts related to a specific watershed or waterbody and targeting specific pollutants or issues. Planning projects identify problems and develop solutions for future implementation, to optimize efficiency of activities and resources for restoration or protection efforts. Implementation projects are in the ground efforts designed to restore or protect water quality conditions in watersheds using BMPs. Section 3 of this Plan describes the process for prioritizing watershed projects in Connecticut.

Statewide initiatives help raise public awareness about runoff pollution, provide technical information on BMPs, and develop and implement regulatory programs. Section 4 of this Plan includes descriptions of statewide initiatives to address NPS pollutant categories.

CT DEEP does not have sufficient resources to conduct planning efforts and implement BMPs for all existing or potential NPS pollution problems. To maximize NPS pollution control efforts, technical and financial assistance from other federal, state, and local sources are cooperatively targeted to NPS priority watersheds and statewide initiatives. Subsequent sections of this plan address the ways that Connecticut maximizes resources to address NPS pollution, including the process for prioritizing watershed projects in Connecticut (Section 3), statewide initiatives that address priority NPS pollutant categories (Section 4), and potential sources of funding for NPS activities in Connecticut (Section 5).

2 Connecticut's NPS Management Program Framework

Connecticut's NPS Management Program Framework takes an interdisciplinary approach across many programs administered by federal, state, and municipal agencies and organizations to address existing water quality impairments and prevent future degradation of water quality from NPS pollution. The NPS Management Program Plan is a collaborative approach to increase efficiency between CT DEEP's NPS Management Program and other related programs, while complying with any requirements and restrictions.

CT DEEP's NPS Management Program is not a singular program, but rather is made up of staff from several programs within the Bureau of Water Protection and Land Reuse.

The Watersheds Section, which is part of the Water Planning and Management Division, oversees administration of the Section 319 NPS Grant funds and assistance with other NPS funding (see Section 5). The Watersheds Section coordinates with the other Water Planning and Management Division programs on many NPS-related tasks, including but not limited to: assuring efficient

utilization and community involvement in application of Clean Water State Revolving Funds for Green Infrastructure projects in communities with Combined Sewer Overflows (CSOs); continue efforts to reduce Nitrogen through Total Maximum Daily Load (TMDL) implementation; and the protection and restoration of streamflow through CT DEEP's Streamflow Classification program. The new Office of Climate Resiliency will interface with the NPS Program regarding Green Infrastructure and funding opportunities.

The Technical Resources and Planning Section within the Land and Water Resources Division is the lead for CT DEEP's NPS Program on Coastal NPS issues (see Section 2.3), wetland permitting, and promotion of Green Infrastructure. These staff interact with NPS municipal partners in Wetland and Conservation Commissions as well as the Connecticut Association of Conservation and Inland Wetland Commissions.

CT DEEP's NPS Program also collaborates with programs within other CT DEEP Bureaus and Offices, including with the Office of Climate Planning and the Office of Environmental Justice within the Office of the Commissioner, as subject matter experts on newly developing topics and how they can be incorporated into NPS projects. NPS Management Program staff interact with Water Permitting & Enforcement Division staff within the Bureau of Materials Management and Compliance Assurance, on topics related to agriculture and subsurface wastewater permitting; Watersheds Section staff also provided oversight for revisions to the Connecticut Stormwater Quality Manual and the Guidelines for Soil Erosion and Sediment Control. CT DEEP's Pollution Prevention Program is part of the Office of Planning Compliance within the Office of Planning and Program Development; it provides information on preventing or minimizing pollution rather than controlling it, including topics related to NPS pollution, such as sustainable practices for the lawn care industry. When planning or implementing projects that may have co-benefits for addressing NPS pollution, staff from the Remediation Division collaborate with Watersheds Section Staff.

2.1 Water Quality Planning and Management

Water Quality Standards

The Connecticut Water Quality Standards form the foundation of Connecticut's water management programs. Required by Section 303(c) of the federal Clean Water Act (CWA), the Water Quality Standards (WQS) articulate State policies regarding designated uses and related classifications of Connecticut's water resources, addressing both surface and ground waters, and the standards and criteria necessary to support such designated uses. The WQS provide the context and underpinnings for environmental programs, informing actions such as CWA National Pollutant Discharge Elimination System (NPDES) permit issuance, water quality certification programs, remediation programs, as well as state-led monitoring and assessment programs and Total Maximum Daily Load (TMDL) development, NPS Management, among other programs and activities.

CT DEEP's WQS are comprised of three components:

1. Standards: The WQS describe CT DEEP's general policies and goals necessary to protect or restore water quality. The WQS identify designated uses for surface and ground waters and

set conditions necessary for their attainment. The WQS also describe acceptable types of discharges and activities consistent with CT DEEP's goals for each classification. The WQS also define the concept of a zone of influence for such discharges. Anti-degradation Standards include policies for protecting ground and surface water whose actual quality exceeds that quality associated with its classification.

2. Water Quality Criteria: The water quality criteria can be either narrative or numeric and describe conditions necessary to support designated uses.

3. Water Quality Classification Maps of Connecticut's Water Quality Standards: The Water Quality Classification Maps show the class assigned to each surface water and ground water resource throughout the state. The Water Quality Classification Maps have been adopted and are amended from time to time pursuant to the statutory process. The maps are used to relate Designated Uses and the applicable Standards and Criteria for each class of surface and ground water resource to a specific location. In Connecticut, classifications are based on designated uses.

Integrated Water Quality Report

The Connecticut Integrated Water Quality Report (IWQR) is prepared by CT DEEP pursuant to the federal CWA Sections 305(b) and 303(d). Section 305(b) requires each state to monitor, assess and report on the quality of its waters every two years. Water quality is assessed in terms of designated uses established by the WQS. Monitoring and assessment data indicate the attainment of designated uses when consistent with appropriate WQS. If data are not consistent with the standards, the waterbody is identified as "impaired" for a particular designated use. Section 303(d) requires each state to compile a List of Impaired Waters identifying those waters not meeting WQS and to assign a priority for each impaired waterbody for development of a TMDL analysis or other management action. The IWQR, which includes the assessment and listing methodology, the assessment results, and the identification of waters for Action Plan development for water quality restoration or protection, is submitted to EPA for review and approval.

The IWQR identifies NPS pollution as a major contributor or cause of impairments to designated uses in streams, rivers, lakes, and estuaries statewide.

What is an Impaired Waterbody?
An impaired waterbody is a waterbody that does not meet water quality criteria that support its designated use, such as drinking, swimming, or fishing. For each impaired waterbody and associated pollutant, CT DEEP must develop a restoration target called a Total Maximum Daily Load (TMDL).

In addition to updating the IWQR, CT DEEP allocates monitoring resources to directly measure the impacts of projects aimed at reducing NPS pollution. CT DEEP Monitoring Section staff revisit impaired water bodies to determine if they can be removed from the impaired waters list following a restoration project. CT DEEP is committed to report on waterbody improvements or impairment delistings related to NPS pollution, see Success Stories in Section 5.2. Decisions about which sites to revisit are made annually during the development of the monitoring workplan for the year.

Total Maximum Daily Loads

A Total Maximum Daily Load (TMDL) is a target pollutant level or "pollution budget" that identifies the amount of point and nonpoint source pollution that are needed to meet Connecticut WQS for a particular waterbody and a strategy to implement those reductions to restore or protect water quality and meet designated uses. TMDLs provide the framework for restoring impaired waters and protecting waters consistent with Antidegradation provisions in the WQS. In Connecticut, TMDLs are implemented through various programs such as NPDES permits, Remedial Action Plans, and Watershed Based Plans (WBPs).

A NPDES permit contains water quality-based limits and specifies other treatment and monitoring requirements to ensure that the discharge does not impact water quality. By law, NPDES permits must be consistent with TMDL allocations for point sources to ensure that WQS will be met.

TMDLs for waters impaired by NPS include recommendations to implement controls that may be outlined in a WBP such as: reducing the use of fertilizers, herbicides, and pesticides; keeping Subsurface Sewage Disposal Systems in proper working order or addressing failing of substandard systems; planting vegetated riparian buffers; discouraging the feeding of waterfowl; protection or acquisition of open space; proper pet waste management; and redirecting polluted runoff into the ground or to stormwater treatment consisting of Green Infrastructure practices. Public education and local commitment are key elements to reducing NPS pollution.

2.2. Watershed Management

Watershed management describes the process of implementing land use and water management practices to protect or restore the quality of water and other natural resources within a watershed. Watershed management helps address pollution of water and other natural resources by identifying the categories of pollution in the watershed and how those pollutants are transported, and recommending ways to reduce or eliminate those sources.

Watershed management is also important because the planning process results in a partnership among all affected parties in the watershed. That partnership is essential to the successful management of land and water resources since all partners have a stake in the health of the watershed. It is also an efficient way to prioritize the implementation of watershed management plans in times when resources may be limited.

Watershed planning creates a framework of how to best protect and restore the water quality and other natural resources in a watershed. Since watershed boundaries may extend over political boundaries into adjacent municipalities and/or states, a comprehensive planning process that involves all affected municipalities located in the watershed is essential to success. Typically, a planning process takes place first, which identifies an overall management strategy with implementation options that will achieve the water quality goals. The process is meant to be iterative, holistic, hydrologically defined, integrated, and collaborative.

CT DEEP has developed a watershed management framework through a networked approach with federal, state, and municipal governments and non-government agencies and organizations to conduct watershed management and strengthen the State's ability to manage NPS pollution.

The outcome of the watershed planning process is detailed in a watershed plan. A watershed plan is a document that provides assessment and management information for a geographically defined watershed, including the analyses, actions, participants, and resources related to developing and implementing the plan.

CT DEEP and EPA recognize the need to focus on developing and implementing watershed plans for waters that are affected by nonpoint sources. It is imperative to provide general watershed management measures as well as specific BMPs that have the potential to reduce pollutant loads and contribute to restoring or protecting waters to meet water quality standards. The watershed planning process can be used for waters with or without approved TMDLs or TMDL alternatives.

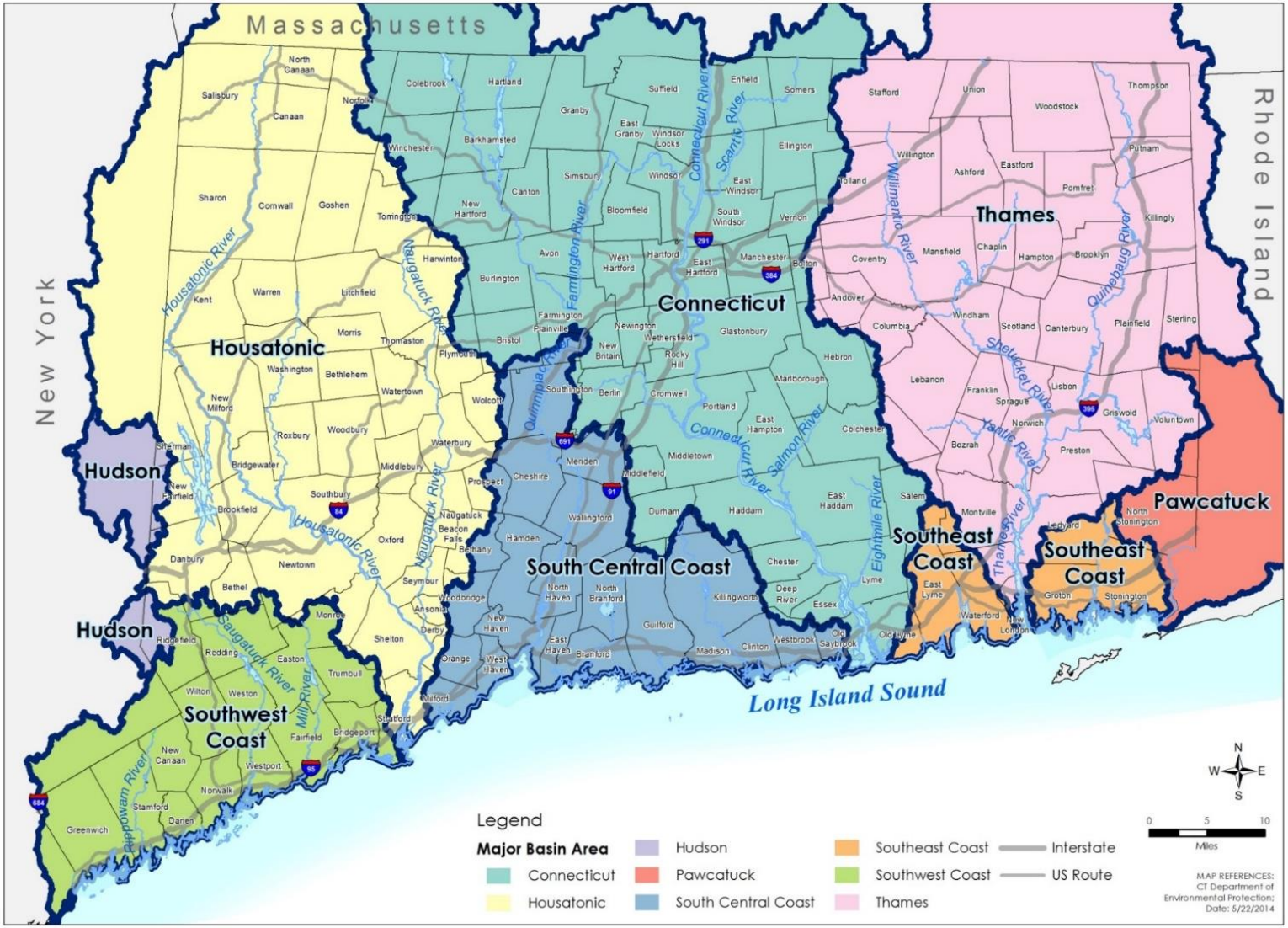

Figure 2 Connecticut's Major Watershed Basins

Watershed Based Plans

Watershed planning is a critical precursor to watershed project implementation. Effective planning is necessary to guide successful watershed efforts. In general, watershed plans identify the following: water quality goals; causes and sources of pollution; structural and nonstructural practices needed to address pollution sources; pollutant reduction goals; cost estimates for projects; project stakeholders and partners; and other important aspects of careful project management, including monitoring approaches to measure implementation results and water quality improvements.

CT DEEP encourages broadening the scope of watershed plans by addressing other water and land resource issues beyond water quality impairments on a watershed scale. Implementation of locally developed watershed plans is one of the primary methods for achieving the CT DEEP NPS Management Program goals and objectives.

There are different options for types of Water Planning Documents to ensure WQS are met. The two most common are TMDLs and nine-element Watershed Based Plans (WBPs).

Nine Element Watershed Based Plans

Under the direction of the CT DEEP Watersheds Section, nine-element WBPs have been developed for watersheds throughout Connecticut to serve as a framework for plan development and implementation within the watershed. Implementation projects from these plans, including in-the-ground water quality restoration or protection projects, have been completed throughout the state with Section 319 funds and other sources of federal, state, local and private funding. Completed and ongoing watershed based plans and other watershed management plans are available on the CT DEEP Watershed Management Plans and Documents website.

EPA Nine Key Elements of Watershed Based Plans

1. Impairment
2. Load Reduction
3. Management Measures
4. Technical & Financial Assistance
5. Public Information & Education
6. Schedule
7. Milestones

Consistent with EPA guidelines, CT DEEP prioritizes projects identified in nine-element WBPs for Section 319-funded watershed projects. Alternative watershed management plans may be applicable in the following situations: when the impairment is caused by a change in physical conditions or is otherwise not specific to a pollutant; when responding to a NPS pollution emergency or urgent NPS public health risk, or when addressing an isolated, small-scale water quality problem.

Healthy Waters

CT DEEP has made strides to identify healthy waters across the state, primarily through the efforts of the Water Monitoring Program, and where future protection efforts may be warranted. Details on these healthy waters are updated in the IWQR every 2 years. There is one healthy watershed that has been identified for development of a WBP; and while the state is willing to explore more in the future, there are several factors that curb our efforts. Connecticut's robust industrial history and high population density make restoration still at the forefront of priorities. Developing WBPs for implementation actions in healthy waters lies with the Connecticut Section 319 NPS Grant program, but that has the financial constraints of planning funds and the modest grant funds in comparison to the costs to protect and restore waters statewide. CT DEEP relies heavily on the willingness of local partners to be the driver for WBP development and implementation actions. These factors require CT DEEP to give careful

consideration for any priorities that can be achieved, including utilizing other strategies to support healthy waters that are discussed below.

Emphasized in the NPS Guidelines, the protection of healthy waters is a component of the CT NPS management framework. Restoration of impaired waters to meet WQS has been the priority of the EPA NPS Program and Connecticut's NPS Program. High-quality or threatened waters are those that could potentially be affected by nonpoint source pollution but are not currently impaired, such as those threatened by changing land uses. These waters may warrant protection for the valuable aquatic resources that may be at risk of irreparable harm.

For waters without NPS impairments, WBPs, TMDLs or Advance Restoration Plans can also be developed to ensure that they remain healthy or not impaired and meeting water WQS for their designated use.

EPA's Healthy Watersheds Program includes both watershed assessment and management approaches that encourage states, local governments, watershed organizations, and other stakeholders to take a strategic approach to conserve healthy components of watersheds, and, therefore, avoid additional water quality impairments in the future. EPA's Healthy Watershed Program facilitates technical exchanges and leverages resources and collaboration.

Land conservation is a valuable watershed management tool to protect healthy waters. The CT DEEP NPS program works regularly with other CT DEEP programs to encourage land conservation, especially of eligible land near vulnerable waterways or within riparian corridors. To support this, NPS Management Program staff provide reviews for land acquisition and management programs on a regular basis. NPS staff will continue these evaluations as they relate to the NPS Program and Healthy Waters.

CT DEEP's Healthy Waters Initiative is an ongoing effort lead by the Water Monitoring Section, to gather data to support water quality assessments and improve understanding of healthy waters in Connecticut using interdisciplinary datasets including water chemistry data, physical habitat assessments, and biological information.

The CT DEEP Water Monitoring Program has studied the relationship between stream health and land cover, leading to identification of least disturbed streams and a statewide statistical model of stream health. The Program also studied the relationship between impervious surface and water quality to identify "Streams of Hope" – or those at a tipping point where active management could return them to a healthy status – across the State.

The Riffle Bioassessment by Volunteers (RBV) Program is a biologically-based method that uses benthic macroinvertebrates to screen for water quality. The Program was branded as a treasure hunt to find the healthiest streams, directing volunteers to target unassessed waters that are likely to be high quality. The Volunteer Stream Temperature Monitoring (VSTeM) Network trains volunteers to deploy contiguous data loggers in waterbodies, to classify them as cold, cool, or warm water habitat – emphasizing locating the coldwater habitats. Together, these helped to expand CT DEEP's inventory of healthy waters.

The Stream Flow Standards and Regulations were adopted in 2011 to protect Connecticut's river and stream systems by establishing stream flow standards, which apply to all river and stream systems in the state through a classification process and require minimum releases from dams. These standards are required to balance river and stream ecology, and wildlife and recreation needs while providing for public health, flood control, industry, public utilities, water supply, public safety, agriculture, and other lawful uses of water. Classifications for all streams across the state have been completed. The streamflow classifications indicate release requirements for dams to maintain a minimum stream flow, in addition to being one of the criteria used by CT DEEP to identify Priority Waters for protection (Class 1) or restoration (Class 3 or 4). Requirements to begin making releases from dams to support flow downstream will begin in the Thames, Pawcatuck, and Southeast Coastal Basins in 2024. Additional information, including a map of Final Adopted Stream Flow Classifications, can be found on the Connecticut Stream Flow Standards and Regulations website.

With direct involvement from the CT DEEP NPS Program, Section 319 funding has been allocated towards supporting the Natchaug River watershed which is generally considered a healthy watershed. The funding first supported the Eastern Connecticut Conservation District to draft measures and implementation actions to address NPS issues in the watershed. More recently, the District received Section 319 funds to develop a Natchaug River Watershed Advisory Committee. The funding will support staff to engage watershed stakeholders to identify implementation measures, encourage project proposals for Section 319 funds and provide education and outreach.

Wild & Scenic Rivers

There are five federally designated Rivers under the 1968 Wild & Scenic Rivers Act in Connecticut. Connecticut has approximately 140 miles of rivers designated as wild and scenic, which accounts for about 2.4% or the state's river miles. Each of these rivers possess Outstanding Remarkable Values (ORVs) to be preserved in free flowing conditions, including scenic, recreational, geologic, fish and wildlife, historic, cultural, or other values. The five designations in Connecticut are for the Eightmile River, the Lower Farmington River and Salmon Brook, the Housatonic River, the West Branch Farmington River, and the Wood-Pawcatuck Rivers Watershed. Additional information, including related Public Law, Management Plans, details on the present ORVs, and maps of each reach can be found on the National Rivers and Streams webpage. CT DEEP Staff have played an active role in their designation and continue to attend meetings and advocate for the designated segments in various reviews.

CT DEEP continues to make efforts to maintain the conditions of these rivers, to protect them from threat, including that of NPS pollution. If additional rivers and streams become eligible for designation, CT DEEP will work with the appropriate parties.

Pollutant-Specific Initiatives

Nutrients

Nutrient pollution is a continuing and growing challenge receiving attention on a national level due to its implications on public health, water quality, and the economy. The complexity and severity of nutrient pollution is increasing in a changing climate. Rivers and streams, lakes, reservoirs, wetlands, and coastal areas and estuaries are all stressed due to excess nutrients. Nutrients, such as phosphorus and nitrogen, are naturally occurring elements and are essential to support plant growth. However, when present in excessive amounts, nutrients contribute to a process called cultural eutrophication, or nutrient

enrichment, which is a major concern for water quality in Connecticut. Excessive loading of nutrients to surface waters can lead to algal blooms, reduction in water clarity, habitat modification, aquatic life impairments and in extreme cases, depletion of oxygen and fish kills.

Understanding the potential sources of nutrient inputs to the environment informs both TMDL and other implementation plans to address the effects that excess nutrients can have on water quality. Nutrient reductions have been targeted for permitted discharges of both phosphorus and nitrogen to address water quality concerns associated with nutrients in freshwater rivers, streams and impoundments as well as in Long Island Sound.

There is an EPA-approved TMDL for nitrogen to achieve water quality standards for dissolved oxygen in Long Island Sound. Nitrogen reduction goals for wastewater treatment plants (WWTPs) were achieved due to treatment plant upgrades, the CT DEEP Nitrogen General Permit Program, and implementation of the Connecticut Nitrogen Credit Exchange Program.

With the successes gained on overall Long Island Sound bottom water hypoxia trends, recent focus has been directed toward the most productive and fragile components of the LIS estuary, coastal embayments. The Second Generation Nitrogen Strategy enhances the TMDL. The strategy has three components: (1) continued nutrient reductions at wastewater treatment plants; (2) reducing nitrogen loads from stormwater and other nonpoint sources statewide; and (3) reducing nitrogen loads to coastal embayments. Additional information can be found on Connecticut's Nitrogen Control Program for Long Island Sound website. Efforts to implement the Second Nitrogen Strategy include but are not limited to: a nutrient trading program for WWTPs, Nitrogen removal upgrades at WWTPs, participation in a Nitrogen Work Group, work on an estuary model, development of a statewide water quality model, and continued embayment data collection.

The discharge of phosphorus from point and nonpoint sources is also a water quality concern for inland surface waters. EPA Region 1 has mandated that all New England states establish limitations on phosphorus in wastewater discharge permits where the potential exists for the discharge to contribute to eutrophication and impair designated uses in downstream waters. In response, CT DEEP has adopted an interim strategy to establish water quality-based phosphorus limits in non-tidal freshwater for industrial and municipal NPDES wastewater discharge permits until numeric nutrient criteria are established in the Connecticut WQS.

CT DEEP and municipalities mandated by EPA are required to construct facilities and treat wastewater for advanced phosphorus removal, and to collaboratively evaluate and make recommendations regarding a state-wide strategy to reduce phosphorus loading to inland non-tidal waters. This also enables municipalities to receive additional funds from Connecticut's Clean Water Fund to remove phosphorus in WWTP plant discharges, regulates fertilizer use and the amount of phosphorus in fertilizers, and requires CT DEEP to work with affected municipalities to develop a state-wide response to address phosphorus in NPS pollution.

A Connecticut NPS Workgroup was formed to evaluate the sources of phosphorus from NPS pollution in stormwater, agricultural runoff, septic system leachate, and soil erosion. The NPS Workgroup reviewed existing programs that address NPS pollution, studied the status and trends of phosphorus in NPS pollution, and identified and assessed methods and strategies to reduce phosphorus in NPS runoff. The

NPS Workgroup published "Recommendations for Phosphorus Strategy Pursuant to PA 12-155 Final Report", in which they made recommendations to expand or add programs to address phosphorus in NPS pollution.

A Water Quality Action Plan (Advance Restoration Plan) that combines the Phosphorus Statewide Strategy for municipal and industrial permittees with a water quality approach to stormwater management and various educational components (i.e. fact sheets, webpages, etc.) is in development to further improve management of water quality impacts from phosphorus.

Bacteria

The Connecticut Statewide Bacteria TMDL addresses bacterial contamination of surface waters throughout the state, including impairments related to recreational use and shellfish consumption. As future bacteria-impaired segments are discovered, and additional data are generated on remaining impairments, new segments will be added to the TMDL. The load reductions required by the TMDL will be implemented through NPDES permits for permitted point sources and through watershed based planning and other voluntary control measures for NPS.

CT DEEP is pursuing improvements at state designated public bathing areas (state beaches). The CT DEEP Water Monitoring program collects samples at each of the state beaches owned by CT DEEP on a weekly basis, to monitor levels of fecal indicator bacteria. Samples with the bacteria above a defined threshold result in a closure of the swimming area. Information and reporting can be found on the program website.

The CT DEEP NPS Program has been involved with projects over the last several years to improve the water quality at state beaches. Rocky Neck State Park in East Lyme is a popular recreational attraction that offers camping, picnicking, hiking, fishing, and swimming to tourists and residents. The East Beach was a focus of a recent investigation to identify hotspots of fecal contamination to East Beach at Rocky Neck State Park, using a multi-pronged approach consisting of four separate analyses was employed at multiple sites within the Bride Brook watershed. This effort involved the services of a canine to help highlight potential sources of bacteria. The result is implementation of recommendations that include the prioritization of septic system replacements throughout the park.

Under a partnership between CT DEEP and the University of Connecticut (UCONN) Center for Land Use Education and Research (CLEAR), *Best Management Practices Manual Development for Managing Water Quality at State Park Beaches and Boat Launches in Connecticut*, aims to develop recommendations for water quality improvements at state parks with designated swim and/or boat launch areas in Connecticut and then develop a green infrastructure BMP guidance document that can be used at other state parks to improve water quality. The objectives of this project are to: 1) identify and prioritize locations at example state parks, for BMPs to improve water quality through addressing stormwater runoff and 2) develop an overall guidance document or online resource for the identification of potential BMPs at designated swim beaches and boat launches throughout the state. It is anticipated that the BMP guidance can be used at any swim beach or boat launch (i.e. not just state parks) to help identify locations to make improvements to water quality and enhance the recreational opportunities.

BMPs are being implemented at one state beach, with the plan of pursuing additional similar projects statewide. Specifically, CT DEEP has conducted an in-house Green Infrastructure project at Chatfield Hollow State Park. CT DEEP's Engineering Division was already planning for reconstruction of the park's parking lot. The freshwater beach at the park was impacted by stormwater runoff, which caused erosion and affected the water quality at the beach, resulting in beach closures for swimming. CT DEEP Watersheds Section staff and Water Monitoring Section staff coordinated with CT DEEP's Engineering Division to incorporate Green Infrastructure into the project, including riprap to control flow and bioswales to infiltrate runoff. UCONN CLEAR provided onsite guidance based on the aforementioned BMP Manual. The Engineering Division also referred to the updated Stormwater Quality Manual during the design development for this project.

Low Impact Development and Green Infrastructure

Low Impact Development (LID) is a land use planning and site design strategy for the management of stormwater runoff that uses small scale controls integrated throughout a site to infiltrate, filter, store, detain, and evaporate precipitation close to its source, replicating the natural hydrology of a site. LID techniques decrease surface runoff, erosion, and NPS source pollution and conserve natural site features to restore water quality and regulate water quantity. Green Infrastructure (GI) refers to broader systems or practices that use or mimic natural processes to manage storm runoff, often in an urban context.

CT DEEP staff across various programs work to promote GI and LID collaboratively with municipalities. Implementing GI projects may also reduce urban runoff loads on Combined Sewer Outfalls (CSO) communities. Connecticut has maintained a multi-million dollar reserve with its Clean Water State Revolving Funds for GI Project implementation in CSO communities. Additional funding may become available for GI projects through Connecticut's Clean Water Fund Priority List. All projects will compete with other Clean Water Fund proposals.

CT DEEP is working with partners at the federal, state and local levels to provide information, educational materials and technical assistance in the application of LID and GI techniques, building on existing programs such as the Connecticut Office of Policy and Management Office of Responsible Growth, the UCONN Nonpoint Education for Municipal Officials (NEMO) Program, and the EPA Smart Growth Program. The goal is to build relationships and promote LID and GI management practices with local land use agencies, academic institutions, nonprofit groups, the building industry and the public. Incorporating LID and GI into land use plans and regulations can decrease impervious surfaces and limit runoff, leading to restored water quality and recharge of rivers, streams and ground water supplies. CT DEEP Watersheds Section staff involved in the environmental review process encourage developers to consider GI and LID practices where feasible.

2.3. Coastal Nonpoint Pollution Control

Long Island Sound is one of Connecticut's most important natural and economic resources, serving as habitat for many aquatic marine invertebrates, fish, and wildlife populations, a commercial and recreational resource to the citizens of Connecticut and New York, and contributes significantly to the regional economy.

NPS pollution contributes nutrients, bacteria and pathogens, sediments, contaminants and litter to Long Island Sound and its embayments. The effects of NPS pollution in the coastal environment can lead to beach closures, fishing and shellfishing restrictions and prohibitions, sedimentation of bottom habitats, fish kills and loss of other marine organisms due to hypoxia. Large amounts of freshwater runoff discharged directly into saltwater tidal wetlands can also upset the delicate balance of fresh- and saltwater in the wetland ecosystem, leading to an increasing invasive freshwater plant species and the degradation of tidal wetlands. Failing or inadequate Subsurface Sewer Disposal Systems can release nutrients that contribute to hypoxia problems in Long Island Sound (See Section 4.1.3).

Coastal Area and Coastal Boundary

Per the Connecticut Coastal Management Act (CGS. 22a-90 to 22a-113), the Coastal Area includes land and water within the area delineated by the following: the westerly, southerly and easterly limits of the state's jurisdiction in Long Island Sound; the towns of Greenwich, Stamford, Darien, Norwalk, Westport, Fairfield, Bridgeport, Stratford, Shelton, Milford, Orange, West Haven, New Haven, Hamden, North Haven, East Haven, Branford, Guilford, Madison, Clinton, Westbrook, Deep River, Chester, Essex, Old Saybrook, Lyme, Old Lyme, East Lyme, Waterford, New London, Montville, Norwich, Preston, Ledyard, Groton and Stonington (CGS 22a-94(a)). Activities and actions conducted within the coastal area by Federal and State Agencies must be consistent with all of the applicable standards and criteria contained in the Connecticut Coastal Management Act.

The Coastal Boundary is a subset of the Coastal Area that represents an area within which activities regulated or conducted by coastal municipalities must be consistent with the Coastal Management Act. The Coastal boundary is a contiguous line delineated on the landward side by the interior contour elevation of the one hundred year frequency coastal flood zone, as defined and determined by the National Flood Insurance Act as amended (USC 42 Section 4101, P.L. 93-234), or a one thousand foot linear setback measured from the mean high water mark in coastal waters, or a one thousand foot linear setback measured from the inland boundary of tidal wetlands mapped under CGS 22a-20, whichever is farthest inland; and shall be delineated on the seaward side by the seaward extent of the jurisdiction of the state.

The Connecticut Coastal Management Manual was developed as a tool for coastal land use agents, boards and commissions, as well as developers, consultants and individuals, to use in understanding how to apply the standards and policies of the Connecticut Coastal Management Act. Figure 3 shows both the coastal area and coastal boundary for Connecticut.

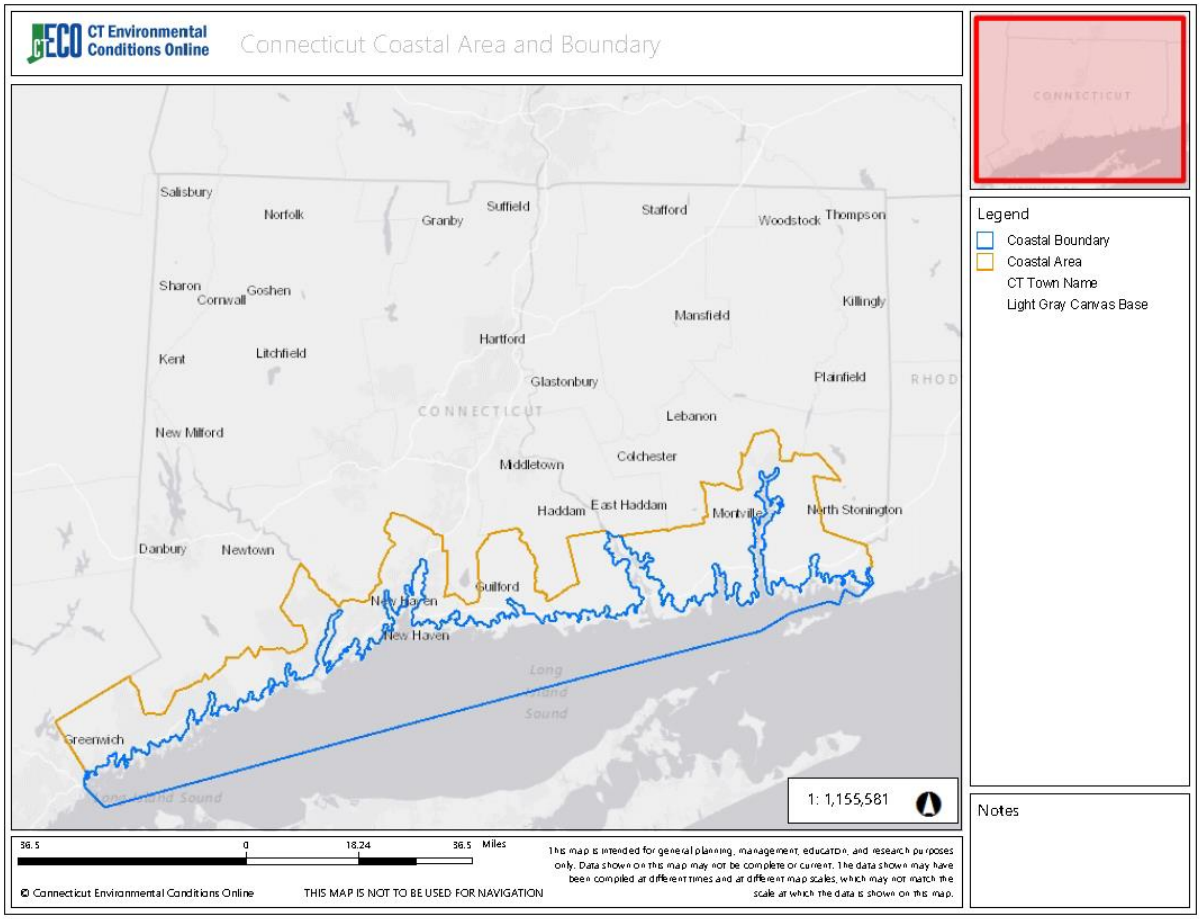

Figure 3 Connecticut Coastal Area and Coastal Boundary per CT ECO

Coastal Nonpoint Pollution Control Program

Connecticut's Coastal Nonpoint Pollution Control Program (CNPCP) established pursuant to Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA), addresses several major categories of NPS pollution including agriculture, urban sources, marinas and recreational boating, hydromodifications, and wetlands and riparian areas. The CNPCP is a networked program that relies on several well-established and effective programs to reduce or eliminate NPS pollution affecting coastal waters, and several of them are administered or overseen by CT DEEP.

The efforts of the CNPCP are significant to address NPS issues in CT however it does not have its own management plan document. Rather, Connecticut's CNPCP is based on the Connecticut Coastal Management Act, Connecticut's administration of the Section 319 Nonpoint Source Management Program, and the State's Water Pollution Control Authority. Per the direction of CZARA, the Connecticut Nonpoint Source Management Program Plan implements the Connecticut CNPCP and some Section 319 funding is used for projects that align with the efforts outlined per Connecticut's CNPCP.

The CNPCP addresses five major sources of pollution: agriculture, urban sources, marinas and boating, hydromodifications, and wetlands and riparian areas, Connecticut received an exclusion for forestry, because those activities are addressed in other program documents. Considerations for the five major

sources in relation to the state's CNPCP are included in the appropriate subsections of section 4 of this Connecticut NPS Management Program Plan and incorporated into the milestones.

In addition to these foundational programs, there are several networked programs and authorities that are used to implement each CNPCP program component. The CT DEEP Land & Water Resources Division (LWRD) is responsible for administering the CNPCP in conjunction with the Water Planning and Management Division. Implementation of Connecticut's CNPCP is focused on:

- Controlling nitrogen and pathogens, especially from new development, existing urban sources, and runoff from marinas that are proximate to Long Island Sound and its major tributaries.
- Addressing NPS pollution control needs both on a case-by-case and a watershed basis through various methods including coastal site plan review, state regulatory authority (e.g., tidal wetlands and structures, dredging, and fill regulatory programs), Section 319 implementation projects, and broader watershed planning initiatives.
- Continuing technical assistance to municipalities to address nonpoint source impacts from new and existing development encouraging use of Low Impact Development and Green Infrastructure techniques.
- Protecting tidal wetlands and riparian areas, including through promoting the use of Living Shorelines where appropriate.
- Improving the monitoring and tracking of Subsurface Sewage Disposal Systems performance in areas impacting coastal waters.

LWRD Staff are responsible for administering statutes related to coastal NPS concerns, including the State's Tidal Wetlands statutes (CGS 22a-359 - 22a-363h), and Structures, Dredging, and Fill statutes (CGS 22a-28 - 22a-35). DEEP staff working on coastal NPS topics work directly with those DEEP staff who administer the 319 Program.

Long Island Sound Study (National Estuary Program)

Other regional and federal groups are also working collaboratively to address coastal NPS pollution issues that affect Long Island Sound. EPA, CT DEEP, and the New York Department of Environmental Conservation formed the Long Island Sound Study (LISS) in 1985, a bi-state partnership consisting of federal and state agencies, user groups, concerned organizations, and individuals dedicated to restoring and protecting the Sound. The LISS Comprehensive Conservation and Management Plan (CCMP), describes the Sound's water quality problem and a series of actions to address and solve these problems.

The Long Island Sound Study

The Long Island Sound Study (LISS), a national estuary programs, is a cooperative effort involving researchers, regulators, user groups and other concerned organizations and individuals. These people are working together to protect and improve the health of the Sound by implementing the Sound's Comprehensive Conservation and Management Plan, which is focused on the following priorities:

- Water quality
- Habitat and wildlife conservation
- Coastal resiliency
- Environmental engagement and education

The LISS has allocated funding to CT DEEP for several projects that will directly implement portions of this NPS Management Program Plan. Such projects include: implementing dam removals, stormwater BMPs at State Parks and Boat Launches, further development of a decision support tool for nutrient load reductions, continued study of Subsurface Sewer Disposal Systems (SSDS) and their potential impacts on water

quality in coastal embayments. Additionally, funding was provided for updates to the Connecticut Stormwater Quality Manual and the Soil Erosion and Sediment Guidelines (see Sections 2.10, 4.1.1 and 4.1.7).

2.4. Pollution Prevention

Pollution prevention emphasizes preventing or minimizing pollution, rather than controlling it once it is generated. Pollution prevention is an effective NPS pollution control strategy and therefore plays a central role in the State's NPS Management Program, consistent with CT DEEP's commitment to pollution prevention. Pollution prevention is essential to restoring impaired waters and protecting high quality waters. Numerous pollution prevention practices are available for a variety of land uses and NPS pollution source categories, many of which are emphasized throughout the recommendations contained in this plan. CT DEEP has a Pollution Prevention (P2) Program that coordinates pollution prevention activities in cooperation with the NPS Program.

2.5. CT DEEP's Stormwater Program

In Connecticut, most stormwater pollution from developed areas that is collected in storm drains, or that discharges from construction, commercial, industrial or CT DOT sites, is regulated by Stormwater General Permits, so it is considered point source pollution. Stormwater permitting and compliance is conducted by the CT DEEP Water Permitting and Enforcement Division (WPED) under the authority of the NPDES Stormwater provisions and supporting state statutes and regulations. CT DEEP regulates stormwater discharges from the following sources:

- Construction sites with land disturbance of one or more acres
- Industrial activities (includes marinas and boatyards)
- Commercial sites with more than five acres of impervious area
- MS4 (Municipal separate storm sewer system) discharges.

Runoff that is not regulated by one of these general permit programs is considered nonpoint source pollution and is addressed by the State's NPS Management Program. Existing regulatory and non-regulatory programs in Connecticut that address point and nonpoint stormwater and runoff pollution are discussed in Section 4.1.1 of this plan.

2.6. Subsurface Sewage Disposal Systems

In Connecticut, subsurface sewage disposal systems (SSDS, also known as septic systems) are regulated by local health departments, CT DEEP's Water Permitting and Enforcement Division, or the Connecticut Department of Public Health depending on the design flow capacity and the type of treatment and disposal system. Additionally, CT DEEP LWRD Staff provide comments about location of SSDS through the Coastal Site Plan Application process.

Connecticut does not currently require inspections and upgrades of SSDS when residential properties are sold. However, CT Public Health Codes require that failed SSDS must be repaired and it's a common

practice for a residential SSDS to receive a clean out and inspection as part of the home inspection when buying a residence. Structural and non-structural measures to minimize the potential for system failure and associated NPS pollution impacts are described in Section 4.1.3 of this plan.

2.7. Agricultural NPS Partners

Agricultural NPS pollution in Connecticut is addressed primarily through outreach and technical assistance programs provided by state and federal agencies including the USDA Natural Resources Conservation Service (NRCS), USDA Farm Service Agency, University of Connecticut Cooperative Extension System, Connecticut Conservation Districts, CT DEEP, and the Connecticut Department of Agriculture. CT DEEP has a general permit program for Concentrated Animal Feeding Operations (CAFO), which requires Comprehensive Nutrient Management Plans (CNMPs), and alternative agricultural waste management technologies. Section 4.1.2 of this plan describes statewide NPS planning and management recommendations for agricultural practices in Connecticut.

2.8. Technical Assistance and Outreach

In addition to the CT DEEP NPS Program, Connecticut's Soil and Water Conservation Districts (Conservation Districts), UCONN CLEAR and the NEMO program, and other NPS Program partners provide technical assistance and outreach on NPS management issues in Connecticut.

Conservation Districts

The Connecticut Conservation Districts provide technical assistance and outreach to municipalities and landowners. Technical and educational services provided include erosion and sedimentation control, management and control of NPS pollution, management of stormwater runoff, and promotion of watershed management with recommendations for best management practices. Districts partner with various public and private stakeholders to develop and implement watershed plans and local initiatives focused on protecting and restoring watershed health. Their partners may include CT DEEP, NRCS, municipalities, regional planning entities, and natural resource and land preservation groups.

CT DEEP has provided Section 319 funding to the five Connecticut Conservation Districts to provide technical assistance for NPS issues across the state. The work done by the Conservation Districts is highly valuable for the NPS management framework. As the five Conservation Districts work on a regional basis, they act as watershed coordinators, and CT DEEP NPS Management Program staff may redirect inquiries from the public to the Districts, who are better equipped to conduct site visits and provide related technical assistance and regional expertise. With limited NPS Management Program staff capacity at CT DEEP, the Districts provide invaluable work and consistently help support the CT DEEP NPS Program statewide.

UCONN CLEAR and NEMO

The University of Connecticut (UCONN) Center for Land Use and Education Research (CLEAR) produces research, tools, and outreach programs to help inform land use decisions and to make them resilient in a changing climate. CLEAR continues to develop GIS mapping tools to analyze Connecticut's land uses and impervious surfaces and how they relate to natural resource protection.

The Nonpoint Education for Municipal Officials (NEMO) program began in 1991 at UCONN, as a collaboration of the Cooperative Extension System, the Connecticut Sea Grant College Program and the Natural Resources Management and Engineering Department. The fundamental premise of the program is that education, not regulation, is the most efficient and cost-effective means of influencing land use decisions. The NEMO program provides information, education and assistance to local land use officials and other community groups on how they can accommodate growth while protecting their natural resources and community character. NPS management issues addressed by the NEMO program and CLEAR include LID and green infrastructure, riparian buffers, and municipal plans and regulations that protect water quality.

Potential NPS Program Partners in Connecticut	
Federal	**Local/Regional**
U.S. Environmental Protection Agency U.S. Department of Agriculture Natural Resources Conservation Service U.S. Army Corps of Engineers U.S. Department of Commerce National Oceanic and Atmospheric Administration National Weather Service U.S. Department of Interior National Park Service U.S. Fish and Wildlife Service U.S. Geological Survey	Municipalities Regional Councils of Government Conservation Districts Water Utilities and Water Pollution Control Authorities Local Health Districts CT Conference of Municipalities CT Council of Small Towns
State	**Other**
CT Department of Energy and Environmental Protection CT Department of Public Health CT Department of Transportation CT Department of Agriculture/Aquaculture CT Department of Policy and Management CT Department of Economic and Community Development CT Department of Emergency Services and Public Protection CT Department of Administrative Services University of Connecticut (CLEAR, NEMO, CIRCA, Sea Grant) CT Council on Soil and Water Conservation Connecticut National Estuarine Research Reserve	Tribes Private Colleges and Universities Watershed Organizations Advocacy Groups and other NGOs Land Trusts Industry Organizations News Media Organizations Neighboring State and County Governments

2.9. Environmental Justice and Equity

Background

Connecticut General Statute defines an Environmental Justice Community (EJC) as a United States census block group, as determined in accordance with the most recent United States census, for which thirty per cent or more of the population consists of low-income persons who are not institutionalized and have an income below two hundred per cent of the federal poverty level; or (B) a distressed municipality, as defined (CGS §22a-20a). A distressed municipality, as designated by the Connecticut Department of Economic and Community Development, includes municipalities that no longer meet the

threshold requirements but are still in a 5-year grace period. (CGS Sec. 32-9p). Fitting into that grace period, eight towns continue to be eligible for distressed municipality benefits because they dropped off the list within the last five years.

Governor Lamont's Executive Order No. 21-3 established a Connecticut Equity and Environmental Justice Advisor Council (CEEJAC) to advise the DEEP Commissioner on current and historic environmental injustice, pollution reduction, energy equity, climate change mitigation and resiliency, health disparities, and racial inequity, including but not limited to the following: a) integrating environmental justice considerations into the programs, policies, and activities of DEEP; b) providing mechanisms for EJCs to have a meaningful opportunity to participate in any decision to allow in such communities certain types of facilities which, by the nature of their activity, have the potential to increase environmental and public health stressors and where appropriate, to limit the further placement and expansion of such facilities in these communities; c) developing a model plan for community engagement and stakeholder outreach centered around meaningful participation; and d) strengthening DEEP's partnerships with other governmental agencies, other states, tribal, local governments, and community leaders and organizations regarding EJ issues.

CEEJAC is comprised of representatives from: EJCs, Connecticut-based environmental advocacy organizations, large and small business and industries, municipalities or regional Councils of Government. Additionally, CEEJAC includes representatives from the following State agencies: DPH, DECD, DOH, DOT; the Commissioner of DEEP appoints additional members to CEEJAC as needed. Each member serves a two-year term, or until a successor is appointed.

Strategies

Connecticut's NPS Program directs funding to EJCs through multiple funding sources including funding provided by EPA through the Clean Water Act Section 319 and Section 604b, as well as through the Long Island Sound Study, and other funding sources when available. Programs associated with federal funding are subject to Justice40 Initiative requirements, so benefits to EJCs are considered during project award selection. In administering the Section 319 Grant, DEEP follows the actions outlined in the most recent guidance or memorandums published by the EPA, in conjunction with any state programs or guidance. Additionally, the grant programs prioritize projects that benefit EJCs in which these projects receive priority consideration when reviewing and selecting projects for funding.

For example, the Urban Waters Initiative is being piloted in the neighborhood of Fair Haven. This neighborhood, which straddles the Lower Mill River Watershed and the Lower Quinnipiac River Watershed in New Haven has a large EJ population. This was selected for the pilot program because CT DEEP was aware of several strong partnerships already existing in the Mill River Watershed that would be able to ensure the initiative stayed on track, including through partnerships with the Southwest Conservation District and Save the Sound. The major goal of the first phase of the Mill River Urban Waters Initiative was capacity building, to identify existing local community groups and individuals who would be interested in pursuing future NPS efforts. In this format, CT DEEP looks to take a more progressive approach to tackling NPS issues in EJCs, by providing resources and support, creating jobs, and initiating the framework so that these groups can seek out additional funding in the future. Phase 1 is completed and Phase 2 is ongoing. Phase 1 included work including, but not limited to support for student projects at a vocational aquaculture high school, opening a Water Quality lab in the watershed, conducting a floatable trash analysis, hiring local community leaders, and identifying concerns in the

watershed to generate NPS-related project proposals. Phase 2 builds off of the work done in Phase 1, to further support the Water Quality lab, offer outreach regarding environmental stewardship, continue to work with the vocational high school, and further develop the project proposals into project briefs. This work was conducted engaging with community members in a predominantly EJC. Following the culmination of this project, the intention is for the group to have the capacity to apply for additional funding to implement the projects identified in Phases 1 and 2, through funding such as the Section 319 NPS grant or other comparable opportunities. CT DEEP intends to duplicate the pilot project in other similar watersheds across the state. by identifying additional watersheds that have robust existing partnerships in the watershed and share the same need for increased community engagement and capacity building, and pursing NPS funding sources to establish an Urban Waters Initiative. One watershed has been identified as a potential candidate to develop the next Urban Waters Initiative project.

NPS Staff continue to have direct communications with members of CT DEEP's Office of Environmental Justice to remain up to date on state policies and procedures related to EJCs.

2.10. Climate Change

Water resources in Connecticut are affected by climate stressors, including increasing temperatures, changes in precipitation patterns, extreme weather events and rising sea levels. Depending on the geographical location, water quality may be affected by higher water temperatures and changes in the timing, intensity, and duration of precipitation, including droughts, floods, and storms. Increased and more frequent extreme precipitation events may create infrastructure operation and maintenance challenges, as increased runoff strains antiquated and undersized storm sewer pipes and culverts, delivering greater pollutant loads to receiving waters. Additionally, sea level rise will affect freshwater by increasing the salinity of coastal rivers and bays due to saltwater intrusion.

Critical infrastructure in coastal communities, including interstate highway systems, rail lines, and local airports are expected to experience tidal flooding, without storm action, due to increased sea level. Notably, the City of Bridgeport has experienced 6 inches of sea level rise since 1965, which is higher than current global rates.

Climate Change and Connecticut's Coastline

Over 60% of CT's population lives in the coastal area, and 30% of the state works within the coastal area.

Connecticut has 618 miles of coastline in the form of beaches and estuaries, which are susceptible to the impacts of rising sea level and climate change.

Projections show that by 2080 Connecticut could lose up to 24,000 acres due to sea level rise.

Predictions by the Connecticut Institute for Resilience and Climate Adaptation (CIRCA) show Connecticut sea level rise could increase 1.5 feet by 2050 and up to 3 feet by 2100, based on the level of action taken today to reduce carbon emissions. Based on scenarios, CIRCA recommends that Connecticut plan for the upper end of the range of values projected of sea level rise for up to 20 inches of sea level rise higher than the national tidal datum in Long Island Sound by 2050 and that it is likely that sea level will continue to rise after that date. CIRCA also recommends that the scenarios be updated at least every 10 years, or more frequently, to incorporate the best available science and new observations.

CT DEEP incorporates changing climate conditions into its NPS Management Program by prioritizing efforts which offer flexibility and adaptability to the various facets of a changing climate, and promoting programs and projects which mitigate or reduce threats associated with climate change.

2.10.1. Stormwater Runoff Guidance for developed areas

Stormwater runoff can be considered both a point source and a nonpoint source of pollution.

Stormwater runoff that flows into a conveyance system and is discharged through a pipe, ditch, channel, or other structure is considered a **point source** discharge under EPA's National Pollutant Discharge Elimination System (NPDES) permit program, as administered by CT DEEP.
Stormwater runoff that flows over the land surface and is not concentrated in a defined channel is considered a type of **nonpoint source pollution.**

The most direct way that climate change affects NPS pollution is through increased stormwater runoff due to increased storm intensity. Stormwater can be both permitted and nonpermitted (see Section 4.1.1) The Connecticut Stormwater Quality Manual and the Connecticut Guidelines for Soil Erosion & Sediment Control were updated in 2023 and are effective as of March 30, 2024. These revisions were developed in partnership with the Connecticut Council on Soil and Water Conservation, with funding from the Long Island Sound Study. Both documents support efforts to maintain and improve water quality by addressing NPS pollution when land uses are undergoing development as well as for post-development conditions. CT DEEP will provide guidance on these newly updated resources, including on their climate change and resiliency components as needed.

The Stormwater Quality Manual provides guidance on the measures necessary to protect the waters of the State of Connecticut from the adverse impacts of post-construction stormwater runoff. This manual focuses on site planning, source control, and stormwater treatment practices and is intended for use as a planning tool and design guidance document by the regulated and regulatory communities involved in stormwater quality management.

The Stormwater Quality Manual incorporates climate change and resilience considerations for design and implementation in the following ways:

- Preserving pre-development site hydrology using LID site planning and design strategies and structural stormwater BMPs
- Discussion of updated design storm precipitation for stormwater quantity and quality control
- Sea level rise and other considerations for stormwater BMP siting and design in coastal areas
- Design considerations for mitigating the potential negative impacts of climate change on stream temperatures and nutrient loads

In addition, the manual emphasizes the importance of considering future conditions when designing and implementing stormwater BMPs, including long-term maintenance, to ensure longevity.

The Soil Erosion & Sediment Control Guidelines provide information to government agencies, regulated communities and the public as a reference for projects that require erosion and sediment control planning, design, and implementation, for minimization of impacts based on best currently available technology.

The Soil Erosion & Sediment Control Guidelines incorporate climate change and resilience considerations for in the following ways:

- Preserving pre-development site hydrology through the use of LID site planning and design strategies and erosion and sedimentation control measures.
- Updating design storm precipitation for design of erosion and sedimentation controls and post-construction stormwater measures.
- Managing coastal erosion as communities seek methods of adapting to sea level rise and increased coastal erosion and inundation driven by climate change.
- UCONN is conducting ongoing research on design storm precipitation estimates to account for projected future increases in extreme rainfall to better inform climate resilient design for Connecticut.
- Consider the use of greater design storm rainfall depths to account for projected future increases in extreme precipitation for post-construction based on the latest climate change projections for Connecticut and a planning horizon corresponding to a minimum 50-year service life for the proposed infrastructure.

2.10.2. Resiliency and Adaptation

The CT DEEP Climate Change Program is actively pursuing partnerships, funding, and projects that promote climate resiliency and adaptation. This includes considerations that climate impacts can disproportionately affect urban and rural communities, which may be predominantly EJCs, as well as resiliency and adaptation measures for Connecticut's coastal communities.

CT DEEP partnered with UCONN to launch the Connecticut Institute for Resilience and Climate Adaptation (CIRCA), to increase the resilience and sustainability of communities vulnerable to the growing impacts of climate change on the natural, built, and human environments through a multi-disciplinary approach bringing together experts in the natural sciences, engineering, economics, political science, finance, and law to provide practical solutions to a changing climate. CIRCA combines the research capabilities of UCONN with the policies and regulatory experience of CT DEEP to ensure the resilience and sustainability of built and natural environments of the coast and watersheds of Connecticut. These solutions will help coastal and inland floodplain communities in Connecticut and throughout the Northeast better adapt to the changing climate and to improve the future resilience and sustainability of the State's highly developed – yet habitat and natural resource-rich – coastline and inland watersheds.

CT DEEP often works closely with UCONN CLEAR staff, including on resiliency measures. UCONN CLEAR houses the CT NEMO Program, and Adapt CT, an outreach partnership of the Connecticut Sea Grant and UCONN CLEAR, in which the two entities work to provide information, tools, trainings & workshop opportunities to assist municipalities, businesses & residents of Connecticut in their efforts to prepare for & adapt to the impacts of a changing climate. Drawing on expertise from faculty within multiple departments at UCONN and other universities, municipal officials, consultants, and lawyers, to share the most recent information and research that communities need to make decisions on how to best adapt to the climate change impacts facing Connecticut.

Connecticut General Statute regarding Flood Management requires that predicted sea level rise be considered in "flood proofing" evaluations for state projects or publicly funded projects, plans for municipal evaluation and hazard mitigation plans, civil preparedness plans, and plans of conservation and development. It also tasks the Marine Sciences Division of UCONN to publish a sea level change scenario for the state based upon the sea level change scenarios published by the National Oceanic and Atmospheric Administration (NOAA) and other available scientific data necessary to create a scenario applicable to the state coastline. The adopted sea level change scenario for Connecticut is up to 20 inches higher than the national tidal datum in Long Island Sound by 2050. This sea level change scenario is meant to guide municipalities and the state in preparing municipal evacuation or hazard mitigation plans, civil preparedness plan and program, municipal plans of conservation and development, and revisions to the state's plan of conservation and development.

A Governor-proposed Bill (Governor's Bill No. 11 LCO No. 577) would allow municipalities to establish resiliency improvement districts to finance projects, including key infrastructure, related to climate change mitigation, adaptation, or resilience. Among defining key terms related to resiliency improvements districts and the authority these hold, the bill also details the requirements for adopting a district master plan. It also requires CT DEEP and CT DPH to review and revise their regulations pertaining to water supply and their permitting processes for SSDS and any attendant regulations, based on most recent climate projections presented by the Marine Services Division of UCONN.

CT DEEP has announced the formation of a new Office of Climate Resiliency within the Bureau of Water Protection and Land Reuse. The Office will address the urgent need to respond swiftly to the challenges posed by climate change. In light of the increased frequency and intensity of climate-related events, such as flooding impacts there is a need to take proactive measures to enhance community resilience and mitigate the impacts of these environmental changes. It will fortify CT DEEP's commitment to climate resilience and sustainability and will allow the agency to build upon the foundation of outstanding work already being done by WPLR in the areas of community resilience, especially in areas of flood protection, green infrastructure, water quality, and habitat restoration. The Office will lead management of climate resilience planning grants, launch a capital matching grant program for resilience implementation, and coordinate efforts to deploy green infrastructure and nature-based solutions. The CT DEEP NPS Management Program will work closely with the Office of Planning and Resilience, particularly on green infrastructure and nature-based solution efforts.

CT DEEP's NPS Management Program will continue to incorporate new climate change-related guidance as it becomes available. CT DEEP will look for opportunities to offer trainings and events to support and inform local adaptation efforts, as well as to help coordinate and oversee funding opportunities for municipal adaptation work in the region through various regional and federal collaborations. CT DEEP has provided and will continue to provide multiple channels of assistance for city and town planners incorporating adaptation measures into their local activities.

To increase resiliency, CT's Clean Water Fund Priority List also includes a reserve category for the construction of resiliency projects which include GI. While the Clean Water Fund primarily focuses on funding regulated wastewater discharges, this reserve presents an opportunity to use GI to address certain unregulated stormwater discharges (i.e. runs off from non-regulated properties such as residential and small commercial properties prior to their discharge into regulated storm or combined sewer systems) in a more resilient manner through the use of GI.

2.10.3. Climate Resiliency Planning

CT DEEP will support climate resiliency and adaptation in the development of Watershed Based Plans and alternative Watershed Management Plans, acknowledging the co-benefits of the two. As WBPs take a holistic approach to NPS issues, in addition to water quality restoration and protection goals, such plans may set relevant climate resiliency goals. Such WBPs will stay ahead of the curve in a changing climate, and promote implementation efforts that will be more likely to withstand future conditions.

CT DEEP has begun incorporating climate change and coastal resiliency into recent Watershed Based Plans, including the Wood-Pawcatuck Flood Resiliency Management Plan (2017), the Niantic Watershed Based Plan (2020), and the Deep Brook/Pootatuck Watershed Based Plan (under development in 2024).

The Wood-Pawcatuck Flood Resiliency Management Plan (2017) was developed "to help local decision-makers think more strategically about ways to utilize natural systems to provide more effective strategies to reduce flooding, while also benefitting the watershed ecosystem. The protection and restoration of natural resources in the watershed will reduce flood potential while protecting water quality and ecological health." (Fuss & O'Neill, 2017, p. 13). Many of the elements of this plan overlap with the EPA's nine-element WBP requirements. Therefore, the Wood-Pawcatuck serves as an example for other watershed associations to incorporate flood hazard mitigation into their watershed plans where there is overlap with fixing water quality impairments.

The Niantic Watershed Based Plan (2020) addresses Climate Change and Coastal Resiliency, recognizing that portions of the watershed are located in areas vulnerable to coastal flooding resulting from sea level rise and storm surge associated with climate change projections. As a result, climate change adaptation strategies for coastal areas within the Niantic Watershed are addressed in Section 3.3 of the watershed plan.

DEEP will continue to encourage inclusion of climate change and resiliency within WBPs where appropriate, such as BMPs with flexibility to adapt to the consequences of climate change, to function optimally in current and future conditions. DEEP will consider technical or financial support for those who do not have the capacity to incorporate climate change and resiliency into WBPs or alternative plans.

2.10.4. Greenhouse Gas Emissions

In addition to adapting to the changing climate, CT DEEP is taking action to reduce greenhouse gas (GHG) emissions. The following paragraphs summarize CT DEEP's activities related to this topic. However, emission reductions are outside the scope of CT DEEP's nonpoint source programs.

Connecticut is at the forefront of U.S. states responding to the challenges posed by global climate change. After nearly two decades in which GHG rose significantly, Connecticut succeeded in returning GHG emissions to 1990 levels by 2010, a goal set by the New England Governors and Eastern Canadian Premiers in 2001 as part of the first multi-national, multi-jurisdictional framework for climate change action.

Connecticut is statutorily required to reduce emissions to 45 and 80 percent below 2001 levels by 2030 and 2050, respectively. The state has achieved a rapid decline in emissions, primarily a result of power sector emission reductions associated with improved energy efficiency, a shift from dirtier fossil fuels such as coal and oil to natural gas, and increased deployment of renewable energy sources. Connecticut is implementing a suite of complementary strategies to ensure that the state is on a course to achieve its mandatory GHG reductions. The range of GHG reduction actions include direct regulations, monetary and non-monetary incentives, market-based mechanisms, and recognition for voluntary actions.

The creation of the Governor's Council on Climate Change (GC3) in 2015 through Executive Order No. 46, required that the Council "examine the efficacy of existing policies and regulations designed to reduce greenhouse gas emissions and identify new strategies to meet the established emission reduction targets" and to "establish interim goals that, if met, will ensure that the state will achieve the 2050 target." After a thorough review of a variety of mitigation scenarios that drive down GHG emissions in the electric, building, and transportation sectors, the GC3, through consensus, recommended an economy-wide reduction target of 45 percent below 2001 levels by 2030. As one of the most ambitious mid-term reduction targets in the nation, the selected target ensures Connecticut is on a downward trajectory from today's GHG emissions to its mandated 80 percent reduction by 2050 target. The GC3's mid-term reduction target recommendation was adopted by the General Assembly and signed into law via Public Act 18-82 Act Concerning Climate Change Planning and Resiliency. In addition to setting a mid-term target, the GC3 released a set of recommendations to meet the mid-term target in the report *Building a Low Carbon Future for Connecticut, Achieving a 45% reduction by 2030.* The recommendations in the report build upon the successful policies and measures the state has implemented to date, propose strengthening existing programs, and put forth new strategies to help Connecticut reach its mid- and long-term GHG reduction targets. The recommendations underscore that there is no single solution; instead, they offer a balanced mix of strategies that allow for flexibility and mid-course adjustments as technologies and costs change over time. More specifically the recommendations in the report lay out a long-term vision for decarbonizing Connecticut's economy through three primary strategies:

- Zero-carbon electricity generation
- Clean transportation
- Clean, efficient, and resilient buildings

In 2019, Executive Order 3 amended Executive Order No. 46 to re-establish and expand the membership and responsibilities of the GC3, which also includes new considerations for adaptation and resilience in the face of climate change impacts. This includes a 100% zero carbon target for the electric sector by 2040.

In 2021, the Governor signed Executive Order 21-3 which calls for 23 actions supporting recommendations proposed by the GC3 and directs the State executive branch state agencies to take significant actions within their authority to reduce carbon emissions. Actions cover the areas of buildings and infrastructure; clean transportation; community climate resilience; health, equity and environmental justice; economic development and jobs; and natural and working lands. The Executive Order advances affordable heating and cooling for State residents and businesses, energy efficient and resilient building codes, a statewide battery electric bus fleet, shovel-ready resilience projects, the first state government assets and operation climate vulnerability assessment, and increasing resilience and

carbon sequestrations in forests and agriculture. It also establishes the first Connecticut Equity and Environmental Justice Advisory Council, Connecticut's first Office of Climate and Public Health, and the first Connecticut Clean Economy Council, and continues the work of the Governor's Council on Climate Change.

CT DEEP will continue implementing the strategies outlined in the GC3 report as well as its Comprehensive Energy Strategy in order to maintain and advance progress toward the goal of reducing statewide climate-disrupting emissions by 80 percent from 2001 levels by mid-century.

Connecticut is a member of the Regional Greenhouse Gas Initiative (RGGI), which is the first market-based regulatory program in the United States to reduce greenhouse gas emissions. RGGI is a cooperative effort among many of the Northeast U.S. states to cap and reduce carbon dioxide (CO2) emissions from the power sector. Upon completion of the 2017-18 program review process, the RGGI states committed to a regional emissions cap in 2021 equal to 75,147,784 tons with an annual decline of 2.275 million tons of CO2 per year, which is equivalent to a 30% reduction in the regional cap from 2020 to 2030. States sell nearly all emission allowances through auctions and invest proceeds in energy efficiency, renewable energy, and other consumer benefit programs. These programs are spurring innovation in the clean energy economy and creating green jobs in the RGGI states.

Atmospheric deposition from GHG can contribute to NPS water quality impairments. CT DEEP will continue to explore the topic as additional resources are made available.

2.11. NPS Program Recommendations

CT DEEP will need to provide continuous administration of the CT NPS Management Program. **Table 2-1** identifies overall NPS Program direction for CT DEEP, including partnerships and funding. Five-year objectives, actions, milestones, and an associated schedule are detailed. Annually, CT DEEP will report on the progress of the 5-year objectives, actions and milestones.

It is recommended that the CT NPS Management Program Plan continue to focus efforts on specific NPS pollution categories to protect and manage Connecticut's water resources; these include stormwater runoff, agriculture, subsurface sewage disposal systems, hydrologic and habitat modification, domestic animals and wildlife, and boating and marinas.

CT DEEP will continue to support programmatic actions, implementation and staff through a variety of local, state and federal funding opportunities. NPS Program funding and evaluation are further discussed in Section 5 of this plan.

Table 2-1. NPS Program, Partnerships, and Funding – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
1. <u>Program Administration</u>: Continue to manage and implement the NPS Program to meet program goals and work towards addressing priority NPS-related water quality issues.	1. Continue to employ appropriate programmatic and financial systems that ensure Section 319 funds are used efficiently and consistent with fiscal and legal obligations (Section 319 grant program guidelines, EPA-DEEP Performance Partnership Agreement). 2. Consistent with Clean Water Act Section 319(h)(8), provide EPA with sufficient information and data about Connecticut's 319 Program to determine whether the State's progress for the previous fiscal year was satisfactory. *Lead Agency: CT DEEP*	Achieve satisfactory Progress Determination for Connecticut's program annually (see Section 5 for a list of tasks associated with this determination)	X	X	X	X	X
2. <u>Partnerships</u>: Build and strengthen partnerships of the lead agencies to coordinate efforts and effectively implement the CT NPS Management Program Plan.	1. Strengthen partnerships with other organizations that fund NPS work in CT, particularly NRCS, LISS, and the Council on Soil and Water Conservation, through: a. Attending meetings b. Combining funds to complete larger projects. 2. Support citizens, farmers, and municipalities through NPS technical assistance. *Lead Agency: CT DEEP, NRCS, LISS, CSWC* *Partners: Rivers Alliance of Connecticut, Conservation Districts, CLEAR, Watershed organizations, COGs, DPH, etc.*	Number of NPS projects initiated with joint funding from multiple NPS programs NPS Technical Assistance provided by partners	1 X	1 X	1 X	1 X	1 X

Table 2-1. NPS Program, Partnerships, and Funding – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
3. <u>Pollutant Reduction Tracking</u>: Development of a statewide NPS management tracking system to quantify NPS pollution reductions and credits.	1. Continue participating in the LISS-led effort to develop a tracking tool as a Statewide Decision Support Tool. 2. Lead the statewide model (CTWM) public outreach project and scenario planning 3. Support embayment modeling effort to identify NPS issues and reduction targets. *Lead Agency: CT DEEP* *Partner Agency: NEIWPCC, LISS, NRCS, CT Conservation Districts, Municipalities, UCONN Cooperative Extension*	Statewide Decision Support Tool completed Finalize development of the statewide model (CTWM) Develop pollutant reduction or protection targets for priority embayments.	X	X	1	1	1
<u>Funding</u>: State Clean Water Funds (CWF) for municipalities with eligible green infrastructure and SSDS projects	1. Maintain reserves within the CWF for green infrastructure and SSDS *Lead Agency: CT DEEP*	Green infrastructure and SSDS projects budgeted in the CWF					3
5. <u>Plan Update</u>: Update NPS Management Program Plan	1. Consult partner agencies and solicit public input to update the Connecticut NPS Management Program Plan for the next cycle. 2. Review and update NPS Management Program Plan. *Lead Agency: CT DEEP* *Partner Agencies: NPS Partners and the public*	Update NPS Management Program Plan for the next cycle (including milestones for 2030-2034) to be approved by October 1, 2029				X	X

3 Watershed Prioritization in Connecticut

3.1. Priority Watersheds in Connecticut

While it is CT DEEP's ultimate goal to restore all impaired waters for their designated uses, a combination of ecological, stressor, and social characteristics influence the successfulness of restoration and protection efforts. Prioritization is an important step in effective NPS planning because it aids in the efficient allocation of limited resources by identifying and ranking watersheds based on their potential for successful restoration and protection efforts. The priority watersheds are spread across Connecticut which ensures a commitment to a statewide approach to improving and maintaining water quality.

A systematic approach known as the Integrated Water Planning Management (IWPM; formerly Integrated Water Resource Management) is a long-term strategy that focuses on water quality priorities to restore or protect surface waters through watershed management. Watersheds across the state were analyzed using data related to Connecticut's water quality concerns including watershed health, stormwater, and nutrients. These data, or indicators, were analyzed using the EPA Recovery Potential (RPS) Tool. The RPS Tool is a screening method that evaluates watersheds utilizing the same sets of indicators compared across each watershed. For Connecticut, it generated 80 indicators during the evaluation and comparison of watersheds. The indicators were divided into three groups: ecological, stressor, and social categories. Some examples of these indicators include: miles of free flowing water, percent impervious cover, and drinking water source areas.

Using the 80 indicators, the RPS Tool generated a ranking number for ecological, stressor, and social categories for each watershed. The ranking numbers were sorted by stressor score and the top 125 scores were selected as the least stressed watersheds. Then these watersheds were sorted by social score and the top 75 scores were selected as the most social value. Then these watersheds were sorted by ecological score and the top 40 scores were selected as the highest value. These remaining watersheds were compared against additional information that could not be incorporated into the RPS Tool. This additional information included existing watershed planning, trout management areas, shellfishing priority areas, and industrial remediation locations. These evaluations resulted in a list of 30 watersheds and coastal embayments recommended for further consideration of restoration and protection.

The prioritization process continued by incorporating input from regulatory and conservation programs across the state, as well as feedback from public comments. In Phase 1 of the IWPM (2016-2022) CT DEEP worked closely with existing and potential partnerships, active environmental groups, and other stakeholders to choose priority topics and focus watershed areas. The 5 topics that were chosen through public engagement for watershed actions plans were: swimming and shellfishing, nutrients in lakes and embayments, fish and wildlife health, and stormwater. Documentation of Phase 2 of the IWPM is ongoing as of August 2024 and entails the same general process as IWPM Phase 1 while refining those same 5 topics with a robust emphasis on Environmental Justice and Climate Change. IWPM Phase 2 will span through September 2032 and identify specific waterbodies and watersheds as priorities for restoration and protection.

While all waters would benefit from restoration and protection efforts, the waterbodies selected represent areas where CT DEEP intends to develop watershed management plans and direct funds for planning or implementation projects in the near future while maintaining overall statewide water quality efforts. The list of selected waters can be revised every two years through the Integrated Water Quality Report, based on CT DEEP resources available to support watershed planning and implementation. Any revisions to the list of selected waters will be made publicly available to provide opportunity for feedback.

3.2 Objectives, Actions, Milestones Related to Watershed Prioritization

Table 3-1 identifies NPS Program recommendations relative to watershed prioritization, planning, and restoration/protection. Recommendations include five-year objectives, actions, and milestones and an associated schedule. Statewide recommendations for specific nonpoint source categories are presented in Section 4.

Table 3-1 Watershed Approach Prioritization – Five-Year Objectives, Actions, and Milestones

Objectives	Actions	Milestones	Schedule				
			2025	2026	2027	2028	2029
1. <u>Prioritization:</u> Evaluate NPS priority lists as new information on individual watersheds becomes available.	1. Evaluate NPS priority watersheds lists and provide opportunity for public comment. 2. Update priority lists as needed - add or remove individual waterbodies to the priority lists as new information becomes available. *Lead Agency: CT DEEP*	Identify NPS priority watershed list in the IWPM strategy List of priority hydromodification and migratory corridor enhancement projects updated	 X	X X	 X	X X	 X

Table 3-1 Watershed Approach Prioritization – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
2. <u>Planning</u>: Approve nine-element watershed based plans (WBP), alternative plans, or significant updates to existing plans.	1. Provide stakeholders with the information, technical support, guidance and, funding for development of effective WBPs 2. Provide funding when available through NPS Section 319 grant program to support development of effective WBPs *Lead Agency: CT DEEP*	Number of new nine element WBPs, updated WBPs, or alternative WBPs submitted for approval.	1	1	1	1	1
3. <u>Implementation</u>: Act on WBP projects to restore and protect waters	1. Provide support and funding when available through Section 319 NPS grant program to support implementation of WBP projects *Lead Agency: CT DEEP*	Percent of Section 319 funding (minimum) directed to implementation projects	50%	50%	50%	50%	50%
		Percent of Section 319 funding (minimum) directed to projects in EJCs	40%	40%	40%	40%	40%

Table 3-1 Watershed Approach Prioritization – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
4. <u>Monitoring</u>: Target monitoring of water quality improvements	1. Collect targeted water quality and biological health information to determine the effectiveness of WBPs or if water quality standards have been met or if there has been substantial incremental improvement in water quality and/or ecological conditions. *Lead Agency: CT DEEP*	Number of waterbodies where targeted water quality monitoring occurs NWQI Watersheds Monitored	2 1	2 1	2 1	2 1	2 1
5. <u>Restoration</u>: Fully or partially restore, or progress toward restoration of, NPS impaired waterbodies; document successes of improvement to waters resources	1. Fully or partially restore, or progress toward restoration of, NPS impaired waterbodies 2. Prepare NPS Success Stories that document the restorations/progress. *Lead Agency: CT DEEP*	Number of waters for which active restoration is occurring Number of Type 1 Success Stories submitted to EPA	3	3	3	3	3 1

4 Strategies to Address NPS Pollution

This section presents statewide strategies for addressing major categories of NPS pollution contributions in Connecticut which include:

- Stormwater Runoff from Developed Areas
- Agriculture
- Subsurface Sewage Disposal Systems
- Hydrologic and Habitat Modification
- Domestic and Wild Animals
- Boating and Marinas

A description, key programs and partners, and measures to control NPS pollution are provided for each NPS pollution category. There is additional information regarding other categories, including landscaping and turf management, atmospheric deposition, land disposal, brownfields and contaminated sites, forestry, material storage, and resource extraction.

4.1. Major NPS Categories

4.1.1. Stormwater Runoff from Developed Areas

Background

In developed areas, large portions of natural landscape cover have been replaced with non-porous, or impervious surfaces. Developed areas and associated impervious cover result in increased stormwater runoff from developed areas volume and pollutant loads to receiving waterbodies. Impervious cover refers to surfaces such as roads, driveways, parking lots, and building rooftops that change the natural dynamics of the hydrologic cycle. Impervious surfaces change the character of stormwater runoff dramatically by causing water to remain on the land surface. Without slow percolation into the soil, water accumulates and flows across surfaces in larger quantities. This faster moving water washes soil from earth surfaces that are not securely held in place by structural means or healthy vegetation, contributing to erosion and sedimentation. When rain falls in developed areas, it flows quickly off these impervious surfaces, carrying soil, bacteria, nutrients, and other pollutants to nearby waterbodies.

Stormwater runoff from developed areas are continuously identified in the CT IWQR as the major contributor for NPS pollution affecting the State's inland water resources and Long Island Sound. Developed lands contribute suspended sediments and solids, nitrogen, phosphorus, hydrocarbons, heavy metals, pathogenic organisms (bacteria and viruses), and road salts that adversely affect the biotic health of aquatic systems and degrade water quality. Stormwater runoff contaminant concentrations vary considerably as a function of the storm and the type and intensity of land use. As would be expected for developed areas, the more urbanized land uses, such as high density residential, commercial, and industrial, contribute greater pollutant loads than lower intensity uses, such as low density residential and forested land.

Developed areas can also impact the timing and quantity of runoff discharging to streams. Compared to the pre-development conditions, post-development conditions can cause increases in

the runoff volume and peak discharge, and decreases in the infiltration of precipitation to the ground, which thereby decreases baseflow in headwater streams and in wetlands. The changes to stream hydrology can have negative impacts on channel stability and the health of aquatic biological communities. Common problems include bank scour and erosion, increased downstream flooding, loss of in-stream habitat for macroinvertebrates, fish, and other organisms, and reduction in stream baseflow and streams running dry during periods of the year. These impacts not only affect the aquatic environment, but also affect the ability of people to use these areas for active and passive recreation. For example, runoff from developed areas commonly contributes to beach closures due to high bacteria and pathogen counts in the water.

New development and redevelopment activities pose a future threat to water quality; they also present an opportunity for the application of effective and innovative land use planning principles that can help avoid or minimize potential impacts from nonpoint sources of pollution.

Runoff from developed areas in Connecticut is managed through both regulatory and non-regulatory programs. Runoff from regulated Municipal Separate Storm Sewer Systems (MS4) and stormwater discharges from certain construction, commercial, and industrial sites and transportation infrastructure are considered point source discharges that are regulated by CT DEEP through Stormwater General Permits under the authority of the NPDES permit program. These permits include conditions for minimum measures to be completed by the applicant such as street sweeping for municipalities, institutions and DOT infrastructure. Stormwater runoff that is not regulated by CT DEEP Stormwater General Permits (e.g., municipalities which do not have an urbanized area as defined by the most recent U.S. census, or runoff from a construction site that disturbs less than one acre of land or runoff from outside urbanized or MS4 areas) is considered nonpoint source pollution and is addressed by the State's NPS Management Program. A number of other state and municipal regulatory programs address management of stormwater in Connecticut.

Additional resources, including a map of urbanized and MS4 communities, including new MS4 communities, can be found on the NEMO MS4 Website. As the map is updated, the most recent iteration can be found here.

The Connecticut Watershed Response Plan for Impervious Cover is a tool used for improvement of water quality, by offering water quality information and guidance for the local community. It provides details on the local watershed conditions, impervious cover, and implementation measures. The community can use the Plan to complement existing stormwater practices and infrastructure management, to improve stormwater quality and reduce runoff, in order to restore or protect water quality in local waterbodies and groundwater.

CT DEEP's Interactive Stormwater Pollution Story Map is a publicly accessible tool with a map that shows the relationship between impervious cover and CT waterbodies on meeting WQS. In addition, the Story Map includes watersheds that have an established or planned TMDL for bacteria, watersheds subject to the CT Phosphorus Strategy, Municipalities subject to the Long Island Sound TMDL, and municipalities subject to the Northeast Regional TMDL.

Strategies

Addressing stormwater runoff from developed areas typically requires a combination of non-structural and structural control BMPs. Source control and pollution prevention BMPs are recommended to reduce exposure of pollutants to rainfall and runoff. Effective site planning and design techniques such as Green Infrastructure (GI) or Low Impact Development (LID) can reduce or eliminate the negative effects of stormwater runoff to the receiving waterbody. Lastly, structural stormwater BMPs can be used to further detain, treat, or infiltrate the runoff from developed areas. Each of these approaches can be used to manage runoff associated with existing developed areas, new development projects, and redevelopment.

BMPs to reduce or eliminate NPS pollution from stormwater runoff may include, but are not limited to: tree filters, bioswales, rain gardens, rain barrels and cisterns, roof downspout disconnections, installation of green roofs, incorporation of urban forests, and permeable pavement. The National Management Measures to Control Nonpoint Source Pollution from Urban Areas provides additional resources including guidance.

Implementing the methods described in the Connecticut Stormwater Quality Manual is one measure to protect waters of Connecticut from the adverse impacts of stormwater runoff (see also: UCONN NEMO searchable version of the Stormwater Quality Manual). The Manual emphasizes LID techniques and structural BMPs for stormwater management. CT DEEP and other NPS partners provide guidance on protecting the waters of Connecticut from the impacts of post-construction stormwater runoff in the updated Manual. Guidance for measures to address erosion and sedimentation from construction sites can be found in the Connecticut Guidelines for Soil Erosion and Sediment Control.

Other Stormwater Runoff-Related Topics

Low Impact Development

CT DEEP has focused on increasing awareness of LID techniques for reducing storm runoff and NPS pollution. CT DEEP works with partners at the federal, state and local levels to provide information, educational materials and technical assistance in the application of LID techniques. The CT DEEP NPS Program promotes LID management practices as part of Watershed Based Planning with municipal land use agencies and public and private stakeholders in order to protect, conserve and restore water quality in Connecticut.

UCONN CLEAR's State of LID Story Map evaluates the LID regulations of 95 Connecticut municipalities for compliance with different LID-friendly provisions, and provides links to towns' LID regulations. CT CLEAR also conducts dozens of tours and presentations each year about LID.

Since urban NPS pollution is so closely related to land use, municipal land use authorities play a central role in implementing this key component of Connecticut's NPS Management Program. CT DEEP provides assistance to municipalities for incorporating LID into local plans of conservation and development and zoning, subdivision, and inland wetlands regulations, which are the primary local regulatory mechanisms for addressing stormwater and NPS pollution associated with new and redevelopment projects.

Roadways/Road Salt

NPS pollution may result from road and bridge maintenance activities including road salt application, sanding, and sweeping of roads; paving; bridge cleaning and painting; vegetation control; inadequate sediment and erosion controls; and maintenance and storage of equipment. Excessively applied or improperly stored road salt may leach into drinking water supplies and other ground or surface waters. Snow can impact surface waters if improperly stored or disposed. Storm runoff may erode the soils of poorly managed roadsides, or transport fertilizers and pesticides from these areas to neighboring waterbodies.

Application of road salt for winter deicing has been standard practice since the 1940s on Connecticut' transportation facilities: roads, bridges, highways, airports, parking lots and sidewalks, etc. In Connecticut, road salt was typically mixed with sand for application to roads. Sand had its own set of problems; it needed to be cleaned out of catch basins and swept off the roads in the spring, and it had the potential to impact stream habitat. Road salting is a significant source of chloride impacts to both surface water and ground water. The State's baseline chloride concentrations have increased by tenfold over the last century.

CT DOT switched to anti-icing: pretreatment of highways with brine (sodium chloride) and eliminated the use of sand. The justification was that decreasing the use of sand was a benefit to waterways, and use of road salt (sodium chloride) and calcium or magnesium chloride would be more effective in clearing snow and ice from roads. Brine is sprayed onto road surfaces prior to storms as a form of pretreatment. The brine prevents snow and ice from bonding to pavement, reduces bounce/scatter of salt and keeps the material on the pavement, and provides plow drivers more time at the onset of a storm. Once the storm has begun, rock salt is applied and may be wetted with calcium chloride and sometimes magnesium chloride to further enhance melting.

Unfortunately, LID practices are not effective for removing chloride. Some municipalities and institutions have reduced salt application, but they also need to balance pedestrian and vehicle safety concerns. However with new information and technology, Green Snow Pro was established at UCONN during the fall of 2018, under the Connecticut Training and Technical Assistance Center (T2) as its primary leader, and in collaboration with CLEAR. Since then, over half of the state's municipalities have had one or more municipal staff successfully complete a CT Green Snow Pro class. The updated Connecticut Green Snow Pro BMP Guide for Roadways and for Parking Lots and Sidewalks were published in 2023. Additionally, professionals from universities, CT DOT, and private landscaping and maintenance companies have also completed the course. At UCONN, newly trained facilities staff were able to achieve substantial reductions of 2,600 less tons of salt, corrected for the number of storms, in its first year of implementing the program. This achieved savings of over $300,000 in salt costs alone, in addition to environmental benefits. Additional case studies highlighting the program are ongoing across several towns.

Improper storage and handling of roadway salt material, such as storing outdoors and exposing to the elements where the material is dissolved, could affect nearby ground water and surface water bodies. In response to the introduction of best management practices for road salt storage and application, all salt piles at CT DOT facilities are now kept undercover or within structures to reduce exposure to the weather. Most municipalities have also implemented similar best management practices at their public works yards to reduce materials exposure as well.

Airports

Small and large airports can contribute point and nonpoint sources of pollution. Water quality concerns specific to airports is the use of aircraft deicers (ethylene and propylene glycol) during the winter months to both remove and prevent the accumulation of snow and ice from aircraft and airfield surfaces. Another concern is the release of per- and polyfluoroalkyl substances (PFAS) in aqueous firefighting foams, which may be used both in wet and dry weather conditions. Some airports employ recycling systems to capture and treat runoff from runways as much as practicable. In places where this practice is not used, these chemicals may be introduced into surrounding waterbodies and ground water through runoff. Deicers can cause degradation of water quality particularly the oxygen carrying capacity of surface waters. PFAS compounds do not break down and can accumulate as higher concentrations in the environment. They have been associated with adverse health effects for both humans and wildlife.

Stormwater Authorities

Communities across the nation, including in Connecticut, are increasingly examining the option of Stormwater Authorities to fund municipal stormwater management programs. A stormwater authority is a public entity that collects fees for managing stormwater runoff. The revenue can be used to maintain and upgrade existing storm drain systems, develop drainage plans, construct flood control measures, and cover administrative costs. Stormwater Authorities are seen as a fair way of collecting funds for stormwater management. In addition, stormwater collaboratives or partnerships between adjacent municipalities to manage stormwater can also reduce costs and increase effectiveness. Tying fees to activities related to flood or stormwater management also provides an opportunity to offer incentives to promote individual actions at the homeowner scale that can help the broader stormwater management system deal with water pollution and flooding events.

The New London Stormwater Authority was established in 2018 under a state-funded pilot program, and has successfully operated with reasonable rates. The State took further action in 2021 with Public Act 21-115, An Act Concerning Climate Change Adaptation which gives the authority for any Connecticut municipality to implement a Stormwater Authority. Additional municipalities and collaboratives across the state are pursuing efforts to establish Stormwater Authorities across the state. More information can be found on the UCONN NEMO Stormwater Utilities website. CT DEEP continues to promote the establishment of stormwater utilities and specifically through the CT Clean Water Fund, includes an incentive (through the Reserve for Construction of Resiliency Projects) and priority for communities with a stormwater utility.

Table 4-1. Runoff from Developed Areas – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
1. <u>Municipal GI/LID</u>: Enhance municipal outreach for GI and LID.	1. Provide outreach to CT municipalities regarding stormwater runoff management. 2. Provide outreach to CT municipalities regarding the revised Stormwater Quality Manual. *Lead Agency: CT DEEP* *Partners: Municipalities, UCONN NEMO/CLEAR, Conservation Districts*	Provide training workshops for coastal site plan review offered for municipal and zoning officials. Conservation Districts offer guidance on use of the Stormwater Quality Manual and Erosion and Sedimentation Guidelines Percentage of Coastal Site Plan reviews to ensure management of NPS from new development and existing sources	5 100%	5 100%	5 100%	5 100%	4 5 100%

Table 4-1. Runoff from Developed Areas – Five-Year Objectives, Actions, and Milestones							
			Schedule				
Objectives	**Actions**	**Milestones**	**2025**	**2026**	**2027**	**2028**	**2029**
2. <u>Municipal GI/LID Implementation</u>: Enhance municipal implementation of GI and LID.	1. Maintain a reserve of Clean Water Funds for municipal Green Infrastructure/LID projects in CSO communities. 2. Provide Section 319 and Clean Water Funds for eligible GI/LID projects in CSO communities to reduce stormwater infiltration into the combined sewer system. *Lead Agency: CT DEEP* *Partners: Municipalities,*	Number of municipal GI/LID projects in communities with CSOs					5

Table 4-1. Runoff from Developed Areas – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
3. <u>CT DOT Roadway Anti-icing and road salt application Program</u>: Continue to enhance state roadway deicing programs to address water quality.	1. Support the "Green Snow Pro" program which provides training to municipal staff and private snow clearing companies on best management practices. 2. Incorporate any new best practices into the state roadway deicing program to reduce impacts to surface and ground water quality. *Lead Agency: CT DOT, UCONN NEMO/CLEAR and Technical Assistance Center* *Partners: CT DEEP*	Credit hours of Green Snow Pro classes offered by UCONN CLEAR to municipal staff and private companies.	11.5	11.5	11.5	11.5	11.5

4.1.2. Agriculture

Background

Agricultural operations include small working farms that help define the Connecticut landscape. On a national scale, Connecticut has one of the smallest average farm sizes. Agriculture in Connecticut consists of livestock/poultry, aquaculture, produce, tobacco, forestry and more. In several cases, agricultural operations are major contributors to NPS pollution in Connecticut. Water quality concerns associated with agricultural operations include excess nutrients from fertilizers and animal wastes, pathogens and materials from animal wastes, sediment from field erosion, as well as a location of pesticides, salts, and petroleum materials. These types of pollutants enter waterbodies through direct surface runoff or through seepage to ground water that discharges to surface water. Ground water nutrients in high concentrations can stimulate blooms of algae in surface waters. Also overuse or improper irrigation can exacerbate some of these pollution problems, as well as have a negative effect on stream flows and ground water levels that are critical resources for humans and wildlife.

In addition to farmland, Long Island Sound provides an additional 70,000 acres with potential for aquaculture. In Connecticut aquaculture includes a diverse range of operations such as growing shellfish on underwater leases in Long Island Sound and raising fish in inland freshwater tank farms. Nutrient pollution from aquaculture comes from both uneaten feed and animal waste, and can contribute to eutrophication when not properly managed. However, laws, regulations, and commonly accepted BMPs can aid in minimizing such impacts. Shellfish aquaculture has additional benefits as shellfish remove NPS pollution from the water column such as particulates, excess nutrients, organic material, viruses, and bacteria. The Connecticut Shellfish Program operates as part of the National Shellfish Sanitation Program in order to ensure the safety of molluscan shellfish. The Connecticut Department of Agriculture Bureau of Aquaculture is responsible for implementing the Connecticut Shellfish Program.

Agricultural runoff from farmland is considered to be NPS, but Concentrated Animal Feeding Operations (CAFOs) are defined as point sources and subject to the NPDES program. The General Permit for Concentrated Animal Feeding Operations (CAFO GP) became effective January 1, 2023 and will expire December 31, 2027. Facilities that qualify for this general permit are large and medium CAFOs which are defined under 40 CFR Part 122.23. The permit authorizes discharges from a CAFO under catastrophic and chronic rainfall conditions and all other discharges to surface water in accordance with the approved Comprehensive Nutrient Management Plan (CNMP).

The CAFO GP regulates certain operations depending on the number and types of animals, and/or the potential for discharges from the operation. In addition to submission of a registration, a CAFO-specific CNMP must be developed and submitted for the facility that is the subject of the registration for the general permit. The permittee is also required to implement the CNMP to reduce the potential water quality impacts of facility operations such as ensuring adequate storage of manure and wastewaters, diverting clean water from production areas, methods for safe land application of manure and wastewaters, proper management of dead animals, and record keeping to document implementation.

Strategies

Agricultural NPS pollution in Connecticut is addressed primarily through outreach and technical assistance programs provided by federal and state agencies including the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), USDA Farm Service Agency, Connecticut Department of Agriculture, University of Connecticut Cooperative Extension System, Connecticut Agricultural Experiment Station, Connecticut Conservation Districts, and CT DEEP. Technical and financial support to farm businesses in their farm waste efforts is offered through the Partnership for Assistance on Agricultural Waste Management Systems. Through this partnership, a farm business may obtain waste management planning, facility design, and qualify for financial assistance as well as help in procuring required permits. Technical assistance is also available in selecting and implementing agricultural BMPs and soil erosion control methods and technologies.

A number of financial and technical assistance programs are implemented by the NRCS through the federal Farm Bill. The Environmental Quality Incentives Program (EQIP) provides financial and technical assistance to agricultural producers in order to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat. Eligible program participants receive financial and technical assistance to implement conservation practices that address natural resource concerns on their land. Payments are made to participants after conservation practices and activities identified in an EQIP plan of operations are implemented. NRCS delivers conservation technical assistance through its voluntary Conservation Technical Assistance Program. Technical Service Providers are individuals or businesses that provide third-party technical expertise in conservation planning and design on behalf of NRCS.

Federal and state agencies offer a variety of technical resources on agricultural BMPs including:

- Livestock exclusion fencing
- Manure collection and storage
- Nutrient management (remove, reuse, land application)
- Cover crops
- Vegetated buffers, filter strips
- Covered heavy use areas
- Diverting clean water
- Soil health

A number of alternative agricultural waste technologies have also emerged and are being implemented across Connecticut. These BMPs include volume reduction (solids removal); the production of value added products such as compost, mulch, and planting pots; and methane digesters which convert the energy stored in manure into methane used to produce energy for on-farm or off-farm use.

The EPA National Management measures to Control Nonpoint Source Pollution from Agriculture contains resources and guidance on a variety of agricultural topics. The Good Horse Keeping BMP Manual for Protecting the Environment intends to provide equine owners and managers with BMPs to protect surface waters and groundwater.

The sale and use of pesticides and pesticide certification and licensing in Connecticut is regulated by CT DEEP through its Pesticide Management Program, in conjunction with other regulatory and non-regulatory partner agencies including the Connecticut Department of Public Health, Connecticut Department of Agriculture, Connecticut Agricultural Experiment Station, and UCONN Cooperative Extension Service.

Integrated pest management is a systematic method of managing pests using non-chemical methods and the judicious use of pesticides when pest populations exceed acceptable levels. When pesticide applications are necessary, priority is given to using the least toxic pesticide as first choice. Significant reductions in the volumes and toxicity of pesticides applied can be achieved when an Integrated Pest Management program has been implemented properly. The implementation of integrated pest management is recommended as a common sense approach to pest control in all environments from agricultural to residential, municipal, commercial, and campus settings.

Several agricultural NPS projects are slated for the upcoming years. CT DEEP is using Section 319 grant funding for two planning projects which intend to yield implementation projects. The development of a WBP which will include soliciting input from agricultural producers in the area, as the watershed has agricultural lands including both crops and livestock. A Section 319-funded NPS Action Plan, aims to provide agricultural producers with education, outreach, and technical assistance to create conservation plans that will prioritize BMPs to address agricultural pollution, such as manure management, stream buffers, and restricting access for livestock to waterbodies. Long Island Sound Futures Funds have been designated for several agricultural NPS projects; upcoming projects to conduct nutrient management projects. The CT DEEP NPS Program will continue supporting agricultural NPS projects that align with the state's NPS Management Program goals.

National Water Quality Initiative (NWQI)

The National Water Quality Initiative (NWQI) was established as a joint initiative between USDA NRCS and EPA to address agricultural sources of water pollution in priority watersheds throughout the country. In Connecticut, the NRCS State Conservationist has worked with CT DEEP, the NRCS State Technical Committee, and other partners to select watersheds that would receive targeted, long-term investment of USDA funds in order to accelerate voluntary conservation efforts to improve water quality. Connecticut continues to work with the EPA and NRCS to implement the NWQI in targeted priority watersheds statewide to improve water quality in agricultural watersheds by addressing nutrient, sediment, and pathogen pollution through targeted conservation implementation, for a minimum of three planning and/or implementation watersheds, as established by NRCS. Connecticut will work with and support documentation of additional watersheds for NRCS to enroll as appropriate to maximize coordination and leveraging of NRCS resources. NRCS expanded the scope of NWQI to include source water protection, including both surface and ground water public water systems, and is now a special component of NWQI.

A NWQI work group of the NRCS State Technical Committee, including representatives of EPA, NRCS and CT DEEP, conducts watershed priority selection. Selection criteria included review of past and current EQIP supported projects, water quality assessments, causes and potential sources of pollution, and a focus on dairy farming for selected agricultural and conservation practices.

Three basins in Connecticut that were selected for NWQI designation: the Little River in Woodstock/Putnam/Thompson (HUC12 011000010401), Broad Brook in Ellington/East Windsor (HUC12 010802050202), and the Farm River in North Branford/Branford/East Haven (HUC12 011000040206). The Little River Healthy Watershed Collaborative is updating the Little River Water Quality Improvement Plan.

Several actions have occurred within these NWQI watersheds. Several dairy farms within the Little River basin have partnered with CT DEEP and Eastern Connecticut Conservation District to incorporate custom-designed BMPs including precision planting equipment to plant valuable cover crop, construction of a dairy mortality composting facility, an integrated suite of agricultural waste management BMPs with Section 319 funds and EPA EQIP cost share assistance to address an increasing herd size and close proximity to the receiving Little River, and piloting a denitrifying bioreactor installation beneath a hay field to treat subsurface, nutrient-laden tile drain water before entering surface waters. These agricultural producers are hosting site tours to share lessons learned with peer producers in support of technology and practice transfers across this watershed and beyond. The Little River begins at the outlet of Roseland Lake. A Section 319-funded Roseland Lake Watershed Management Plan contains recommendations for in-lake and tributary nutrient loading, and is generating implementing project applications through an emerging Little River Source Water Collaborative.

In the Broad Brook watershed, the North Central Conservation District has conducted nitrate sampling on silage corn field for several years to inform farmers of their effective nutrient management planning. Current implementation projects build on the Broad Brook watershed plan, which identified many site-specific projects and primarily on private agricultural land. CT DEEP is currently involved in a project for an agricultural producer in the Broad Brook watershed, utilizing various sources of funding including: Long Island Sound Futures Fund, NRCS EQUIP, the Section 319 funds. The purpose is to reduce pollutant loading to Broad Brook by both limiting livestock access to surface waters by providing a structure for housing the livestock and constructing a waste storage facility with attached barn and milkhouse and animal manure waste transfer, to effectively manage the farm's waste process. This farm also completed a CNMP with NRCS, and that plan to properly manage nutrients on the Farm is the basis of this project. The project is anticipated to be completed by 2026, and will be followed up with additional monitoring efforts.

Part of the NWQI program is water quality monitoring to assess instream changes in pollution resulting from implementation of farm BMPs funded by NRCS's EQIP funds. This task will be completed through a combination of state-wide monitoring programs, pour-point monitoring in the watersheds, and targeted monitoring near implementation projects. Statewide monitoring programs have stations in the selected NWQI watersheds that are revisited periodically. Pour-point monitoring can be used to assess overall pollutant load reductions from the watersheds before and after projects are implemented. Project specific monitoring can be completed if requested by NRCS and the participating farmer.

Table 4-2. Agriculture – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
1. <u>Assistance to Farmers</u>: Provide outreach and technical and financial assistance to farmers regarding agricultural NPS pollution and control measures.	1. Prioritize the specific agricultural operations in need of technical assistance based on apparent risks to surface water and ground water quality. 2. Identify & inventory agriculture BMPs and resources that are targeted to specific types of agricultural operations in need of assistance 3. Allocate technical assistance resources, including Section 319 funds and outreach resources, to implement projects to improve water quality associated with agricultural practices. *Lead Agencies: CT DEEP, NRCS* *Partners: Connecticut Department of Agriculture, UCONN Cooperative Extension, Connecticut Agricultural Experiment Station, Connecticut Conservation Districts*	Number of completed projects to improve water quality associated with agricultural practices	10	10	10	10	10

Table 4-2. Agriculture – Five-Year Objectives, Actions, and Milestones								
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
2. <u>NWQI</u>: Implement National Water Quality Initiative Program with NRCS (Water Quality Monitoring)	1. Coordinate with NRCS to address agricultural sources of pollution in NWQI watersheds. 2. Consider allocation of Section 319 funds to leverage NRCS funding for projects in NWQI watersheds. 3. Collaborate with NRCS to conduct monitoring in NWQI watersheds either as part of specific projects or as part of statewide monitoring. *Lead Agencies: CT DEEP, NRCS* *Partners: CT Conservation Districts, Connecticut Department of Agriculture, UCONN Cooperative Extension, Connecticut Agricultural Experiment Station*	Participate in the NRCS NWQI Number of water quality projects in NWQI watersheds with Section 319 funds Monitoring projects to collect water quality data in NWQI watersheds	X 1 1	X 1 1	X 1	X 1	X 1
3. <u>Nutrient Management</u>: Promote and improve nutrient management practices at Connecticut farms.	1. Continue a permitting program to ensure nutrient management for concentrated animal feeding operations (CAFOs) sites. 2. Require Comprehensive Nutrient Management Plans (CNMPs) for permitted CAFO sites. *Lead Agencies: CT DEEP* *Partners: NRCS, CT Conservation Districts, Connecticut Department of Agriculture, UCONN Cooperative Extension, Connecticut Agricultural Experiment Station*	Sites reviewed for permits to ensure nutrient management. Percentage of CNMPs reviewed for permitted sites.					30 100%

Table 4-2. Agriculture – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
4. <u>Soil Health</u>: Promote "Soil Health" as an agricultural BMP.	1. Coordinate with the Council on Soil and Water Conservation on soil health initiatives in the state, facilitating the dialogue among stakeholders) and identifying gaps and needs. *Lead Agency: Council on Soil and Water Conservation* *Partner Agencies: NRCS, Connecticut Department of Agriculture, Connecticut Agricultural Experiment Station, Connecticut Conservation Districts, CT DEEP*	Develop an action plan for the soil health initiatives					1

4.1.3. Subsurface Sewage Disposal Systems

Background

Approximately 40 percent of Connecticut's population – or approximately 1.5 million people – live in homes with subsurface sewage disposal systems (SSDS) for wastewater treatment and disposal. These systems are primarily used in rural and suburban areas outside of areas served by sanitary sewers generally serve individual homes, small residential communities, and commercial buildings. SSDS that are properly designed, installed, and maintained provide a safe and efficient way of disposing sewage. However, when SSDS are antiquated or substandard, or renovation of the wastewater by the soil may be incomplete, there can be a threat to human health as well as to ground water and surface waters in environmentally sensitive areas resulting from loadings of pathogens, nutrients, and other pollutants.

In Connecticut, SSDS are regulated by local health departments or districts and the Connecticut Department of Public Health (CT DPH) or by CT DEEP, depending on the design flow capacity and the type of treatment and disposal system.

Jurisdiction over conventional, non-community SSDS for site and individual or multi-system flows design flows of 7,500 gallons per day (GPD) and less lies with DPH and local health departments, and are regulated by Public Health Code (PHC) Section 19-13-B103 and 19-13-B100a, and the associated Technical Standards for Subsurface Sewage Disposal Systems (Technical Standards). SSDS on sites with design flows of 7,500 GPD and less are permitted using individual system permits and are inspected and approved by the Local Director of Health using prescriptive requirements and standards set forth in the PHC and Technical Standards. All permits issued are individual, system-specific permits. Plans for SSDS with design flows greater than 2,000 gallons per day but less than 7,500 gallons per day are required to be designed by a professional engineer and submitted to CT DPH for approval prior to being permitted by the local director of health. PHC exception requests pertaining to repair SSDS for a reduced well separation distance, central system (two or more buildings sharing a SSDS), easement approval for an off-site SSDS and wastewater holding tanks are also submitted to CT DPH for review and approval prior to permits being issued by the Local Director of Health. The CT DPH also licenses and regulates subsurface sewage disposal system installers and cleaners and trains and approves local health agents tasked with enforcing the SSDS regulations and Technical Standards for a local health department.

Together, the PHC and the Technical Standards set the minimum standards for SSDS sizing and placement. For residential systems, the land area required is a function of design flow based on bedroom count, and soil conditions and restrictions. Soil evaluation, which includes a hydraulic assessment, is required for all system installations and repairs. Unlike neighboring New England States (i.e., Massachusetts and Rhode Island), Connecticut does not currently require inspections and upgrades of subsurface sewage disposal systems when properties are sold. Inspections, may however, be driven by lending institutions for buyer protection. DPH provides a voluntary inspection form for conducting real estate inspections, however this is not a requirement. The Technical Standards were first published in 1982, and have been revised many times; the latest Technical Standards can be found: DPH Environmental Engineering – Subsurface Systems website.

The CT DEEP Underwater Injection Control (UIC) Permitting and Compliance Program regulates the following types of subsurface sewage disposal systems under either a general permit and individual permit:

- Conventional systems with design flows greater than 7,500 GPD, including sites where multiple smaller systems on a single "lot" have a combined flow greater than 7,500 GPD
- Community sewerage systems (i.e., one subsurface sewage disposal system serving two or more residential buildings, regardless of system size)
- Any system utilizing alternative or advanced treatment, regardless of size.

CT DEEP Guidance for Design of Large-Scale on-site Waste Water Renovation Systems was last revised in 2006.

Many Connecticut communities are faced with wastewater management challenges in existing high density developed areas with old, undersized, malfunctioning septic systems or that are located in areas that are vulnerable to flooding and sea level rise; and in newer developments that need high-performance treatment facilities to protect ground water and nearby sensitive receptors.

Strategies

CT DEEP and a number of Connecticut communities are evaluating and implementing comprehensive and holistic approaches to address wastewater management needs on a long-term basis. Old Saybrook has been implementing a decentralized management program predicated upon the upgrade of individual SSDS within a designated wastewater management district and through the implementation of SSDS upgrade standards. Old Saybrook is continuing to evaluate community system alternatives for the remaining areas within the district where the town would collect wastewater and take it to an offsite location for treatment and disposal. Hydraulic load tests which would help determine the number of homes located in low lying areas that could potentially be connected for offsite treatment and disposal is ongoing. Old Lyme has opted for implementing a centralized solution whereby wastewater will be collected via a sanitary sewer system and transported to an existing wastewater treatment plant for treatment and disposal. The Town of Goshen is looking at sewerage options to send SSDS wastewater from its Woodridge Lake Sewer District.

CT DPH has implemented proactive wastewater management measures to allow for passive nitrogen reduction (PNR) technology to be used on PHC regulated sites. PNR was added to the Technical Standards and addresses nitrogen concerns and where warranted (e.g., community pollution and environmentally sensitive areas), can be used in conjunction with SSDS that utilize low-pressure effluent distribution or proprietary pressure-dosed dispersal systems to reduce nitrogen loading. DPH is also evaluating increased vertical separation distances between SSDS and tidally influenced groundwater tables. The current requirement mandates a 24-inch vertical separation above a coastal groundwater table.

CT DPH leverages resources available through the EPA SepticSmart Program to actively engage both local government officials and homeowners in outreach and education on the importance of proper septic system maintenance and care. Each September, DPH collaborates with local health

departments to distribute Septic Smart week social media messaging and comprehensive educational toolbox materials to the public. Through these directed initiatives, DPH ensures that local health officials and homeowners are equipped with the knowledge and resources needed to maintain and care for their septic systems.

Governor's Bill No. 11 LCO No. 577 requires CT DEEP and CT DPH to review their permitting processes for SSDS and any attendant regulations, based on most recent climate projections presented by the Marine Services Division of UCONN, using information published by the National Oceanic and Atmospheric Administration.

BMPs to minimize the NPS pollution effects of SSDS include proper maintenance of systems to avoid malfunction; replacement of aged systems with newer technologies; as well as transitioning to a centralized wastewater system when possible.

Table 4-3. Subsurface Sewage Disposal Systems – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
1. <u>Regulatory, Planning and Funding Framework</u>: Improve effectiveness of existing regulatory, planning and funding framework for wastewater treatment and disposal in unsewered areas.	1. Continue coordination with CT DPH to identify and discuss concerns pertaining to effective onsite wastewater treatment & disposal, ground water & surface water quality, existing recommendations and requirements, and opportunities for improvements. 2. Review the permitting process for sewage disposal systems to incorporate projections on precipitation, flooding, sea level rise, or other conditions that could impact public safety and environmental quality. 3. Examine funding options with CT DPH to assist homeowners in repairing or remediating individual failing, antiquated, or malfunctioning subsurface sewage disposal systems, or to facilitate connecting to an existing collection system. *Lead Agencies: CT DEEP, CT DPH* *Partners: Local Health Departments, Municipal and industry representatives, NEIWPCC, UCONN, WPCAs, OPM*	Continued coordination between CT DPH and CT DEEP through the joint agency Advisory Committee meetings, including inquiring about funding. Conduct a joint meeting with the CT DPH Subsurface Sewage Disposal System Code Advisory Committee to facilitate an agency and stakeholder review of the permitting process to ensure consistency with current climate resiliency measures.	X	X	X	X X	X

Table 4-3. Subsurface Sewage Disposal Systems – Five-Year Objectives, Actions, and Milestones								
Objectives	**Actions**	**Milestones**	**Schedule**					
			2025	**2026**	**2027**	**2028**	**2029**
2. <u>Homeowner Education</u>: Educate homeowners and homebuyers about proper use and maintenance of SSDS.	1. Provide homeowner and homebuyer education resources. *Lead Agencies: CT DEEP, CT DPH, Local Health Departments, CT Conservation Districts* *Partners: Municipal and industry representatives, watershed associations*	Conduct annual SepticSmart Week in September	X	X	X	X	X
3. <u>Municipal Assistance</u>: Provide funding to municipalities to address water quality impairments due to community pollution from SSDS	1. Maintain a reserve of Clean Water Funds to address community pollution from SSDS where there are water quality impairments. 2. Provide Clean Water Funds to municipalities or authorities for eligible decentralized wastewater treatment projects or sewer line extensions to solve water quality impairments associated with community pollution from substandard or failed SSDS. *Lead Agency: CT DEEP* *Partners: Municipalities*	Number of municipal planning, design, or construction projects completed with Clean Water Funds to address water quality impairments associated with substandard or failed SSDS	1		1		1

Table 4-3. Subsurface Sewage Disposal Systems – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
4. <u>Prioritization</u>: Assess the impact of SSDS on water quality in coastal embayments	1. Use available information to enhance modeling for estimating nitrogen loads to priority embayments from SSDS. 2. Evaluate SSDS loads as a percentage of total nitrogen loads to embayments. *Lead Agency: CT DEEP* *Partners: Long Island Sound Study, NYSDEC, RIDEM*	Refined model loading estimates for SSDS. SSDS load reduction development for embayments	X	X	X 1	1	1

4.1.4. Hydrologic and Habitat Modification

Background

Hydrologic and habitat modification refer to physical changes to aquatic resources caused by filling, draining, ditching, damming, or otherwise altering wetlands and watercourses. In this case, the pollution is not from a chemical contaminant, but it is from a human impact. Some examples of this NPS pollution include lack of adequate flow, stream channelization, invasive species, and loss of riparian vegetation. Hydrologic and habitat modification can adversely impact water quality by causing downstream sedimentation, lowering dissolved oxygen, and increasing water temperatures. Degradation of existing wetlands and riparian areas can cause the wetlands or riparian areas themselves to become sources of NPS pollution in coastal waters. Such degradation can result in the inability of existing wetlands and riparian areas to treat nonpoint pollution. Physical obstructions such as dams and perched culverts can restrict migratory fish passage and alter natural stream flow. Restoration and protection of migratory fish runs are considered to be a very high priority for CT DEEP and NOAA National Marine Fisheries Service to enhance the ecological productivity and integrity of Long Island Sound. Hydromodification impacts can degrade aquatic habitat and contribute to the loss of fish and aquatic organism populations. Further, hydrologic modifications can change the uniqueness, recreation, visual and aesthetic values of Connecticut's riparian corridor and shoreline habitat.

The CT IWQR and impaired waters list identify waters that are impaired due to hydrologic and habitat modification. Current assessment protocols have not covered the entirety of waterbodies across the State of Connecticut to determine all impairments due to non-pollutant sources.

Notable types of hydrologic and habitat modification in Connecticut include:

- **Channelization and channel modification** includes straightening, widening, deepening, and dredging; flood control measures; water drainage; navigation; sediment control; infrastructure protection; stream channel mining; channel and bank instability; habitat improvement/enhancement; and flow controls.

- **Streambank and shoreline erosion** occurs when the banks of water bodies are pulled away. Human-induced degradation of bank vegetation accelerates erosion when flowing waters overwhelm the soil and vegetation holding the bank in place. Streambank and shoreline erosion also occurs under natural erosion and sedimentation processes.

- **Loss of riparian habitat and vegetation** occurs when natural areas along rivers and streams are converted to developed land uses. Riparian, or streamside, corridors are environmentally important areas critical to stream stability, pollutant removal, and both aquatic and terrestrial wildlife habitat.

- **Dams and diversions** are engineered structures used for impounding, diverting, or withdrawing water for flood control, power generation, irrigation, public water supply, or navigation or to create ponds, lakes, and reservoirs. The DEEP Dam Safety Database shows the locations of dams in Connecticut.

Strategies

Many programs exist in Connecticut to protect and restore resources threatened or impacted by hydrologic and habitat modification. Activities affecting inland wetlands and watercourses are regulated at the local level under the Connecticut Inland Wetlands and Watercourses Act. Each municipal Inland Wetlands Agency regulates activities that affect inland wetlands and watercourses within their municipal boundaries. CT DEEP provides training, regulatory, and technical assistance to Connecticut's Municipal Inland Wetlands Agencies.

State activities potentially affecting inland water resources and wetlands are regulated by CT DEEP under individual and general permit programs. CT DEEP regulates activities in tidal wetlands and in tidal, coastal or navigable waters of the state seaward of the coastal jurisdiction line. The U.S Army Corps of Engineers also regulates activities in inland waters and wetlands within the State of Connecticut and the boundaries of Mashantucket, as well as activities occurring within tidal, coastal and navigable waters.

The Stream Flow Standards and Regulations were adopted in 2011 to protect Connecticut's river and stream systems by establishing stream flow standards, which apply to all river and stream systems in the state through a classification process and require minimum releases from dams (RCSA 26-141b-1 through 26-141b-8 inclusive). These standards are required to balance river and stream ecology, wildlife and recreation needs while providing for public health, flood control, industry, public utilities, water supply, public safety, agriculture, and other lawful uses of water. The Streamflow Standards and Regulations are in the implementation phase that require Streamflow Response Plans and Release by prescribed dates.

Habitat restoration is the process of returning a habitat to the condition that existed prior to its being degraded by anthropogenic activities. Once restored, a habitat will resume its normal ecological functions. CT DEEP has pioneered efforts to restore tidal wetlands, diadromous fish runs, and improve habitats for numerous plant and animal species. Several CT DEEP grant, advisory, and technical programs focus on restoration of tidal wetlands, coves and embayments, riverine migratory corridors, and coastal barrier beaches.

The CT DEEP Habitat Conservation and Enhancement (HCE) Program serves as a liaison between the CT DEEP Fisheries Divisions and other CT DEEP Program staff who take primary responsibility in regulating permitted activities that potentially impact fish populations. HCE staff interact directly with federal, state and local regulatory and planning agencies, as well as private conservation organizations, to provide information to conserve, restore and enhance the State's aquatic environments. Staff also provide site-specific guidance to private landowners managing freshwater and marine systems throughout the state.

Aquatic Invasive Species (AIS) are non-native plants or animals that when introduced to new waterbodies can displace beneficial native species, disrupt the ecosystem, and drastically reduce recreational activities, including swimming. CT DEEP provides funding, educational programs, and legislative support to help reduce the spread and impact of AIS as a source of NPS pollution.

By establishing a dedicated funding source for the Aquatic Invasives Grant Program provides a vehicle for state agencies, municipalities, and non-profit organizations to access funds from the Connecticut Lakes, Rivers and Ponds Preservation Account through a competitive grant process.

The "Clean, Drain, Dry" technique for boaters is the suggested BMP and will prevent the further spread of aquatic invasive species. CT DEEP hires AIS Stewards, Boating Education Assistants, and Pumpout Facility Inspectors that play a critical role in increasing public awareness about and preventing the spread of these species both through education and outreach. Additionally, under the law, boaters must inspect their vessel for vegetation and aquatic nuisance species and properly remove and dispose of all vegetation and nuisance species before transporting the vessel, or else be fined $95 per violation.

The CT DEEP Inland Fisheries Division maintains a riparian corridor protection policy to maintain biologically diverse stream and riparian ecosystems and to maintain and improve stream water quality and quantity. The policy also contains buffer zone guidelines for protection of perennial and intermittent streams. The Inland Fisheries Division also maintains a fact sheet on the importance of large woody debris to river ecosystems and guidance for its beneficial management, as well as stream crossing guidelines to promote unimpeded fish passage for resident and anadromous fish species and other wildlife.

The Connecticut Coastal NPS Program also lists wetlands, riparian areas, and vegetated treatment areas as an important topic for Coastal NPS in the state. Concepts emphasized by the program include the need to maintain the ability of wetlands and riparian areas to filer NPS contaminants, prevent or reduce pollutant loading to wetlands and riparian areas, restoring degraded or preexisting wetland and riparian areas, and using vegetated filter strips to reduce the amount of pollutants entering adjacent areas. These concepts are emphasized in the work that the CT DEEP Coastal NPS Program undertakes, including via living shoreline, riparian buffer, and tidal wetland restoration projects.

CT DEEP continues its efforts on stream habitat restoration with federal partners including NOAA and USFWS, municipalities, private land owners, and conservation groups such as Save the Sound and the Nature Conservancy to selectively remove dams that no longer serve their historical purpose. These dam removal efforts are primarily intended to restore aquatic habitat and eliminate public safety hazards. CT DEEP convenes regular meetings of partners working on this topic to update the list of priority dams for removal. Currently, several dams are in the planning stages for removal on Beaver Brook, Sawmill Brook, Pequabuck River, Farmington River, and Mill Brook. The CT DEEP NPS program will work with the CT DEEP Dam Safety program to evaluate additional dams for removal as funding is available.

BMPs related to hydrologic and habitat modification are being pursued with Section 319 and other NPS funding. Projects may have elements such as fish ladder installation, culvert modification or replacement, or restoration of riparian habitat, living shorelines, and tidal wetlands. Additional examples and resources an be found in the National Management Measures for Hydromodification and Habitat Alteration.

Table 4-4. Hydrologic and Habitat Modification – Five-Year Objectives, Actions, and Milestones								
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
1. <u>Ecosystem-Based Restoration</u>: Protect and restore water quality using streamflow-based protection and restoration.	1. Work with state and federal natural resource agencies and advocacy groups to implement ecosystem-based habitat restoration approaches that will restore and protect water quality and streamflow. Examples include: a. Protection from coastal erosion through the use of living shorelines and coastal wetland restoration b. Restoration and creation of wetlands, eelgrass, and oyster beds c. Stream and riparian zone restoration d. Restore stream connectivity by removing obsolete dams and repairing perched culverts	Projects implemented that utilize ecosystem-based approaches through cooperation with Migratory Corridor and Diadromous Fish Restoration Plan, and CT Green Plan.					5
		Review Streamflow Release Plans and approve streamflow releases	8	12		9	17
	2. Habitat enhancement through implementing the Streamflow Standards and Regulations	Number of dam removal projects		1	1	1	1
	3. Promote approaches that enhance aquatic habitat in new and updated watershed based plans and implementation projects, and in community coastal resilience plans.	Conduct projects that include riparian planting	2	1	1		
	4. Enhance connectivity and habitat through the removal of dams.	Living Shorelines Projects implemented	1	1	1	1	1
	Lead Agencies: CT DEEP, NOAA, LISS *Partners: Municipalities, CT Conservation Districts, NGOs*	Acres of tidal wetlands restored					20

4.1.5. Domestic Animals and Wildlife

Background

Domestic animals can be a significant source of NPS pollution. In residential and urban areas, pet waste can be a major contributor of bacteria in stormwater runoff from developed areas. If the waste is not disposed of properly, bacteria and potential pathogens can wash into storm drains or directly into waterbodies and contribute to bacteria impairments, beach closures, contamination of commercial shellfish beds, and threaten public health. The nutrients in pet waste can also make their way to ponds, lakes and streams and contribute to algal growth and low dissolved oxygen.

Fecal material from nuisance populations of waterfowl (e.g. mute swans, Canada geese, ducks) and gulls is another source of NPS pollution. Feeding waterfowl and modifying natural vegetated areas near waterbodies to managed turf tends to increase their concentrations in certain areas and convert migratory populations into year-round residents. Canada geese are particularly persistent when they have become habituated to an area. Reducing waterfowl nuisance populations can help reduce bacterial and nutrient loadings, particularly in public parks, golf courses, and commercial areas along rivers, streams, and shoreline areas. However, there are no easy solutions to nuisance waterfowl problems and an approach that emphasizes education and outreach as a waterfowl control strategy is most effective.

Picking up after pets is an important behavioral and educational BMP to improve our waterways. Many communities have local ordinances or regulations requiring pet owners to pick up pet waste in public places. Off-leash dog parks managed by municipalities and often run by volunteer groups have broadened awareness and affected positive behavioral change in picking up pet waste, as a regular pet owner responsibility. CT DEEP's Pollution Prevention program provides information including fact sheets about pet waste.

Many WBPs incorporate NPS source information about pet waste and generally acceptable management practices, with many plans identifying specific areas of likely or known concentrations of pet dogs to focus on pollutant loading reductions through structural stormwater retrofit practices, and non-structural education and outreach events, signage, and pet waste stations. Such signage and pet waste stations can be found at a number of State Parks.

The CT DEEP Wildlife Division has published guidance for common wildlife problems methods, including for nuisance waterfowl. The guidance includes BMPs such as habitat modification and barriers/exclusion as methods designed to reduce feeding of waterfowl by the public, waterfowl nesting, and terrestrial waterfowl habitat. Creation of a vegetated, non-turf buffer along ponds or streams as a form of habitat modification is a recommended BMP since it also provides value as a riparian buffer, which can further reduce NPS pollution.

CT DEEP is pursuing improvements at State Bathing Beaches via the development of the *Best Management Practices Manual Development for Managing Water Quality at State Park Beaches and Boat Launches in Connecticut* and subsequent implementation of BMPs, including those that will reduce bacteria from domestic animals and wildlife at state parks and boat launches (Section 2.2).

Table 4-5. Domestic Animals and Wildlife – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
1. Provide information on nuisance wildlife and pet waste management to enhance protection of water quality	1. Promote information to the public on wildlife deterrents. 2. Promote signage in public parks and other educational tools, in addition to enforcement of prohibitions on the feeding of waterfowl. *Lead Agencies: CT DEEP* *Partners: Local Health Departments, Municipalities*	Conduct outreach and education events at State Parks Materials available as fact sheets, signage, preventive measures, resources on the DEEP website	3 X	3 X	3 X	3 X	3 X
2. Implement wildlife BMPs and pet waste management	1. Implement nuisance wildlife BMPs at state parks 2. Provide maintain pet waste stations at state parks	Number of state parks with wildlife deterrent BMPs Number of state parks where dog waste stations are maintained by CT DEEP					11 30

4.1.6. Boating and Marinas

Background

Boating is a major recreational and commercial activity in Connecticut. Approximately 90,000 boats are registered with the state and there are 117 state-owned boat launches in the state for recreational use. An estimated $11 billion is generated annually by the Connecticut maritime industry. Pollutants associated with marina operations and boating activities are of concern in Long Island Sound and local coves and embayments. Untreated or poorly-treated human wastes, boat exhaust contaminants, oil, fuel, litter, antifouling materials, paint, and preservatives can contaminate waters directly, through washing of vessels, or by storm runoff from boat maintenance areas. Limited tidal flow at marinas may exacerbate localized water quality problems. These sources can contaminate shellfish beds and bathing beaches, lower aesthetics, and contribute to nutrient enrichment, sediment contamination, and hypoxia.

Strategies

BMPs to reduce NPS effects from boating and marinas include proper hull maintenance and boat cleaning, boat washing and inspection, proper boat maintenance, and management of sewage from boats. The National Management Measures for Marinas and Boating contains information on means of reducing pollution of surface waters.

All Connecticut coastal waters are designated as No Discharge Areas (NDAs). The CT DEEP Boating Division is responsible for educating boaters about the need to keep boat sewage out of the water and for instructing boaters about the use of waste containment and disposal systems on boats and pumpout facilities. The Boating Division promotes the use of pumpout facilities and clean water along the coastline by distributing brochures and promotional items with the pumpout logo to marinas and boaters throughout the state to remind them of the available services and the harmful environmental effects of sewage discharges.

Marine Sanitation Devices (MSDs) are equipment installed on boats to receive, retain, treat, or discharge sewage. Under CWA Section 312, “no-discharge” areas for MSDs can be designated to afford better protection for sensitive near-shore areas. In addition, Connecticut’s Clean Vessel Act Program helps protect water quality in Long Island Sound and CT DEEP’s Boating Division administers the Clean Vessel Act Grant Program that provides partial funding for approved projects to help improve boat sewage facilities. While this program has traditionally been active in the Sound, the program also provides dockside pumpout on the Connecticut River as well as a pumpout boat for use on Candlewood Lake. Candlewood is Connecticut’s largest inland lake, located within the communities of Brookfield, Danbury, New Fairfield, New Milford, and Sherman. The vessel has been used for educational purposes and to provide a needed service on the lake.

Marinas are a potential source of polluted runoff to inland and coastal waterbodies. Connecticut has developed a Clean Marina Program and a Clean Boater Program to comprehensively address the protection of habitat and water quality relative to marina and recreational boating activities. The Clean Marina Program is currently managed by the Connecticut Marine Trades Association. The Connecticut Marine Trades Association has worked cooperatively with CT DEEP to build upon the Clean Marina and Boater Programs and develop guidance on recommended pollution prevention practices for marinas and boating facilities. Certified Connecticut Clean Marinas are recognized by

CT DEEP for their voluntary efforts to operate at standards above and beyond regulatory compliance. Connecticut Clean Marinas have taken great strides to implement practices that minimize pollution from mechanical activities, painting and fiberglass repair, boat hauling and storage, fueling, facility management, emergency planning and boater education.

Table 4-6. Boating and Marinas – Five-Year Objectives, Actions, and Milestones							
Objectives	**Actions**	**Milestones**	**Schedule**				
			2025	**2026**	**2027**	**2028**	**2029**
1. Administration of the Clean Marina Program	1. Connecticut Marine Trades Association (CMTA), with whom the authority now rests, will work with partners to continue to provide BMPs and training opportunities for marinas and the recreational boating community through existing resources. 2. CMTA will continue to assess the level of adherence by marinas to the minimum standards of the Clean Marina certification program. *Lead Agency: CT Marine Trades Association* *Partners: CT DEEP, US Coast Guard Municipalities, Stakeholders and User groups*	Provide reviews for Certified Clean Marinas applications CT DEEP/ US Coast Guard may provide inspections if necessary	X X	X X	X X	X X	X X
2. Continue to promote use of marina pumpout facilities	1. Continue to provide and promote the use of pumpout facilities. 2. Evaluate the need for additional pumpout facilities for inland and coastal waterbodies. *Lead Agency: CT DEEP Boating Division*	Remove over 1 million (1m) gallons of wastewater annually from recreational vessels	1m	1m	1m	1m	1m

4.2. Other NPS Categories

4.2.1. Landscaping and Turf Management

Background
The care and maintenance of lawns and other landscaped areas such as golf courses, cemeteries, athletic fields, and parks can contribute significantly to NPS pollution and water quality impacts.

The use of fertilizers and pesticides on lawns contributes nutrients and toxic chemicals to surface waters and ground water. Fertilizer use on turf is a significant source of phosphorus and nitrogen input to Connecticut waters. Inputs of phosphorus from fertilizers are of particular concern in freshwaters, while inputs of nitrogen are the main concern for coastal waters and Long Island Sound.

Storage and disposal of fertilizer and lawn care chemicals is also a potential source of NPS pollution. Improper storage procedures are of concern when chemicals are located near critical resource areas. Disposal of leftover and unusable pesticides, as well as containers and rinse water, can impact water quality if proper procedures are not followed.

Improper disposal of grass, leaves, and other yard wastes can also affect water quality in residential and commercial areas. Grass clippings, high in nitrogen, are of particular concern with respect to coastal waters, while leaves, which contain relatively high amounts of phosphorus, are of particular concern with respect to freshwaters. Grass clippings or leaves deposited in surface waters, wetlands, or drainage systems can contribute to nutrient loadings and drainage problems.

Strategies
Pollution prevention and source controls are the most effective approaches for addressing NPS pollution associated with landscaping and turf management. A number of statewide and regional efforts are underway that mandate or promote improved lawn care and landscaping practices in Connecticut.

- Connecticut law P.A. 12-155 banned the application of fertilizers containing phosphorus on established lawns. The law requires that a soil test be performed within the previous two years indicating phosphate is needed before phosphorus from fertilizer, amendments, or compost can be applied to established lawns. Regardless of testing results, fertilizers containing phosphate shall not be applied to established lawns between December 1 and March 15, near water resources, or to any impervious surface. Golf courses and agricultural land are exempt from this regulation.

- Connecticut Law P.A. 09-56 banned lawn care pesticide applications on the grounds of day care centers, elementary and middle schools (grade 8 and lower) as a result of residents' concerns about children's health and the environment. Some Connecticut municipalities have gone beyond the requirements of the law and have stopped using pesticides to manage turfgrass on all their municipal properties.

- Organic lawn and turf care can maintain attractive lawns and turf without the use of excessive nutrients or toxic pesticides. Homeowners are encouraged to use environmentally-friendly lawn care practices such as reducing or eliminating fertilizer and pesticide usage through the use of slow release fertilizers and fertilizer application timing; utilizing alternative landscaping that decreases maintenance; soil testing and non-chemical lawn care measures. The UCONN Cooperative Extension has a number of programs related to sustainable lawn care and gardening practices including the Home & Garden Education Center, Master Gardner Program. The Connecticut Chapter of the Northeast Organic Farming Association is an additional sources of information on organic lawn care resources in Connecticut.

- Connecticut participated in the Northeastern Regional Turf Fertilizer Initiative, a collaborative effort that sought to engage the six New England states and New York State, EPA, and industry and non-industry stakeholders in discussion on the contribution of fertilizers applied to lawns to polluted runoff and water quality problems. This initiative developed mutually agreeable and scientifically sound regional guidelines related to the formulation and application of turf fertilizer.

- CT DEEP and other NPS partners continue to promote landscape stewardship by homeowners, businesses, and institutions. Extensive outreach programs and materials have been developed to encourage the creation of backyard habitat in residential areas near stream corridors, including the importance of maintaining healthy vegetated buffers to streams, ponds, and wetlands, and recognize the efforts of the public.

- UCONN developed FertAdvisor, a smartphone application to assist homeowners and turfgrass practitioners in calculating the amount of lawn fertilizer needed, drop and rotary spreader calibration, and reading a fertilizer label to properly apply fertilizer to turfgrass areas. Built in calculators help users determine how much fertilizer will be needed to properly fertilize turfgrass areas, streamline calibration calculations, and calculate the amount of nitrogen, phosphate and potash that will be applied to their area based on the fertilizer selected. Animations and videos guide turfgrass enthusiasts on how to take a soil sample, properly apply fertilizer using drop and rotary spreaders, calibrate a fertilizer spreader, and calculate lawn surface area.

Table 4-7. Landscaping and Turf Management – Five-Year Objectives and Actions	
Objectives	**Actions**
1. <u>Homeowner and Municipal Outreach</u>: Reduce water quality impacts from residential lawn care and landscaping activities.	1. Using existing educational materials and programs (UCONN CLEAR guidance, NEIWPCC's Regional Turf Fertilizer Initiative, NOFA's Organic Landcare Program, and UCONN FertAdvisor App) to provide outreach to homeowners on sustainable lawn care and gardening practices and the creation and maintenance of backyard habitat, particularly in residential areas along waterbodies such as streams, lakes, and ponds. *Lead Agency: UCONN Extension* *Partners: CT DEEP, NOFA, NEIWPCC* Support for

4.2.2. Atmospheric Deposition

Background

Nitrogen and sulfur compounds released into the atmosphere from combustion and chemical processes form acids that enter surface waters through fallout, precipitation, and indirect runoff from the land, resulting in acidic soil and water conditions. Nutrients, particularly nitrogenous compounds, may contribute to increased biological productivity and dissolved oxygen deficits as has been observed in Long Island Sound. Toxic substances, including heavy metals, hydrocarbons, and pesticides, are transported via the atmosphere and contribute to water and sediment degradation when deposited. Atmospheric deposition of nutrients and other NPS pollutants is most effectively controlled through aggressive implementation of the Clean Air Act through reductions in air emissions.

In the Northeast, over 10,000 lakes, ponds, and reservoirs, and over 46,000 river miles are listed as impaired for fish consumption primarily due to atmospheric deposition of mercury (NEIWPCC, 2007). All freshwaters in Connecticut have a fish consumption advisory due to atmospheric deposition of mercury. The Northeast Regional Mercury TMDL establishes the mercury reduction goal and management strategy for multiple waterbodies throughout New England, including Connecticut, that are impaired by the atmospheric deposition of mercury.

Strategies

All of the New England states, including Connecticut, are implementing stringent mercury reduction programs. The Northeast region's ability to achieve the calculated TMDL allocations is dependent on the adoption and effective implementation of national and international programs to achieve necessary reductions in mercury emissions. Given the magnitude of the reductions required to implement the TMDL, the Northeast cannot reduce in-region sources further to compensate for insufficient reductions from out-of-region sources (NEIWPCC, 2007).

While the CT DEEP NPS Program does not currently have any projects that target NPS pollution from atmospheric deposition, the program will continue to evaluate the source and continue regional mercury emission reductions initiatives.

Table 4-8. Atmospheric Deposition – Five-Year Objectives and Actions	
Objectives	**Actions**
1. Continue regional mercury emissions reduction initiative.	1. Continue to implement the Regional Mercury TMDL. 2. Continue progress made toward the fish tissue goal and determine if adjustments need to be made in the reduction goals or how they can be achieved in accordance with the timeline set forth in the TMDL implementation plan. 3. Continue to evaluate and reduce emissions limits on coal-fired utilities, sewage sludge incinerators, municipal waste combustors, area sources, and residential heating/commercial and industrial oil combustion. 4. Work with other Northeast states to recommend adaptive implementation of the TMDL to meet the national implementation requirements of the TMDL. 5. The State of Connecticut has a consumption advisory to the public on fish captured in freshwaters due to mercury contamination, similar to the majority of states in the conterminous USA. Connecticut has completed multiple assessments over the years, which have shown generally lower levels of mercury, although levels remained above thresholds commonly advocated as leading to risk among consumers. CT DEEP will continue evaluate trends and make recommendations for fish consumption advisory in the state. *Lead Agencies: CT DEEP, CT DPH*

4.2.3. Land Disposal

Land disposal activities with the potential for NPS pollution impacts in Connecticut include landfills, septage disposal, and sludge management.

Land disposal activities can result in a variety of contaminants that have the potential to pollute ground and surface waters. As rain or snowmelt seeps through or runs off of disposal sites, it can collect contaminants produced by the deposited waste materials. This contaminated liquid, called leachate, can be produced by active or inactive land disposal areas including landfills and land application of septage and biosolids. Leachate is typically high in dissolved and suspended solids, including metals, and contains pathogens, organic constituents, and relatively high chemical oxygen demand.

In the case of landfills, the pathway of leachate through a disposal area is normally downward to the water table. Within the ground water system, the leachate forms a plume and flows with the ground water to surface water discharge points such as nearby streams or ponds. Where an impermeable surface such as hardpan or bedrock is present, the leachate may reach deeper ground water through fractures, or it may migrate laterally to surface waters. As leachate migrates from a landfill, it also undergoes certain physical, chemical, and biological reactions. These reactions alter and may decrease contaminant levels over time. Depending on the location and type of receptors, however, the potential exists for serious impacts to ground and surface waters.

In Connecticut, most septage is transported to and treated at publicly owned wastewater treatment plants. Other treatment/disposal methods such as land application, unlined lagoons, and innovative/alternative facilities are not prevalent and therefore are considered a relatively minor source of NPS pollution. Sludge or biosolids are mostly organic solids resulting from the treatment of wastewater. Recycling, incineration, or landfill disposal are the primary options for managing biosolids. Decisions regarding management of local biosolids are made at the local public wastewater treatment facility.

CT DEEP will continue to implement the CT DEEP Solid Waste Management Program and Connecticut Solid Waste Management Plan. Additional regional resources can be found on the North East Biosolids and Residuals Association webpage.

Table 4-9. Land Disposal – Five-Year Objectives and Actions	
Objectives	**Actions**
1. Continue to implement the CT DEEP Solid Waste Management Program and Connecticut Solid Waste Management Plan	1. Improve residential and commercial waste management practices. 2. Work with Municipalities to ensure better waste management practices including efficient yard waste disposal that reduces inputs to wetlands and roadways. *Lead Agency: CT DEEP-Bureau of Materials Management and Compliance Assurance* *Partners: Municipalities, Stakeholder Workgroups*

4.2.4. Brownfields and Contaminated Sites

Background

Contaminated sites, including brownfields, can contribute to nonpoint source pollution through erosion of contaminated soils, the discharge of contaminated ground water to surface waters, and the effects of contaminated sediments carried downstream by flowing surface waters.

The CT DEEP Remediation Division oversees the investigation and remediation of environmental contamination and the redevelopment of contaminated properties, and coordinates with the Water Quality Program to make sure that site clean ups are consistent with WQS. Their goal is to clean up contaminated sites to meet Connecticut's Remediation Standard Regulations, which ensure that human health and the environment are protected. The Remediation Division, with the assistance of Licensed Environmental Professionals (LEPs), oversees the cleanup of contaminated sites across Connecticut in the context of numerous state and federal programs including:

- Brownfields and Urban Sites
- Property Transfer Program
- Voluntary Remediation Program
- State Superfund Program
- Federal Superfund Program
- RCRA Closure and Corrective Action
- Underground Storage Tank Clean-up Program
- Significant Environmental Hazard Program
- Potable Water Program

Contaminated Sites in Connecticut

Industrial contamination is persistent in Connecticut, which has had a long history of industrial activities such as textiles, firearms, glassware, metal finishing, and other industries. Historical contamination from many industrial activities contributed pollutants directly to surface waters and sediments as well as ground water, which eventually discharges to surface water. Many sites have been remediated by eliminating the contaminant source, but others remain or need further investigation to determine the contaminant(s) that may be present and may be contributing to impairments.

Table 4-10. Brownfields and Contaminated Sites – Five-Year Objectives and Actions	
Objectives	**Actions**
1. Promote brownfield restoration for public open space.	1. Work with NGOs and Municipalities to facilitate non-intensive development options for brownfields. 2. Work with stakeholders to identify available funding sources for open space land restoration and water protection. 3. Encourage brownfield redevelopment as an alternative to development of undeveloped lands. 4. Provide incentives to redevelop brownfields and take advantage of existing infrastructure. 5. Encourage utilization of incentives for brownfields redevelopment through CT DECD program grants such as: support to municipalities for the costs of assessment and cleanup of brownfields and loans to private developers. *Lead Agency: CT DEEP Remediation Division* *Partners: Municipalities, Stakeholder Workgroups*

4.2.5. Forestry

Background

Connecticut is both heavily forested and densely populated. Per the CT DEEP Forestry Program, forests cover approximately 60% of land in the state. Potential water quality concerns associated with forestry practices (also referred to as "silviculture") involve erosion and sedimentation, which can result from road construction and use, timber harvesting, operation of mechanical equipment, and burning. Other potential impacts include increased water temperature and stream flow, caused by the removal of riparian zone vegetation, and water quality degradation caused by the accumulation of organic debris or chemical applications.

Commercial forestry operations in the state occur only on a small scale. Connecticut's Coastal NPS program received an exemption for the pollutants associated with forestry operations because forestry activities are adequately addressed through the State's Forestry Program and are not considered a significant NPS concern. The CT DEEP Division of Forestry oversees certification of Forest Practitioners under the Forest Practices Act. State Statutes requires that each city and town appoint an individual who meets certain educational requirements or by being licensed as an arborist in Connecticut as tree warden or deputy tree warden.

The potential impacts of forestry activities on inland wetlands and watercourses are regulated by town inland wetland agencies. The Connecticut Inland Wetlands and Watercourses Act was amended to eliminate the silviculture exemption for clear-cutting in inland wetlands.

A more significant impact related to NPS pollution is the loss and fragmentation of forested land resulting from development. Forest cover, including natural forest soils with irregular topography, provides numerous benefits. In addition to providing habitat for terrestrial and aquatic wildlife, watershed forest cover also reduces nonpoint source pollution, runoff, and flooding, improves regional air quality, reduces stream and channel erosion, improves soil and water quality, and reduces summer air and water temperatures. Through green infrastructure approaches, vegetation and natural systems are now considered a key tool in the protection and restoration of urban watersheds.

Programs within the CT DEEP Forestry Division focus on working with partners to protect Connecticut's forest resources. These programs:

- Encourage private land owners to practice responsible long-term forest management
- Protect Connecticut's forest resources from the effects of fire, insects, disease, and misuse
- Provide accurate and timely information about Connecticut's forest resources
- Certify forest practitioners
- Manage the State Forests, in which exist many large blocks of unfragmented forest land
- Encourage local forest industry.

Connecticut's Forest Action Plan is a guidance document for the CT DEEP Division of Forestry and forest conservation partners to promote forest conservation, protection, and enhancement strategies. A Forest Action Plan is required by the U.S. Farm Bill and must be updated every 10 years and reviewed every five years. Partners include:

- Connecticut Forest & Park Association
- UCONN Cooperative Extension System – Connecticut Forestry Program
- Natural Resources Conservation Service of Connecticut
- Connecticut Agricultural Experiment Station
- Audubon Connecticut
- Yale University
- United States Department of Agriculture (USDA) Forest Service
- Land owners, practitioners, land trusts, municipalities, and non-profit organizations.

CT DEEP partners with the USDA Forest Service to implement the Forest Legacy Program. The Forest Legacy Program is used to identify and help conserve environmentally important forests from conversion to non-forest uses. The main tool used for protecting these important forests is conservation easements. The Forest Legacy Program protects working forests, which is defined as those that protect water quality, provide habitat, forest products, opportunities for recreation and other public benefits. The program encourages and supports acquisition of conservation easements, legally binding agreements transferring a negotiated set of property rights from one party to another, without removing the property from private ownership. Most Forest Legacy Program conservation easements restrict development, require sustainable forestry practices, and protect other values. CT DEEP has used several funding sources to increase forest preservation holdings including the Recreation and Natural Heritage Trust Program and the Open Space and Watershed Land Acquisition Grant Program.

CT DEEP NPS Program staff coordinate with and provide comments to the CT DEEP Open Space and Watershed Land Grant Acquisition Program and the CT DEEP Recreation and Natural Heritage Trust Program. In these reviews, NPS staff encourage acquisitions that may be beneficial to surface waters, such as those mentioned in a WBP, adjacent to existing state land, or within a riparian corridor.

The EPA National Management measures to Control Nonpoint Source Pollution from Forestry contains additional resources and guidance to help forest owners or managers protect surface waters from polluted runoff that can result from forestry activities.

Table 4-11. Forestry – Five-Year Objectives and Actions	
Objectives	**Actions**
1. Apply the CT Forest Action Plan for priority areas	1. Implement the CT Forest Action Plan for the next 10 years. 2. Utilize the CT Forest Action Plan and supplemental resources to support grant applications, target conservation opportunities, and best utilize resources to accomplish goals *Lead Agency: CT DEEP Division of Forestry* *Partners: Connecticut Forest & Park Association, UCONN Cooperative Extension System, Connecticut Agricultural Experiment Station, Natural Resources Conservation Service*
2. Continue to provide education and outreach to private land owners and municipal officials	1. With the majority of forest land in the state being privately owned, continue the existing education and outreach programs of the CT DEEP Division of Forestry. Focus on outreach and training to private land owners, municipal officials, and land use commissions in the value and importance of forests to water quality and protecting forest riparian areas and forest cover within watersheds. *Lead Agency: CT DEEP Division of Forestry* *Partners: Connecticut Forest & Park Association, UCONN Cooperative Extension System, Connecticut Agricultural Experiment Station, Natural Resources Conservation Service*
3. Promote preservation of forests and open space through grants and direct purchase of lands	1. Continue to Fund Open Space Grants for municipalities to purchase open space, 2. Purchase and preserve lands to add to State Forests and Parks as a priority for NPS abatement. 3. Coordinate with and provide comments to CT DEEP's Open Space and Watershed Land Grant Acquisition Program, and the Recreation and Natural Heritage Trust Program. *Lead Agency: CT DEEP Land Acquisition* *Partners: Municipalities*
4. Promote urban forestry as a key component of effective municipal green infrastructure programs	1. Continue to promote urban forestry through grants and technical assistance to municipalities. 2. Support the NPS benefits of the urban Forested Natural Areas and Riparian Corridor Restoration Grant and encourage NPS Partners in urban areas to consider this as an additional funding source for riparian buffer projects. *Lead Agency: CT DEEP Division of Forestry* *Partners: Municipalities, UCONN Cooperative Extension System, Connecticut Fund for the Environment*

4.2.6. Material Storage

Storage Tanks

Underground storage tanks (USTs) and aboveground storage tanks (ASTs) are used to store petroleum products such as motor fuels, heating oils, and other types of chemicals. Storage container leaks or exposure to precipitation or runoff may lead to contamination of waters. When an underground storage tank leaks, the soil around the tank will become contaminated and the ground water may also be impacted. The length of time the tank has been leaking and the type of soil the tank is placed in will play a factor in the extent of contamination. Leaking USTs have caused significant impacts, including the contamination of numerous private wells, temporary disruption in the use of public wells, explosions and fires at construction sites, explosion hazards within buildings, and the leaching of petroleum into surface waters. Proper siting, design, construction, operation, and maintenance of USTs and ASTs are critical to minimizing the opportunities for such releases to occur.

The UST regulations have led to many USTs being removed because their ages exceeded established average life expectancy criteria. Connecticut now boasts one of the nation's lowest ratios of releases to total number of commercial USTs in use. Federal and State rules require certain UST systems to have pollution prevention modifications including protection from spills, overfills, and corrosion. Information on CT DEEP's process on UST, including updates to regulation rulemaking, can be found on the program webpage.

Hazardous Materials

The improper use, handling, storage, and disposal of hazardous materials can have a significant impact on surface and ground water quality. Hazardous materials is a broad category that generally includes toxic, corrosive, flammable, or explosive materials which, due to their quantity, concentration, or physical/chemical characteristics, may, upon release or exposure, cause or contribute to human health or environmental hazards.

CT DEEP has prepared information including fact sheets and compliance checklists for the vehicle services industry, which includes vehicle maintenance and repair facilities, auto body shops and auto recyclers which outline basic regulatory requirements and BMPs, including for disposal of hazardous waste related to their operation.

Discharges and releases of toxic chemicals and other hazardous materials to the environment generated by commercial, industrial, and institutional activities are regulated by a variety of federal and state laws and programs. Household hazardous wastes (HHW) also pose a danger to the environment; however, these wastes are not subject to the same rules. Common HHW include oil-based paints, thinners, pool chemicals, pesticides, and gasoline. Programs that encourage collection and proper disposal of HHW offer a potential solution.

Concerns associated with hazardous materials generally involve their use in industrial or commercial operations; yet even small amounts of household hazardous materials may be transported by runoff and have the potential to impact water quality.

Table 4-12. Material Storage – Five-Year Objectives, and Actions	
Objectives	**Actions**
1. Continue regulatory programs for materials and hazardous waste management	1. Continue to implement Connecticut's materials and hazardous waste management regulatory programs. *Lead Agency: CT DEEP*
2. Expand Household Hazardous Waste Collection Opportunities	1. Evaluate the feasibility of creating a program to expand Household Hazardous Waste opportunities for citizens. 2. Develop a strategy for implementing an expanded HHW program financed by Extended Producer Responsibility. *Lead Agency: CT DEEP* *Partners: Industry Representatives, CBIA*

4.2.7. Resource Extraction

In Connecticut, sand and gravel mining and rock quarries are the most common resource extraction activities that contribute to NPS pollution. Crushed stone and construction sand and gravel are the State's leading mineral commodities by value – accounting for nearly all of the State's mineral production. Crushed stone quarried in Connecticut is used for riprap and jetty stone, as fine and coarse aggregate, and other uses. Sand and gravel are used in concrete aggregate (including concrete sand), concrete products (blocks, bricks, pipe and decorative uses), road construction, fill, and in snow and ice control.

Potential NPS impacts from resource extraction activities in Connecticut include:

- Sand and gravel mining can lead to increased erosion and sediment load, which can have adverse affects on receiving waterbodies.
- Like other types of mining, sand and gravel mining involves the removal of overburden (layers of soil or rock overlying a valuable mineral deposit) which can play an important role in the protection of ground water.
- Stone and gravel washing at quarries and mining sites can lead to sedimentation if not properly controlled.
- Water quality impacts can result from fuel spills and other hazardous material discharges associated with vehicles and equipment at the mining site.
- Sand and gravel sites can attract illegal dumping if not properly managed.

Surface mining activities are subject to a variety of state and federal environmental regulatory programs, including water discharge permitting, solid and hazardous waste management, water and natural resources permitting, and air emissions permitting (see CT DEEP Industrial Stormwater General Permit, Sector B – Mines & Quarries and stone cutting). Resource extraction activities are often regulated at the local level through zoning and inland wetland regulations.

Table 4-13. Resource Extraction – Five-Year Objectives and Actions	
Objectives	**Actions**
1. Strengthen regulatory controls on resource extraction activities to protect water quality	1. Support efforts to modify Comprehensive NPDES General Permit program to regulate the mining industry, and re-evaluate the compliance status and existing threat to water quality from mining activities in Connecticut. 2. Assess the effectiveness of municipal land use regulations for addressing potential water quality impacts of resource extraction activities. 3. Develop recommendations for modified State and/or local regulatory mechanisms for more effectively addressing water quality impacts of mining activities. These include CT Industrial Stormwater General Permit. *Lead Agency: CT DEEP* *Partners: Industry Representatives, CBIA*

5 NPS Management Program Performance

Like all state and federal programs, the Connecticut NPS Management Program cannot function effectively without funding and reporting needs. The funding is essential to achieve the objectives, actions and milestones identified within this plan. Additionally, reporting is essential to evaluate, consider and inform others on the progress and successes as a result of implementing this plan. The following sections provide the details of the funding and reporting behind the Connecticut NPS Management Program.

5.1. Program Funding

In Connecticut, programs that address NPS pollution are supported with federal, state, and local funds. Like many states, Connecticut does not have sufficient resources to implement measures for all existing or potential NPS pollution problems. To maximize NPS pollution control efforts, technical and financial assistance from federal, state, and local sources are cooperatively targeted to NPS priority watersheds and statewide programs. This Plan identifies the use and allocation of Section 319 funds as well as the use and coordination of other funding for NPS activities in Connecticut.

Section 319 funds support only a small portion of the overall nonpoint source pollution reduction activities in Connecticut. Other Federal funds include the CWA Section 604(b) Water Quality Planning grant, EPA's Long Island Sound Study grants and grants from the US Fish and Wildlife Service such as the Long Island Sound Futures Fund, Coastal Zone Management Act funds awarded by the National Oceanic and Atmospheric Administration, and NRCS EQIP funds that go directly to agricultural producers. FEMA Pre-Disaster Mitigation Funds also support projects in Connecticut. Other funding sources from other federal, state agencies, and private foundations are used when available.

5.1.1. Section 319 Funding

Background

Section 319 of the federal Clean Water Act establishes the national program to control nonpoint sources of water pollution. Under Section 319, the U.S. Environmental Protection Agency (EPA) awards a grant annually to CT DEEP. The Section 319 NPS award is divided into "NPS program" and "Watershed project" funds by the type of work funded. "Watershed project" funding is for implementing water quality restoration or protection projects while "NPS program" funding supports the full range of nonpoint source program and planning activities. Current EPA guidance allows states to use up to 50% of the annual Section 319 NPS award for "NPS program" activities which includes staff funding; states must use as least 50% of the annual grant award to implement "watershed projects" guided by EPA required nine-element Watershed-Based Plans (WBP) or an alternative plan. Most funding is directed to subgrantees that proposed projects for planning and implementation across the state have been awarded after a competitive review process. These funds are called the categorical grant and is used for planning projects, such as WBP development, and implementation projects. A major focus of Connecticut's NPS Program is to implement WBP plan recommendations related to impairments listed in the IWQR and 303(d) list of impaired

waters. Per updated EPA guidelines, there is added flexibility to use watershed project funds to support watershed planning and capacity building in EJCs.

Staff Funds

CT DEEP uses a portion of the NPS program funds through its EPA Performance Partnership Grant (PPG) to support staff in the Watersheds and Water Quality programs. Currently, the staff funding supports full-time Environmental Analysts in the Watersheds Section, and provides partial funding of an Environmental Analyst in the Water Quality Program. CT DEEP NPS staff report deliverables, conduct program planning and outreach, review new and existing WBPs or alternative plans, implement WBPs through grant implementation and projects, and assist local support through partnerships. In addition, Watersheds Section staff promote the CT DEEP NPS Management Program Goals (see Section 1.4) through review of environmental permit applications, for example, water diversion permits, subject to CT DEEP approval, planning documents developed by CT DEEP and other agencies, and potential purchases and acquisitions of land by the state, each with a focus on water quality. Water Quality Section staff review and evaluate pollutant loads for planning documents, work on new TMDLs and TMDL Alternatives, and Support the Watersheds Section with impaired waters information. Staff also sit on various committees, and attend meetings related to NPS issues as requested by stakeholders. Funding may also be used to cover travel expenses for NPS program staff, including to the Annual Regional Nonpoint Source Conference, Nonpoint Source Workshop, and other related conferences.

Annual Request for Proposals

CT DEEP develops an annual Section 319 NPS Grant Program Request for Proposals (RFP) to solicit project proposals which meet CT DEEP's priorities toward restoration or protection of surface waters. A minimum of 50% of Connecticut's overall Section 319 NPS Grant allocation is devoted to watershed implementation projects. A selection committee made up of staff from CT DEEP and EPA to conduct a competitive review of the proposals according to RFP and grant criteria.

Priority Projects

In the review process, CT DEEP looks for certain projects that meet program priorities. In addition to projects submitted by applicants to CT DEEP in the RFP process, CT DEEP NPS staff consider projects that may have been previously submitted, or that originated from other CT DEEP programs and priorities. Such priorities include: larger, contiguous projects, such as those that incorporate GI into other capital programs; projects identified in approved WBPs; projects that target impaired waters; WBP development; and projects in priority watersheds; projects with considerations for climate resiliency; or projects within or benefiting an Environmental Justice Community (see Section 5.2).

Previously Funded Projects

Annually, CT DEEP awards 5-10 projects planning and implementation projects with Section 319 funds. The following are a few examples of projects that are underway or have been completed in the last few years.

Examples of funded planning and implementation projects include, but are not limited to:

- Watershed Based Plan development
- Neighborhood retrofits, including residential rain gardens
- Technical Assistance support from the Soil and Water Conservation Districts
- Agricultural NPS planning and waste management

- Sediment management for dam removal
- Stormwater retrofits and improvement
- Green Infrastructure implementation

Match Requirements

EPA requires 40% match for the federal funds received through the Section 319 NPS Grant. CT DEEP requests Section 319 Grant applicants/recipients provide the 40% non-federal match for the project. Non-federal match can be provided in terms of monetary match or in-kind services, such as staff/volunteer time and/or equipment. In certain cases when applicants are unable to provide match, CT DEEP has explored other options to achieve the required match, such as designating match from state funds that are supporting a NPS project. The source of match might be provided by a combination of the subgrantees pledges and state funds, such as Connecticut Clean Water Fund grants. CT DEEP evaluates all the options to meet the match requirement for each year. Match for staff supported with Section 319 NPS funds are provided through the Performance Partnership Agreement.

5.1.2. Other funding sources supporting NPS management goals

Additional funding for NPS pollution control is embedded in various programs. Likewise, many other programs while not directly related have co-benefits for the Connecticut NPS Management Program. For example, CT DEEP, through the Clean Water Fund (CWF), extends sanitary sewers or establishes decentralized wastewater management systems in areas with failing septic systems. The CWF also provides grants and loans to municipalities with combine sewer overflows for green infrastructure projects. Green Infrastructure project proposals must compete with other proposals to be considered under the Biennial Clean Water Fund Priority List. They must also demonstrate compliance to achieving the goals of the local Long Term Control Plan for CSO abatement, if they are to be considered for Clean Water Revolving Funds and Loans. Through state bond funds, Connecticut provides 95% of the funding for the CWF. CT DEEP provides grants to communities for open space acquisition or purchases properties directly to preserve undeveloped areas. Purchase of open space protects properties from development and protects water quality.

The Long Island Sound Study (LISS) and its grant partners offer various funding opportunities for projects in and around Long Island Sound. These grant opportunities and additional information can be found on the Long Island Sound Study Grants website. CT DEEP NPS Staff collaborate and oversee funded work for NPS projects funded through the various facets of the LISS.

Funding opportunities through the LISS related to NPS include:

- Long Island Sound Community Impact Fund, through a partnership with Restore America's Estuaries, the EPA, and the LISS, is eligible for, among others, projects that result in quantifiable pollutant prevention or reduction.
- Long Island Sound Futures Fund supports projects to fully restore the health and living resources of Long Island Sound. Under the Clean Waters and Healthy Watersheds funding priority, the program aims to improve water quality by reducing pollution from the waters that flow into the land which surrounds the Sound. Major funding is from the EPA through the LISS with funding from the U.S. Fish and Wildlife Service, the NRCS, and the Zoeits Foundation.

- Long Island Sound Study Research Grant Program aims to provide a better understanding to more effectively manage Long Island Sound, including its pollution problems.

The Long Island Sound Study received significant funding through the Bipartisan Infrastructure Law. Some of this funding is being used to implement projects that address NPS problems. The table of BIL-funded LISS projects provides a brief description of each funded project as well as additional details. CT DEEP NPS staff serve as project managers for certain projects and provide administrative support. The LISS also receives funding under CWA Section 320 through the National Estuary Program. Coastal Zone Management Act funds are awarded by the National Oceanic and Atmospheric Administration.

CT DEEP annually receives Clean Water Act Section 604(b) Water Quality Management Grants from EPA. Funds from this grant program are used for water quality planning activities such as projects to help identify point and nonpoint source pollution problems and to develop plans to resolve these problems. Funding is allocated such that CT DEEP reserves and awards 40% of the grant to planning organizations for projects that help meet Connecticut's water quality goals and program priorities, and the remaining 60% of the funds are used by CT DEEP for water quality management planning purposes and oversight of the 604(b) funded projects.

The USDA NRCS Environmental Quality Incentives Program (EQUIP) can be used by agricultural producers for projects that will result in improved water quality and reduced soil erosion and sedimentation, which aligns with the CT NPS Management Program goals. CT DEEP staff collaborate with NRCS staff, and try to supplement EQUIP funding for NPS projects with other funding sources when feasible. In Connecticut, EQUIP funding has recently been combined with LISFF and Section 319 funding on waste management projects.

CT DEEP Climate Resilience Fund Grant helps Connecticut communities initiate planning and develop projects that foster resiliency for the effects of climate change at the regional, municipal, and neighborhood level scale. One primary outcome of the program is to help communities win competitive grant funding, including through the Long Island Sound Futures Fund, Connecticut Clean Water Fund, and others.

Further information can be found in Appendix B, but a few grant resources include:

- Grants.gov
- Catalog of Federal Domestic Assistance
- EPA Water Finance Clearinghouse
- EPA Funding Resources for Watershed Protection and Restoration
- EPA Green Infrastructure Funding Opportunities
- USDA National Agriculture Library: Water and Agriculture Information Center

5.2. Program Progress

Regular reporting on the objectives, actions and milestones from the Connecticut NPS Management Plan is a requirement of the associated federal funding, however it is also important to provide a summary of efforts to those overseeing this plan. It is also an opportunity to review the program achievements and consider where efforts are making progress or not. The information is very informative for state managers and federal legislators to continue their support for the program as well.

Annual Reporting

Watersheds Section staff submit documentation of the administration of the Section 319 NPS Grant to EPA on an annual basis. This documentation includes summaries to report the progress of the 5-year Connecticut NPS Management Plan objectives. Documents submitted include a Work Plan documenting projects selected for the upcoming fiscal year, an Annual Report documenting Section 319 activities and accomplishments completed in the past fiscal year, and data entry for the Grant Reporting and Tracking System (GRTS). Other documents, a NPS Success Story and a nine element WBP, are also submitted for EPA's approval on an annual basis. In addition, Watersheds Section staff are responsible for submitting final reports for the Section 319 funded projects. CT DEEP's commitment to each of these tasks is further described in Section 6.3.

Annual Achievements

The following measures will be used to evaluate the performance and progress of the Connecticut NPS Management Program (dates are subject to change):

National Guidelines: Use the Nonpoint Source Program and Grants Guidelines for States and Territories dated May 4, 2024, to identify eligible activities, program priorities, programmatic conditions, and reporting requirements. At least 50% of 319 funding will be used for implementing watershed-based plans (WBP) to protect or restore priority water bodies. One nine-element WBP per state will be submitted annually to the Region for review; alternative watershed-based plan(s) will be submitted to the Region for review and approval. Continue to work with USDA through participation on the State Technical Committee and to support the National Water Quality Initiative, including monitoring. State agency will enter all state-mandatory GRTS data elements within 90 days of a new categorical grant or PPG award and before the national deadline (currently March 31); add GRTS data as projects are implemented per grant term and condition; and promptly assist EPA (HQ or Region) with data reconciliation and quality checks when requested. Submit an annual work plan and schedule that describes proposed 319-funded work, outputs, staffing, environmental outcomes, and budget, consistent with management plan milestones.
NPS meetings/training: A representative of the State's NPS program is expected to attend national and regional NPS and GRTs training workshops, conferences and meetings convened by EPA unless prevented by state-wide travel bans. Annual state work plans should include adequate 319 funds to cover travel expenses for NPS program staff to participate unless state funds are available for this purpose.

Success Stories: Submit success stories for impairments eliminated in previous years (Type 1 stories) and/or that show improvement in water quality (Type 2 stories) or demonstrate ecological restoration (Type 3 stories). To do this, identify impairments eliminated or waterbodies with demonstrated water quality or habitat improvements, and investigate whether local, state, federal or private NPS mitigation occurred that might make these waterbodies a candidate for a NPS Success Story. In addition, beginning in FY25, submit success stories for sustained prevention of water quality degradation in healthy waters (Type 4 stories) and/or success stories that feature interim metrics/measures (Type 5 stories). Using EPA's guidance, prepare and submit to EPA candidate success stories (via the Grants Reporting Tracking System portal) by August 15th. See this link for examples of success stories and other information.
Annual Report: In accordance with the CWA and following the current Nonpoint Source Program and Grants Guidelines, report annually on progress made in implementing the State's NPS Management Program, including a summary of major accomplishments and completed milestones, a description of 319-funded statewide programs and completed 319-funded watershed projects, a list of active 319 projects with expected completion dates, a brief summary of water quality improvements (e.g. restoration of impaired waters or other notable environmental results) and NPS pollutant load reductions (total phosphorus, nitrogen, and sediment reductions for the state, from the previous March GRTS reporting). Where information is not yet available on load reductions and water quality improvement where implementation is underway, surrogate measures of environmental progress should be used.
Satisfactory Progress Review: EPA will use information provided by the state (annual report, workplan, GRTS entry, success stories) to determine whether the State has made satisfactory progress in implementing its NPS Management Program in accordance with CWA Section 319(h)(8). If appropriate, EPA will request additional information to assist with the determination. EPA will complete an annual checklist on Progress and Performance and document its findings.

Appendix A

Legal Authority for Connecticut's Nonpoint Source Management Program

Legal Authority for Connecticut's Nonpoint Source Management Program

In 1987, the federal Clean Water Act (CWA) was amended in a number of ways, one being the addition of Section 319, titled "Nonpoint Source Management Programs." This new section established the first national program to authorize federal funding for the control of NPS pollution. To be eligible for federal funding under Section 319, each state was required to prepare two documents: a state assessment report describing the State's NPS problems and a state management program explaining statewide planning. Section 319 requires states to regularly update their NPS Management Program Plans.

In 1990, Congress passed a second NPS statutory mandate—Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA). CZARA requires states with federally-approved coastal zone management programs to develop coastal nonpoint pollution control programs to be approved by the EPA and the National Oceanic and Atmospheric Administration (NOAA). These programs strengthen the link between federal and state coastal zone management and water quality programs with the intent of enhancing state and local efforts to manage land and water use activities that degrade coastal waters and coastal habitats.

Although Connecticut General Statutes contain no specific requirement to develop a NPS management program or plan, statewide NPS planning complements and helps to integrate Connecticut's state water quality initiatives.

Connecticut's Water Pollution Control Statutes (Section 22a-416 through 22a-484 of the Connecticut General Statutes, hereinafter referred to as Chapter 446k), as well as inland water resources statutes (Chapter 446i and others), provide the Commissioner of DEEP with regulatory authority and nonregulatory tools to abate, prevent, or minimize sources of water pollution, including nonpoint sources. The programs include:

- Education
- Technical guidance
- Establishment of site-specific water quality goals and criteria
- Best management practices
- Product bans
- Discharge permitting authorities
- Multiple enforcement tools to abate and prevent pollution
- Financial assistance for sewerage infrastructure, cove and embayment projects, and Long Island Sound water quality research and management.

Connecticut General Statutes, Sections 22a-90 through 22a-112, in effect since January 1, 1980, serve as the basis for the State's coastal management program. The Connecticut Coastal

Management Act (CCMA) contains specific goals, policies, and standards that, when applied to development proposals, ensure that the development or use of the land and water resources proceeds in a manner consistent with the capability of the land and water resources to support the development and that adverse impacts to coastal resources and water-dependent uses are avoided, minimized, or mitigated. Section 22a-93(15)(A) of the CCMA specifically defines "Adverse Impacts on Coastal Resources" to include degrading water quality through the significant introduction into either coastal waters or ground water supplies of suspended solids, nutrients, toxics, heavy metals or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen or salinity." Thus, the CCMA specifically protects against adverse NPS pollution impacts to coastal water quality. Further, any permit issued pursuant to the State's coastal regulatory authority must be made with due regard for indigenous aquatic life, fish and wildlife, and the interests of the state, including pollution control, water quality, recreational use of public water and management of coastal resources, with proper regard for the rights and interests of all persons concerned (CGS Section 22a-359).

Appendix B

Connecticut Nonpoint Source Management Program Funding Sources

Connecticut Nonpoint Source Management Program – Potential Funding Sources	
Funding Source	**Description**
EPA Urban Waters Small Grants	Funds research, investigations, experiments, training, surveys, studies, and demonstrations that will advance the restoration of urban waters by improving water quality through activities that also support community revitalization and other local priorities. Projects proposed for funding must take place entirely within and focus on specific Eligible Geographic Areas.
EPA Healthy Communities Grant Program for New England	EPA New England's main competitive grant program to work directly with communities to reduce environmental risks to protect and improve human health and the quality of life.
EPA Environmental Education Grants	The Grants Program sponsored by EPA's Office of Environmental Education (OEE), Office of External Affairs and Environmental Education, supports environmental education projects that enhance the public's awareness, knowledge, and skills to help people make informed decisions that affect environmental quality.
United States Fish and Wildlife Service (USFWS)	The USFWS administers a variety of natural resource assistance grants to governmental, public and private organizations, groups and individuals.
USFWS North American Wetlands Conservation Act (NAWCA)	NAWCA provides matching grants to organizations and individuals who have developed partnerships to carry out wetlands conservation projects in the United States, Canada, and Mexico for the benefit of wetlands-associated migratory birds and other wildlife.
USFWS Partners for Fish and Wildlife Program	The Partners Program provides technical and financial assistance to private landowners and Tribes who are willing to work with USFWS and other partners on a voluntary basis to help meet the habitat needs of Federal Trust Species. The Partners Program can assist with projects in all habitat types which conserve or restore native vegetation, hydrology, and soils associated with imperiled ecosystems such as longleaf pine, bottomland hardwoods, tropical forests, native prairies, marshes, rivers and streams, or otherwise provide an important habitat requisite for a rare, declining or protected species.
USFWS National Coastal Wetlands Conservation Grant Program	The NCWCGP provides States with financial assistance to protect and restore these valuable resources. Projects can include (1) acquisition of a real property interest (e.g., conservation easement or fee title) in coastal lands or waters (coastal wetlands ecosystems) from willing sellers or partners for long-term conservation or (2) restoration, enhancement, or management of coastal wetlands ecosystems. All projects must ensure long-term conservation.

Connecticut Nonpoint Source Management Program – Potential Funding Sources	
Funding Source	**Description**
NRCS Conservation Stewardship Program	This program is available to producers to address resource concerns in a comprehensive manner by improving existing conservation activities and undertaking new conservation activities.
NRCS Conservation Reserve Program	This program is to provide technical and financial assistance to eligible farmers to address soil, water, and related natural resource concerns on their lands in an environmentally-beneficial and cost-effective manner.
NRCS Floodplain Easement Program	NRCS is providing up to $124.8 million in Emergency Watershed Protection Program-Floodplain Easement funding to help prevent damages from future storm events in Connecticut and other states affected by Hurricane Sandy. NRCS purchases the permanent easements on eligible lands and restores the area to natural conditions. The program complements traditional disaster recovery funding and allows NRCS to purchase a permanent easement on lands within floodplains that sustained damage from Sandy.
NRCS Connecticut Environmental Quality Incentives Program (EQIP)	For implementation of conservation measures on agricultural lands.
NRCS Healthy Forests Reserve Program	For restoring and enhancing forest ecosystems
CT DEEP's Administration of the EPA Section 319 Grant Program	Under the federal Clean Water Act, EPA Section 319 funds are awarded to CT DEEP to administer a grant program to effectively and efficiently address nonpoint source pollution are available to municipalities, nonprofit environmental organizations, regional water authorities/planning agencies, and watershed associations.
EPA Section 604(b) Program	Under the federal Clean Water Act, EPA Section 604(b) funds are awarded to CT DEEP to carry out water quality management planning including revising water quality standards; performing waste load allocation/total maximum daily loads, point and non-point source planning activities, water quality assessments and watershed restoration plans.
CT DEEP Clean Water Fund Financial Assistance for Municipal Projects	The Connecticut Clean Water Fund (CWF) is the State's environmental infrastructure assistance program. The fund was established in 1986 to provide financial assistance to municipalities for planning, design and construction of wastewater collection and treatment projects. This program was developed to replace state and federal grant programs that had existed since the 1950s. The 1987 amendments to the Federal Clean Water Act required that states establish a revolving loan program by 1989. The fund was modified in 1996 to include the Drinking Water State Revolving Fund (DWSRF) to assist water companies in complying with the Safe Drinking Water Act by providing low cost financing.

Connecticut Nonpoint Source Management Program – Potential Funding Sources	
Funding Source	**Description**
Long Island Sound Study - Grant Programs	The Long Island Sound Study and its partners offer multiple grant opportunities to help fund water quality improvement, education and outreach, restoration, and research projects of all sizes around Long Island Sound.
CT DEEP Long Island Sound License Plate Program	Section 14-21e of the Connecticut General Statutes (CGS) authorizes the issuance of the Long Island Sound license plate by the Department of Motor Vehicles, while CGS Section 22a-27k establishes the Long Island Sound Fund to be administered by the Department of Energy and Environmental Protection into which proceeds from the sale of the plates are deposited. Funds are distributed to schools, municipalities, environmental groups, and other non-profit organizations which apply for grants for projects to benefit Long Island Sound
CT DEEP Open Space and Watershed Land Acquisition	The Open Space and Watershed Land Acquisition (OSWA) Grant Program provides financial assistance to municipalities and nonprofit land conservation organizations to acquire land for open space and to water companies to acquire land to be classified as Class I or Class II water supply property.
CT DEEP Recreation and Natural Heritage Trust Program	The Recreation and Natural Heritage Trust program was created by the Legislature in 1986 in order to help preserve Connecticut's natural heritage. It is the CT DEEP's primary program for acquiring land to expand the State's system of parks, forests, wildlife, and other natural open spaces.
CT DEEP Urban and Community Forestry Grant Programs	he Urban and Community Forestry Planning Grant Program offers funding for municipalities and non-profit organizations to pursue planning projects such as tree inventories, management plans, or other monitoring programs that will help communities to make informed management decisions. Funding is offered through the: Urban Forest Equity Grant Program, Urban Forest Resilience Grant Program, Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program, and Community Forestry Small Grants Program.
FishAmerica Foundation Conservation Grants	FishAmerica, in partnership with the NOAA Restoration Center, awards grants to local communities and government agencies to restore habitat for marine and anadromous fish species. Successful proposals have community-based restoration efforts with outreach to the local communities.
NFWF Five Star and Urban Waters Restoration Grant Program	The Five Star and Urban Waters Restoration Program seeks to develop nation-wide-community stewardship of local natural resources, preserving these resources for future generations and enhancing habitat for local wildlife. Projects seek to address water quality issues in priority watersheds, such as erosion due to unstable streambanks, pollution from stormwater runoff, and degraded shorelines caused by development. The program focuses on the stewardship and restoration of coastal, wetland and riparian ecosystems across the country.

Connecticut Nonpoint Source Management Program – Potential Funding Sources	
Funding Source	**Description**
NFWF Long Island Sound Futures Fund	The National Fish and Wildlife Foundation's Long Island Sound Futures Fund supports projects to fully restore the health and living resources of Long Island Sound. It operates within a partnership of federal and state agencies, foundations, non-governmental organizations, educational institutions, user groups, and individuals dedicated to restoring and protecting the Sound.
Trout Unlimited Embrace A Stream	Embrace-A-Stream (EAS) is a matching grant program administered by TU that awards funds to TU chapters and councils for coldwater fisheries conservation.