NATIONAL ESTUARY PROGRAM SUMMARY WORK PLAN

FOR

FEDERAL FISCAL YEAR 2019 FUNDING

FOR

COMPREHENSIVE CONSERVATION AND MANAGEMENT PLAN

IMPLEMENTATION ACTIVITIES

DURING THE PERIOD

October 1, 2019-September 30, 2020 or beyond
[FY2020]

WITH PRIOR YEAR GOALS/ACCOMPLISHMENTS/HIGHLIGHTS
FOR THE PERIOD

October 1, 2018- September 30, 2019
[FY2019]

August 2019

Prepared by:

EPA Long Island Sound National Program Office

in consultation with and on behalf of

the Long Island Sound Study Funded Management Conference Partners

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A. GENERAL INFORMATION REPORTING REQUIREMENTS

1. CCMP 2019 GOAL FOCUS

The Long Island Sound Study (LISS) Comprehensive Conservation and Management Plan (CCMP) was first approved in 1994 by the States of New York (NY) and Connecticut (CT) and by the U.S. Environmental Protection Agency (EPA). From 2011 through 2015 the LISS partners and EPA met and revised the CCMP. The new CCMP, approved in 2015, identifies four primary themes:

1) Clean Waters & Healthy Watersheds,
2) Thriving Habitats & Abundant Wildlife,
3) Sustainable & Resilient Communities, and
4) Sound Science & Inclusive Management.

The need to continue the Management Conference was identified as an important, unifying component to support implementation. With the enactment of the Long Island Sound Improvement Act of 1990 (P.L. 101-596), the LISS Management Conference was made permanent – "The Administrator *shall* continue the Management Conference of the Long Island Sound Study…" In October 2018, the Congress passed, and the President signed into law, the *America's Water Infrastructure Act of 2018*. Among the many provisions of this far-ranging bill, Sec. 4104. *Amendments to Long Island Sound* revised the legislative underpinnings of the Long Island Sound Study and reauthorized funding through 2023. The bill's passage is important for several reasons. It codifies Congress's intent to authorize continued funding, it strengthens requirements for assessing program progress and financial integrity, and it lowers the non-federal share of grants from 50 percent to 40 percent. It also signals Congress's general support for the Long Island Sound restoration program.

Under the Management Conference structure, the CCMP established a broad-based and integrated approach to addressing the primary environmental and management problem areas identified. This approach required significant and sustained Management Conference coordination, involvement and funding – at all levels. Further, the CCMP identified many existing and ongoing environmental management programs of the Management Conference partners that would serve as the foundation for addressing the Sound's priority problems. New or separate programs or efforts to implement the CCMP were only to be created to fill gaps or better integrate efforts, such as the LIS Futures Fund (LISFF), LIS Research Fund, and CCMP Enhancements program. This FY2019 Work Plan, prepared under EPA's National Estuary Program (NEP) guidance, directly supports these goal areas with National Estuary Program (NEP) and LISS funding as described herein.

Ongoing core environmental programs that contribute to or support CCMP implementation include other Federal programs and funds directed to land use and watershed management, water quality, living resource conservation, management and regulation, as well as state and local programs aimed at regulating human and environmental impacts on the Sound. Many of these programs are delegated to the states, which have the responsibility, authority and accountability for implementing them.

The CCMP anticipates many funding streams and a variety of funding sources for successful implementation of its recommendations -- over time, by the LISS partners. The CCMP also envisions an educated public and informed constituency for the sustained effort to restore, enhance, and preserve the Sound as a national treasure and a 'green' engine of economic activity. Designated as an Estuary of National Significance in 1987, Long Island Sound is an inherent part of EPA's NEP and is a key geographic program of the national water program that includes Chesapeake Bay, Puget Sound, the Great Lakes, and the Gulf of Mexico. Because of its economic, social and environmental importance to the

Northeast region, Long Island Sound is included as a separate line item and has received funding under EPA's President's Budget request since FY1999.

a. NEP Implementation Review. The EPA Office of Water conducted a CCMP Implementation Review during June 5-6, 2019. The review focused on primary CCMP implementation areas and on determining whether sufficient progress was being made and funding was being directed to highest priority areas. The EPA Office of Water will provide a final findings letter to the LISS by September 2019.

2. FY2019 LISS BUDGET BREAKDOWN

This work plan summarizes tasks and deliverables contained in EPA FY2019 assistance awards to Management Conference partners that account for the FY2019-20 EPA Environmental Programs and Management (EPM) appropriation for the LISS NEP, and for EPM funding provided by EPA for the Long Island Sound Geographic Program. These funds include $600,000 in NEP allocations under Clean Water Act (CWA) §320, and $14,000,000 under CWA §119 as enacted. Grants are awarded by EPA Region 1 and 2 as delegated under EPA Delegations of Authority 2-42 and 2-94 under the authority of §119 per NEP funding guidance. The required aggregate match for this funding cycle is $8,929,956 as shown in Attachment 3.

The work activities and the budget amounts contained in this NEP Summary Work Plan were approved by EPA and the LISS Management Committee at its April 25, 2019 meeting. The record of the Management Committee meeting is documented in the April 25, 2019 Long Island Sound Study Management Committee Meeting Notes.

The LISS budget is organized into the four Program Elements outlined below; the FY2019 LISS budget breakdown by Program Element is:

Program Element	Amount
Coordination and Reporting of Environmental Actions/Results	*$411,707*
Public Outreach, Information and Education	*$1,074,255*
Monitoring, Modeling and Research	*$7,158,625*
CCMP Implementation, Technical Assistance/Regulatory Support	*$5,955,413*

To implement this summary Work Plan, as of this writing, EPA will issue five new assistance awards and amend ten current assistance awards to include the FY2019 funding. In addition, EPA will fund one interagency agreement and one contract to support work tasks. **Attachment 1** is a detailed breakdown of the FY2019 approved budget by LISS Program Element, Products and/or Services, Implementing Agency, and Environmental Outcome(s). The Environmental Outcomes are derived from the individual partner grant work plans based on EPA Order 5120.

3. LISS STAFF AND THEIR OFFICIAL RESPONSIBILITIES

The LISS provides funding to certain of its partners to support staff resources to carry out key elements of implementing the CCMP. **Attachment 2** lists the FY2019 LISS-funded staff by name, title and description of their major roles and responsibilities. Each LISS partner's federal assistance award work plan provides details on the deliverables, outputs and expected environmental outcomes for LISS-funded staff functions as required by EPA Order 5120. In addition to the staff listed in Attachment 2, the CTDEEP employs seasonal staff to assist with conducting the LIS summer water quality monitoring

program as necessary; these, and overtime costs for water quality monitoring staff, are included in that award, but are not shown in Attachment 2 because of the seasonal nature of the positions that may be filled by different incumbents during the period of employment. Each EPA grantee is responsible for managing its personnel under its own organization's human resource management policies and procedures.

The EPA provides two full-time equivalent (FTEs) federal employees that staff the EPA Long Island Sound National Program Office (LISNPO). A director, appointed by the Administrator under §119, and a program coordinator to plan, organize, coordinate and manage program operations to assist the Management Conference partners in CCMP implementation. These FTEs are not funded from the LISS, but from other EPA EPM resources. EPA Region 1 provides approximately 75 percent of an FTE to support EPA efforts for Long Island Sound in Region 1. In addition, EPA Region 1 is in the process of filling another full-time position that that will be dedicated 50 percent to Long Island Sound work. The LISNPO program coordinator position was filled on April 28, 2019. Additional staff in Region 1 and Region 2 are assisting with project officer duties relating to LIS awards. Region 1 also supports a US Government vehicle for LISNPO use via the General Services Administration (GSA). EPA supports, from its Working Capital Fund appropriation, leasing office space for the LISNPO through the GSA. EPA Region 2 provides technical and management support to the program through the Water Division and EPA Region 1 provides staff and technical support through the Water Division. By agreement between the Regions, Region 2 provides other administrative support for official business, such as procurements, funds control and management, information technology and telecommunications support, grants management, travel, training and other policy and program management requirements. Region 1 provides grants management, contract oversight and funds control for the awards processed through Region 1. This support is essential to operating and maintaining the EPA LISNPO, the national program office for the Long Island Sound Geographic Program.

4. GRANT AWARDS

Attachment 3 lists the FY2019 LISS budget by recipient organization; the total funding for each recipient may consist of one or more EPA grant awards or amendments to existing grants, **Attachment 4** lists the FY2019 budget by individual EPA assistance award number by grantee. The actual EPA assistance award number is provided for reference where known now. However, the award process is dynamic and final grant award numbers and dollar amounts as actually awarded by EPA may differ from Attachment 4 since this NEP summary Work Plan is completed in advance of the grant award process, which must be completed by September 30, 2019. Details of the award purpose, project deliverables, and project completion dates are provided in Section B of this Work Plan below. Attachments 3 and 4 also show the required non-federal matching funds and the overall actual aggregate match requirement for the LISS for FY2019.

For FY2019 Federal assistance awards, the Connecticut Department of Energy and Environmental Protection (CTDEEP) and the New York State Department of Environmental Conservation (NYSDEC) are providing an annual 'overmatch' in its EPA assistance awards to enable the LISS to meet the overall aggregate match for the NEP as required under CWA §320 [see Attachment 3]. The CTDEEP overmatch is from a conveyance and storage tunnel in Connecticut. The NYSDEC overmatch is from land acquisition tasks. This also allows other recipients and sub-awardees that are not able to meet matching funds requirements to apply for LISS grant programs, ensuring broader participation in the work of the LISS Management Conference from academic researchers and institutions, local environmental organizations, interest groups and associations, as well as other qualified regional or watershed organizations. **[NB: Final assistance award amounts and number designations are issued by EPA**

pending final EPA action on individual awards, and each award is subject to the special terms and conditions contained therein.]

Using FY2019 funding for work that will take place in FY2020, the EPA is providing funding to ten LISS partners through new or amended awards: CTDEEP; the Connecticut Sea Grant (CTSEA); the Interstate Environmental Commission (IEC); the National Fish and Wildlife Foundation (NFWF), the New England Interstate Water Pollution Control Commission (NEIWPCC); the New York City Department of Environmental Protection (NYCDEP); NYSDEC; the New York Sea Grant College Program (NYSEA); the State University of New York Research Foundation (SUNY) and the University of Connecticut Marine Sciences Department (UCONN). EPA is also establishing an interagency agreement with the United States Geological Survey (USGS). These partners assist in implementing the CCMP and conduct activities to support the LISS program. These awards are managed by staff of the EPA LISNPO, EPA Region 1, and EPA Region 2, who are trained and assigned as EPA Project Officers. Because of multi-year awards and varying federal appropriation levels, not all partners receive LISS funding in every annual budget/work plan cycle. The EPA Project Officers work with their grantees to ensure that any unliquidated obligation (ULO) balances are considered in awarding new year funding, and as necessary, award amounts are adjusted to compensate for ULO balances. It should also be noted that these partners also bring their own non-matching resources to restore and protect the Sound, which are not accounted for in this work plan.

B. PROPOSED NEW AND ONGOING (FY2019) PROJECTS

This work plan provides information as required under EPA's *FY2017-2019 Clean Water Act §320 National Estuary Program Funding Guidance*. The format for Section B is the same as used by the LISS since FY2008, when the LISS adopted a combination of the FY2008 NEP Work Plan Guidance and the September 2008 NEP Program Evaluation Guidance Logic Model format (until updated). To adjust to this reporting format, to the extent feasible, the LISS Program Element activities have been 'broken up' under the following logic model Core Elements and Sub-elements contained in the NEP Program Evaluation Guidance:

Logic Model Core Element: **1. Program Implementation & Reporting**: a) Financial Management; b) Tracking/Reporting; c) Program Planning & Administration; d) Outreach & Public Involvement;

Logic Model Core Element: **2. Ecosystem Status & Trends**: a) Research; b) Assessment & Monitoring; c) Reporting;

Logic Model Core Element: **3. Ecosystem Protection & Restoration Projects:** a) Habitat; b) Water Quality; c) Living Resources; d) Healthy Communities; and

Logic Model Core Element: **4. Technical Assistance and Capacity Building:** a) Tools; b) Training; c) Direct Assistance.

Following is the crosswalk between the Logic Model elements and the LISS Program Elements:

Logic Model Element	LISS Program Element
CCMP/Work Plan Goal	[LISS CCMP Area]
Project/Activity Name:	[Program Element/Sub-category description]
Project/Activity Purpose and Description (indicate as New, Continuing, On-Going)	New: first year of project for LISS Continuing: prior year funded project On-Going: multi-year or base program project

Logic Model Element	LISS Program Element
Responsible Partners and Their Role(s)	[LISS Grantee Name]
Outputs/Products:	same
Milestones	(project start and completion dates) [EPA Grant/IAG Date(s)]
Budget:	[FY2019 to the extent separately identifiable]
Outcomes:	(anticipated and/or completed accomplishments) [Environmental Outcomes]
-Short term; Intermediate; Long Term	
-Changes (+/-) in Pressure Targets:	[N/A]
Identify the CWA core program the project would support	[Checklist of 7 Core Elements]

1. Program Implementation and Reporting. Under CWA §119 (33 USC 1269), the EPA LISNPO is responsible for the overall coordination of the LISS Management Conference convened under CWA §320 and is to *assist* and *support* implementation of the CCMP developed under that Section, *coordinate* the grant, research and planning programs and *provide administrative* and *technical support* to the Conference.

a. Financial Management. The EPA LISNPO has overall responsibility for managing EPA LISS appropriated funds, ensuring that these funds are awarded and expended in a timely and efficient manner using the methods and management controls established by the Agency. Since the LISS NEP does not utilize the single assistance agreement process for implementation, but rather is a federally-administered program (as specified under CWA §119) that uses multiple EPA assistance awards to conduct the program, financial management responsibilities are distributed, not centralized. Each EPA grantee is responsible for financial management under EPA assistance regulations, and must comply with those regulations, under the new Part 200 rule as applicable to the organization.

The EPA LISNPO, EPA Region 1, and EPA Region 2 manage the individual EPA assistance awards and IAs for each Federal fiscal year cycle of LISS funding. Each LISS grantee is responsible under EPA regulations for fiscal management and accountability for Federal funds it acquires by advance payment or reimbursement. EPA LISNPO requires semiannual grant progress reports from grantees and periodic Federal Financial Status Reports (SF260s) are to be submitted to EPA's Las Vegas Financial Center from the grantees' fiscal offices. EPA LIS grant awards use the identifier prefix, "LI;" NEP awards use the identifier "CE." Funds accounting by assistance award number is available online at EPA's Compass Data Warehouse. The LISNPO monitors drawdown of funds regularly and provides each grantee with the data on unliquidated obligation (ULO) status and works with grantees to ensure timely and appropriate liquidation of grant balances or adjustments to work plans and/or grants.

LISS grants are made under the Catalog of Federal Domestic Assistance (CFDA) number 66.437, Long Island Sound Program or CFDA number 66.456, the National Estuary Program. EPA LISNPO semi-annually updates the LIS CFDA description as necessary through EPA's internal process as required by OMB. Grantees are responsible for tracking and accounting of expenditures according to their approved assistance award budgets and must abide by EPA grant regulations and terms and conditions to modify budgets or change program direction.

CCMP/Work Plan Goal:	**Continuing the Management Conference**
Project/Activity Name:	EPA LISNPO Support to the Management Conference
ONGOING Project/Activity Purpose & Description:	Provides support to the Management Conference in implementing the CCMP; overall program coordination, management and direction.
Responsible Partner(s) Role(s):	EPA Long Island Sound Office
Outputs/Products:	Assistance and coordination of the LISS Management Conference. Development of annual NEP work plan; development and execution of EPA Strategic Plan elements for LIS; development, execution and management of financial assistance agreements; development and submission of GPRA-required reports; tracking and reporting of implementation of CCMP actions; tracking and reporting of ecosystem targets; technical assistance to partners in program operations.
Milestones *(project start/end dates)*	Project period October 1, 2019-September 30, 2020 and continuing.
2019 Budget:	Total $14,500. ($4,000 EPA HQ administrative support; $10,500 communications, postage, and supplies), EPA staff N/A [See Attachment 1, lines 1 & 2.]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Coordinated federal, state, and local government actions to implement the CCMP; clear annual goals and objectives framed within available funding; public, political, and financial support for restoration and protection of Long Island Sound; organized and effective LISS public participation; informed and educated public and citizenry as measured by numbers of publications distributed to target populations and number of website visits; improved management and coordination of implementation actions as measured by reported program indicator outputs and outcomes.
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards §304(a) x 2) Improving WQ Monitoring §303(d) 305(b) x 3) Developing TMDLs §304(b) x 4) Controlling NPS Pollution on a Watershed Basis §319 x 5) Strengthening NPDES Permits §402 x 6) Supporting Sustainable Wastewater Infrastructure x 7) Wetlands Program Support/Implementation §404 x

b. Tracking and Reporting. As the only Federally led NEP, EPA's authority to require and collect information is limited to that contained in enabling statutes and regulations. CWA §320 and §119 indicate specific reporting requirements and EPA regulations under 40 CFR Parts 30 and 31 provide further reporting requirements for grantees. Finally, EPA grant regulations provide several reporting requirements e.g., quarterly or semi-annual reporting on grant progress. EPA LISNPO is responsible for the overall LISS tracking and reporting systems for the NEP.

In 2011 the LISS Management Conference partners agreed to a process to revise and update the 1994 CCMP. CCMP revision was completed in Spring 2015 and a new CCMP was issued (see http://longislandsoundstudy.net/about/the-comprehensive-conservation-and-management-plan/). The 2015 CCMP also sets 20 ambitious, but achievable, long-term targets for the ecosystem. These ecosystem targets are intended to drive progress toward attaining CCMP goals. Measuring, tracking, and reporting environmental indicators of each ecosystem target will provide information to assess progress and refine and adapt management as needed (see http://longislandsoundstudy.net/research-monitoring/liss-ecosystem-targets-and-supporting-indicators/.) Some of the targets include intermediate goals. For example, the ecosystem target to reduce effective impervious cover by ten percent in twenty years would assume a pace of 0.5 percent per year. Progress at any point in time would be assessed against the rate needed to attain the long-term target. In July 2018, the Government Accountability Office (GAO) completed a review of the LISS, *Long Island Sound Restoration: Improved Reporting and Cost Estimates Could Help Guide Future Efforts* (GAO-18-410). The GAO recommended that the EPA work with the LISS to ensure that it fully incorporates leading practices into performance reporting efforts. The LISS has supported contractor work to enhance performance tracking and reporting of implementation actions and progress, most likely through web-based platforms. This new system will replace the annual *eSound CCMP Implementation Tracking Report*, which was organized around the 1994 CCMP.

CCMP/Work Plan Goal:	**Continuing the Management Conference**
Project/Activity Name:	Improved Reporting
CONTINUING Project/Activity Purpose & Description:	Provides support to the Management Conference in tracking and reporting on CCMP implementation.
Responsible Partner(s)/Role(s):	EPA Long Island Sound Office
Outputs/Products:	Evaluation of contractor report evaluating and recommending leading practices for performance reporting. Development of an approach for program tracking using contractor report.
Milestones *(project start/end dates)*	Project period October 1, 2019-September 30, 2020.
2019 Budget:	$0; Current contract ends 9/30/19 [See Attachment 1, line 6.]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Improved management and coordination of implementation actions as measured by reported program indicator outputs and outcomes.
-Changes (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x

CCMP/Work Plan Goal:	Continuing the Management Conference	
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	x

c. Program Planning and Administration. As indicated above, the EPA LISNPO has overall responsibility for coordinating the LISS Management Conference, which is a multi-grantee, multi-state distributed partnership NEP. LISS federal, state, local, and academia partners have inherent responsibilities in these areas and are provided funding for administrative staff positions to carry out these overarching functions. LISS grantees have a negotiated Indirect Cost Rate with EPA or their federal Cognizant Agency to cover the overall expenses of their institution in managing federal assistance awards under Office of Management and Budget Circulars. The following charts include information in the required NEP Work Plan format relative to this Logic Model category:

CCMP/Work Plan Goal:	Continuing the Management Conference
Project/Activity Name:	State Coordination and Technical Assistance
ONGOING Project/Activity Purpose & Description:	Provides support to the Management Conference in implementing the CCMP; overall program planning, coordination, administration, management and direction in the State of Connecticut and coordination with other state/local agencies in Connecticut.
Responsible Partner(s)/Role(s):	Connecticut Department of Energy and Environmental Protection
Outputs/Products:	Involvement of relevant technical staff and programs in LISS activities to protect and restore Long Island Sound, its resources and its habitats, and to protect public health and meet commitments to the LISS partnership. Development of work group products and activities essential to implementation of the CCMP. Nitrogen management incorporated into watershed planning. Steady progress of point source nitrogen reductions as per the TMDL and nitrogen general permit. Update of progress towards implementing CCMP recommendations. Reports on progress to ensure commitments to protect and restore LIS, and implementation plans are on track. LIS Research and Implementation grants are consistent with and complementary to LISS goals and objectives and productive in restoring and managing Long Island Sound. Two-year grant period.
Milestones *(project start/end dates)*	Project period 10/1/19-9/30/21 and continuing. Grant period 10/1/19-9/30/21 and continuing.
2019 Budget:	$302,869 [See Attachment 1, lines 4.a.]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Improved management and implementation of CCMP goals and objectives; improved environmental data quality and reporting of environmental results.
-Changes (+/-) in Pressure Targets	**N/A**

CCMP/Work Plan Goal:	**Continuing the Management Conference**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	x

CCMP/Work Plan Goal:	**Continuing the Management Conference**
Project/Activity Name:	State Program Coordination and Management
ONGOING Project/Activity Purpose & Description:	Provides support to the Management Conference in implementing the CCMP; overall program planning, coordination, administration, management and direction in the State of New York and coordination with New York State Department of State and other state/local agencies in New York.
Responsible Partner(s) Role(s):	New York State Department of Environmental Conservation
Outputs/Products:	Coordination and development of activities and products to implement the CCMP. Track progress of programs and projects designed to protect and restore LIS. Electronic and paper reports of the status of resources, water quality and implementation. Coordinate and implement CCMP actions, protect public health, preserve and protect LIS resources and water quality by soliciting and involving expertise from various state programs. Ensure that projects are consistent with NYS regulations and the CCMP. Grant proposals are reviewed for relevance and benefits to LIS. Develop and implement CCMP actions as directly related to NPS pollution reduction, protect public health, preserve and protect LIS water quality and resources by soliciting and involving expertise from various state programs.
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020 and continuing
2019 Budget:	$0 The NYSDEC Coordinator is a state covered position. [See Attachment 1, lines 4.b.]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Coordinated management and implementation of CCMP goals and objectives. Progress towards implementing the CCMP management actions. Better enables DEC to act as a partner to get restoration projects initiated. Improved public awareness, stewardship, WQ, protection of public health, and implementation of CCMP and LIS Agreement goals and objectives.
-Changes (+/-) in Pressure Targets	**N/A**

CCMP/Work Plan Goal:	**Continuing the Management Conference**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	x

CCMP/Work Plan Goal:	**Continuing the Management Conference**	
Project/Activity Name:	Management Conference Administrative Support	
ONGOING Project/Activity Purpose & Description:	Provides support to the Management Conference in implementing the CCMP through committee meetings support; local and national travel support and other planning and reporting support	
Responsible Partner(s) Role(s):	New England Interstate Water Pollution Control Commission	
Outputs/Products:	Citizen involvement and participation; state and local meeting support; national conference and travel support.	
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2021	
2019 Budget:	Total: $89,338 [Coordination $76,778, and Travel Support $12,560. See Attachment 1, line 5]	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Ongoing coordination of federal, state, and local governments with user groups, the academic community, and stakeholders. Attendance at national conference and meetings; travel to CAC and other LISS meetings and events support.	
-Changes (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	
	2) Improving WQ Monitoring	
	3) Developing TMDLs	
	4) Controlling NPS Pollution on a Watershed Basis	
	5) Strengthening NPDES Permits	
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**
Project/Activity Name:	ORISE-Technical Support
ONGOING Project/Activity Purpose & Description:	Automate the download, analysis, and graphical presentation of water quality-related databases. Assist in evaluating and implementing leading practices for program performance tracking and reporting.
Responsible Partner(s) Role(s):	EPA
Outputs/Products:	Automate the download, analysis, and graphical presentation of nitrogen loading data from facilities with nutrient limits in the LIS watershed. Gather and assess nutrient loading data from watershed monitoring programs and models to report on trends in watershed loads. Gather and assess data on indicators of watershed nutrient loads used to evaluate progress in implementing the LIS Nitrogen TMDL. Research and support implementation of leading practices for program performance tracking and reporting.
Milestones *(project start/end dates)*	January 1, 2019-September 30, 2019
2019 Budget:	$5,000 [see Attachment 1, line 3]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short; Intermediate; & Long Term**	Better accessibility and use of data on pollution loads, compliance conditions, watershed stressors, and water quality responses. Improved assessment and reporting of programmatic and environmental outcomes.
Δ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: 5) Strengthening NPDES Permits: x 6) Supporting Sustainable Wastewater Infrastructure: x 7) Wetlands Program Support/Implementation:

d. Outreach and Public Involvement. The LISS provides grants to several of its partners to support their public outreach, information and education (PI&E) program activities, a key Program Element of the LISS. NEIWPCC, NYSEA and CTSEA are primarily responsible under their LISS grant awards for public outreach assistance. The LISS communications team consists of staff of these partners and other interested parties, including members of the LISS Citizens Advisory Committee (CAC). The communications team meets periodically to develop and carry out work as reflected in each grant award. In addition, NFWF conducts the Small Grants program, which is focused on PI&E activities, and may also make awards for approved PI&E projects under the Large Grants program. The prior year LISFF Large and Small Grant projects are posted on the NFWF website, http://www.nfwf.org/lisff/Pages/lisff-projects.aspx.

The LISNPO and LISS partners provide significant support to the CAC, which is co-chaired by an elected member each from New York and Connecticut. Coordinated by the NY/CTSEAs, the CAC meets quarterly at alternating locations in Connecticut and New York in the LIS watershed and

provides advice to the Management Conference partners in implementation of the CCMP. The CAC operates under its Bylaws and is composed of up to 60 members who represent organizations with a demonstrated interest in Long Island Sound. Financial support for CAC meetings is provided through NEIWPCC's PI&E line item in its LISS assistance award. CAC members are reimbursed for their travel expenses directly related to attending CAC meetings **[see Attachment 5].**

In addition, the CAC meets as needed with the STAC to jointly review program priorities from a scientific perspective and to update each other on issues of scientific and public concern. The CAC co-chairs are members of the Management Committee, and provide a public perspective at Management Committee meetings. The CAC also appoints two liaisons to the STAC, one each from New York and Connecticut to represent the CAC at STAC meetings. CAC members participate on LISS teams and work groups and attend those meetings as appropriate.

The **Outreach and Public Involvement** program area of the required NEP Work Plan format is summarized below:

CCMP/Work Plan Goal:	**Public Outreach, Information and Education**
Project/Activity Name:	PI&E, Small Grants and PI&E Project Support
ONGOING Project/Activity Purpose & Description:	Supports the Management Conference in conducting the LISS public outreach, information and education program through staff resources and products, services and supplies.
Responsible Partner(s) Role(s):	NEIWPCC, NYSG, CTSG; NFWF, CTDEEP, direct implementation of PI&E activities.
Outputs/Products:	Production of annual year in review issue of *Sound Update* for distribution throughout the LIS region. Three to five issuances of *Sound Bytes*, an electronic mail update of current LIS issues; Update of progress towards implementing CCMP recommendations. Award small and medium sized grants to public, private and government entities to implement LIS restoration and education projects. Communication of LIS issues and successes to a wide variety of interested citizens, educational entities, and professional societies. Provide LISS and agency information about LIS to the public and assist other agency staff in reporting efforts meeting CCMP goals. Communication of LIS issues and resource value to state citizens and LIS awareness to the public in the watershed.
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020 (or as specified in individual assistance awards)
2019 Budget:	Total: 715,665 [NEIWPCC: $420,021; NYSG: $233,406; CTSG: $62,238. See Attachment 1, lines 7-9]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Informing public and increasing citizen stewardship and action beneficial to a healthy LIS. Informing and increasing public knowledge and citizen activism on LIS issues. Increasing awareness of the state of LIS health and promoting changes in lifestyle that might benefit the Sound. Assessment of progress and key report to citizens involved in the LISS leading to adjustments in management direction. Publicity to support LIS management activity and to inform public about trends in LIS health to create public support. Improved habitat and water quality and increased public awareness and participation in LIS affairs. Fulfill public request for knowledge about LIS and educational

CCMP/Work Plan Goal:	**Public Outreach, Information and Education**
	needs; promote better stewardship of the Sound; increase awareness for the protection and restoration of LIS to the public and improve management decisions for the LISS partner agencies. Increased awareness for the protection and restoration of LIS to the public and promote better stewardship of the Sound.
Δ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x 6) Supporting Sustainable Wastewater Infrastructure: x 7) Wetlands Program Support/Implementation: x

2. Ecosystem Status and Trends. The LISS federal, state, local and academia partners monitor ecosystem status and trends for a suite of environmental indicators. These indicators are posted on the LISS website, http://longislandsoundstudy.net/research-monitoring/liss-ecosystem-targets-and-supporting-indicators/. The indicators are linked back to CCMP ecosystem targets and provide information on the abundance, diversity, distribution, viability, and/or quality and trends of the resource being monitored. As noted previously, the 2015 CCMP sets 20 ecosystem targets. Measuring, tracking, and reporting the ecosystem targets and indicators provides information to assess progress and refine and adapt management as needed. Reporting on targets and indicators on a periodic basis is a complex process, because the LISS does not directly pay for or support the data collection efforts for many of them. These are the province of other entities that are either directly responsible for that data collection by law, statute, regulation or by history or organizational preference. Instead, LISS works to use existing data when available, and collect new data as needed.

a. Research. The LISS Research program is a cooperative effort between EPA and the New York Research Foundation of the State University of New York (SUNY RF) and Connecticut Sea Grant College program, to which each have contributed funds and expertise in review of proposals and identification of peer reviewers. Generally, the LISS has held competitions biennially, combining funds from two fiscal years. The LISS withheld funding for the research program in FY17 to target those funds toward water quality modeling. However, the LISS approved sufficient funds in FY18 and FY19 to support a competition. Research projects funded from prior cycles of the Research Program are ongoing.

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
Project/Activity Name:	Long Island Sound Research Grant Program
ONGOING Project/Activity Purpose & Description:	To administer the LISS Research Grant program by identifying scientific research needs and priorities for LIS, solicit and review project proposals and ensure the selection and management of the highest priority projects with available funds.
Responsible Partner(s) Role(s):	SUNY RF/CTSEA, jointly administer and manage the LIS research program.

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**	
Outputs/Products:	Develop Request for Preliminary and Final Proposals; List of research selected for funding; manage research projects; request, review and process progress reports and final report per research project.	
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2023	
2019 Budget:	$1,354,953 [$639,669 SUNY RF, $715,284 CTSEA]. These amounts include $6,122 for STAC meeting support and $10,000 for a research conference. [See Attachment 1, line 27].	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Identify, fund and conduct highest priority research relevant to the Long Island Sound Agreement or its successors as established by the STAC; research topics are defined, openly solicited, and selected for funding using a well-developed, respected process that is fair and technically-based; new science-based information will be provided to inform decision-making and actions towards reaching the vision and goals for Long Island Sound. Plan, organize and conduct biennial LIS research conference in 2021.	
∆ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	x

b. Assessment and Monitoring. In FY2019 the Management Committee once again approved funding for the LIS ambient water quality (WQ) monitoring program conducted by CTDEEP, USGS, IEC, and UCONN. The program provides the basis for the determination of hypoxic, and other ambient conditions in LIS and to determine state compliance with water quality standards for dissolved oxygen (DO). This information is reported by CTDEEP and is used by the LISS to report annual progress in meeting CCMP goals. CTDEEP uses some of the funds to supplement CT River nutrient monitoring by the USGS. The IEC monitors water quality in the open waters and embayments of the Narrows portion of LIS. UCONN supports a network of buoys with sensors that monitor water quality every 15 minutes. This effort complements the more spatially dense ship-based sampling by CTDEEP and IEC. New in 2018, and continued in 2019, was funding for Save the Sound to support the Unified Waters Study, which will collect data in embayments and nearshore sites through community organizations. This will fill gaps in data not collected by the main stem monitoring programs. The following charts describe the WQ monitoring program conducted by CTDEEP and other partners' monitoring and assessment projects approved in the FY2019 budget.

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
Project/Activity Name:	LIS Water Quality Monitoring Program
<u>ONGOING</u> Project/Activity Purpose & Description:	To monitor and assess the ambient conditions of water quality in LIS and provide management with information for decision-making.

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
Responsible Partner(s) Role(s):	CTDEEP, conduct WQ monitoring, field sampling, and analysis of LIS open waters.
Outputs/Products:	Nutrient and ancillary data to evaluate benefits of nutrient management programs and health of LIS. Dissolved oxygen data and maps of areal extent and duration of hypoxia in LIS. Tissue data is required to update the health consumption advisories in CT and NY. Organized and available database (to researchers and the public); interpretive graphics and fact sheets for public consumption on web site. Plankton community data to evaluate biological condition and response to changing water quality.
Milestones *(project start/end dates)*	October 1, 2019- September 30, 2020
2019 Budget:	Total $1,256,407. [$1,211,407 LIS Water Quality Monitoring Program. See Attachment 1, line 15. $45,000 CT River monitoring USGS. See Attachment 1, line 17]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Improved water quality assessment to guide management activities. Improved planktonic community assessment to guide management activities. Improved dissolved oxygen assessment to protect living resources and to determine criteria compliance in CT and NY. Greater safety of CT and NY residents who consume LIS seafood. Better public involvement and management of LIS nutrient and oxygen conditions. Improved stewardship. Data for researchers to complement their projects. Improved water quality assessment to guide management activities. Improved stream and tributary monitoring results. In 2017 the maximum area of hypoxia in the Sound was 70 square miles lasting for 26 days. The pre-TMDL averages of 205 square miles and 56 days are compared with the post-TMDL averages of 164 square miles and 56 days.
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x 6) Supporting Sustainable Wastewater Infrastructure: x 7) Wetlands Program Support/Implementation: x

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
Project/Activity Name:	Embayment and Watershed Data Collection for Modeling Input
NEW Project/Activity Purpose & Description:	As Connecticut continues progress on its Second Generation Nitrogen Strategy, which involved prioritization of embayments for further study and the preparation of protection or restoration plans. This project will collect

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
	data and develop water quality and hydrodynamic models in priority embayments.
Responsible Partner(s) Role(s):	CTDEEP via contractor
Outputs/Products:	Monitoring and data collection; embayment models; summary report on Year 1 data collected; results of modeling efforts; recommendations for management actions
Milestones *(project start/end dates)*	October 1, 2019- September 30, 2021
2019 Budget:	Total $505,000 [see Attachment 1, line 16]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Data available for researchers or stakeholders to complement their projects; improved understanding of dilution, productivity, and other processes in embayments under different scenarios; improved understanding of problems in embayments; support for future restoration plans; improvement management of priority embayments.
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x 6) Supporting Sustainable Wastewater Infrastructure: x 7) Wetlands Program Support/Implementation:

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
Project/Activity Name:	LIS Real-Time Water Quality Monitoring
ONGOING Project/Activity Purpose & Description:	To increase accuracy of data collection of the onset of low dissolved oxygen levels in the Sound to eliminate adverse impacts of hypoxia and provide an early warning mechanism to protect human health and the LIS ecosystem.
Responsible Partner(s) Role(s):	University of Connecticut
Outputs/Products:	Project will support the LIS water quality monitoring program through a network of fixed stations (buoys) and telemetered data.
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020
2019 Budget:	$173,165 [see Attachment 1, line 18]
Outcomes: *(anticipated and/or completed accomplishments)*	Assessment of water quality management program impact; interpretation of stream flow variability on salinity in critical coastal habitats; better assessment of trends in managed nutrients; improved assessment of water

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
-Short, Intermediate, Long Term	quality models; maintained and working fixed monitoring stations; maintain, evaluate and distribute remote sensing data for PCO2 and PH with instruments purchased in 2017.
Δ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x 6) Supporting Sustainable Wastewater Infrastructure: x 7) Wetlands Program Support/Implementation: x

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
Project/Activity Name:	IEC LIS Water Quality Monitoring
ONGOING Project/Activity Purpose & Description:	To monitor and assess the ambient conditions of water quality in western LIS and provide management with information for decision-making.
Responsible Partner(s) Role(s):	Interstate Environmental Commission (IEC)
Outputs/Products:	Project supports the LIS water quality monitoring program in western Long Island Sound.
Milestones *(project start/end dates)*	October 1, 2019-December 31, 2020
2019 Budget:	$220,303 [see Attachment 1, line 19];
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Improved resolution of water quality data; increase in number of stations covered; additional data points obtained; consistency of data collected and reported.
Δ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**	
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	x

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
Project/Activity Name:	Unified Waters Study
CONTINUING Project/Activity Purpose & Description:	To monitor and assess the ambient conditions of water quality nearshore harbors and embayments throughout LIS
Responsible Partner(s) Role(s):	Save the Sound, Inc. with cooperating community groups
Outputs/Products:	Data on water quality in nearshore harbors and embayments.
Milestones *(project start/end dates)*	July 1, 2018-December 31, 2021
2019 Budget:	$751,284 [see Attachment 1, line 20];
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Increased community engagement and understanding of local water quality issues; improved resolution of water quality data; increase in number of stations covered; additional data points obtained; consistency of data collected and reported.
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x 6) Supporting Sustainable Wastewater Infrastructure: x 7) Wetlands Program Support/Implementation: x

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
Project/Activity Name:	Long Island Sound Tributary Sampling
NEW Project/Activity Purpose & Description:	This project would be a 1-year pilot project to establish water quality sampling in the three major tributaries to the Long Island Sound (Thames, Connecticut and Housatonic Rivers). Goal is to characterize each of the tributaries to develop a longer-term monitoring plan for each tributary. Samples will be collected for whole water and filtered forms of nitrogen, phosphorus, organic carbon and chlorophyll a analysis. Continuous water quality monitors will be installed near the mouth of the Housatonic and

CCMP/Work Plan Goal:	**Monitoring, Modeling and Research**
	Thames Rivers to monitor water temperature, specific conductance, salinity, dissolved oxygen, pH, turbidity and chlorophyll a.
Responsible Partner(s) Role(s):	USGS Interagency Agreement with assistance from the LIS nitrogen strategy workgroup
Outputs/Products:	Monitoring and data collection; dataset of existing and project specific data; summary data report on Year 1 data collected; final project report.
Milestones *(project start/end dates)*	October 1, 2019-December 31, 2020
2019 Budget:	$160,000 [see Attachment 1, line 21];
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Data available for researchers or stakeholders to complement their projects; improved understanding of water quality of large river embayments; improved management of priority embayments
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x 6) Supporting Sustainable Wastewater Infrastructure: 7) Wetlands Program Support/Implementation:

c. Reporting. Costs for producing Long Island Sound publications are budgeted for in the NEIWPCC assistance award as necessary and approved by the Management Committee for the appropriate budget year. These activities are usually funded in the year preceding the publication of the appropriate report to allow for establishment of financial commitments necessary to produce the documents. Copies of these reports are available upon request or electronic versions are posted on the LISS website.

Grant Reports. Under 40 CFR Parts 30 and 31, semi-annual reporting is required for each EPA grant award according to an established format that follows the LISS work plan form with outputs/outcomes reported. These reports are posted in EPA's Integrated Grants Management System (IGMS) and final grant progress reports are due within 90 days of the expiration date of an award.

NEPORT Reports. CTDEEP, NFWF and NYSDEC annually report information into EPA's NEPORT data system for leveraged funds, and habitat acres restored/protected/enhanced, including river miles reopened to fish passage. These latter data are used to report accomplishments to EPA's ACS system for the LIS Strategic Plan and budget measures as appropriate. Grant awards are conditioned to require these reporting elements.

3. Ecosystem Protection and Restoration Projects. The LISS Futures Fund Grant program is the primary LISS vehicle for funding implementation projects to address CCMP and other program priorities. The LISS Futures Fund, consists of Large Implementation Grants ($20,000-$250,000); Planning and Water Quality Monitoring Grants ($20,000-$100,000); Education and Public Participation Large Grants ($20,000-$50,000); and Long Island Sound Study Education and Public Participation Small Grants ($3,000-$10,000) projects. The LISFF is administered by NFWF. In FY2019, the LIS Futures Fund is funded at $2,300,000 and the Small Grants component is funded at $50,000. These projects are responsive to the new *Long Island Sound CCMP* and other LISS priorities and the major outcome metrics are described in brief in Attachment 1, lines 12 and 28.

As noted, the below Logic Model subcategories are eligible funding categories under the LISFF. FY2019 LISFF-funded projects cannot be characterized under this Logic Model format as projects are not selected until September 2019.

a. Habitat; b. Water Quality; c. Living Resources; d. Healthy Communities.

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**
Project/Activity Name:	LISS Futures Fund
ONGOING Project/Activity Purpose & Description:	To provide resources for priority CCMP implementation projects at the state and local level to qualified applicants.
Responsible Partner(s) Role(s):	NFWF, plans, coordinates, conducts and administers the LISS Futures Fund Grant Program
Outputs/Products:	Issue RFP to solicit a diverse range of project proposals that address problems identified in the LISS *CCMP;* develop content and format for two to four eblasts (flyers and email text), Twitter and Facebook postings to encourage applicants to develop a technically sound and diverse range of project proposals that address problems identified in the LISS *CCMP*. Provide technical assistance to potential applicants to help them develop the most useful projects to address the problems identified in the LISS *CCMP*. Develop and distribute one press release in CT and NY to announce RFP and awards. Develop and implement one grant award event in either NY or CT. Meet with potential public, nonfederal and private funders. Support LISS and EPA/LISNPO to develop accomplishments brochures and other materials. Outreach to three or more Congressional offices to respond to inquiries and raise profile of implementation elements of the LISS Futures Fund in terms of federal investment around the Sound.
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2024
2019 Budget:	Total: $2,370,000 [$2,320,000 Large Grants. See Attachment 1, line 28. $50,000 Small Grants. See Attachment 1, line 12.]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Increase in participation of 'communities of practice,' including environmental justice, urban waters/distressed communities, youth and young adult and underserved communities. Increase in acres of key coastal habitat restored. Increase in measurable nonpoint source controls addressing water quality problems in LIS and its embayment's. Increase in riparian corridor development and protection. Increase in diadromous fish passage restoration. Increase public understanding of accomplishments and challenges faced in LIS and addressed by various LISS initiatives.

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
Δ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	x

The LISS also provides direct assistance to the states for habitat restoration and protection projects. The FY19 work plan includes support for state-led habitat restoration projects in addition to those funded through the LIS Futures Fund.

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
Project/Activity Name:	LISS Stewardship Acquisitions	
Continuing Project/Activity Purpose & Description:	To provide resources for priority CCMP LIS Stewardship Initiative acquisitions at the state and local level.	
Responsible Partner(s) Role(s):	NYSDEC	
Outputs/Products:	Acquisition of properties identified by the LISS Stewardship Initiative workgroup for protection of water quality, habitat and living resources.	
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2021	
2019 Budget:	$1,500,000 [See Attachment 1, line 37]	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Protection of habitats of ecological, recreational, and public access value; protection of endangered, threatened, and rare species of plant and animal habitats; demonstration of effective public and private partnerships in habitat conservation.	
Δ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards,	
	2) Improving WQ Monitoring,	
	3) Developing TMDLs,	
	4) Controlling NPS Pollution on a Watershed Basis,	x
	5) Strengthening NPDES Permits,	
	6) Supporting Sustainable Wastewater Infrastructure.	
	7) Wetlands Program Support/Implementation	X

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**
Project/Activity Name:	Restoration Final Design for Leetes Island Tidal Marsh, Guilford, CT

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**
NEW **Project/Activity Purpose & Description:**	Complete final restoration design of Leetes Island Marsh, a 35-acre tidal wetland. Project would remove the existing structures that have been altered from Hurricane Sandy and prevent the marsh from proper ecosystem function and replace them with a concrete box culvert and new tide gate chamber. Activities include hydrology studies to prevent unintended impacts and flooding; engineering services; state permitting; and federal permitting.
Responsible Partner(s) Role(s):	CTDEEP
Outputs/Products:	Data to inform CTDEEP and engineers of needs for project and final design plan sheets that are permit- and construction-ready
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020
2019 Budget:	$140,000 [See Attachment 1, line 38]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Ability for Leetes Island Marsh to support emergent vegetation after constant flooding is removed; restoration of the tidal marsh
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards, 2) Improving WQ Monitoring, 3) Developing TMDLs, 4) Controlling NPS Pollution on a Watershed Basis, X 5) Strengthening NPDES Permits, 6) Supporting Sustainable Wastewater Infrastructure. 7) Wetlands Program Support/Implementation X

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**
Project/Activity Name:	Merwin Meadows Dam Removal and Sediment Remediation Project
NEW **Project/Activity Purpose & Description:**	Dam removal and remediation of Merwin Meadows, which will open up three miles of river to anadromous fish passage and benefit valuable cold water fisheries by restoring habitat and water quality below the dam.
Responsible Partner(s) Role(s):	CTDEEP
Outputs/Products:	Advanced design for dam removal, field studies, dam removal, and proper disposal of accumulated sediment behind the dam.
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2021
2019 Budget:	$400,000 [See Attachment 1, line 39]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Enhanced protection of important diadromous fisheries and wildlife habitat; enhanced riverine riparian habitat; improved water quality; expanded public access; fish passage; and reduced flood risk.

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
Δ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards,	
	2) Improving WQ Monitoring,	
	3) Developing TMDLs,	
	4) Controlling NPS Pollution on a Watershed Basis,	
	5) Strengthening NPDES Permits,	
	6) Supporting Sustainable Wastewater Infrastructure.	
	7) Wetlands Program Support/Implementation	X

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
Project/Activity Name:	Restoration of Sluice Creek Tidal Marsh, Guilford CT	
NEW Project/Activity Purpose & Description:	Sluice Creek marsh is a 125-acre tidal wetland whose primary connection to Guilford Harbor and LIS is through a tide-gated box culvert. Restoration involves diverting the lower 875 feet of Sluice Creek away from Guilford Harbor so that the primary tidal connection is the East River.	
Responsible Partner(s) Role(s):	CTDEEP	
Outputs/Products:	Combination of easements, deeds or similar legal documents to access full project area; final report with data to inform DEEP of project needs; final design plan sheets of restoration project with licensed engineer's signature; permits for construction.	
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2021	
2019 Budget:	$120,000 [See Attachment 1, line 40]	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Open connection between Sluice Creek marsh and the East River, which is an extension of the 600+ acre East River Marsh Complex and CT DEEP's East River Marsh Wildlife Management Area	
Δ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards,	
	2) Improving WQ Monitoring,	
	3) Developing TMDLs,	
	4) Controlling NPS Pollution on a Watershed Basis,	x
	5) Strengthening NPDES Permits,	
	6) Supporting Sustainable Wastewater Infrastructure.	
	7) Wetlands Program Support/Implementation	x

4. Technical Assistance/Capacity Building. The LISS provides technical assistance and capacity building thorough a variety of means. The LIS Futures Fund can provide direct financial support to partners to in this area. NFWF will provide technical assistance to communities of practice in developing

project proposals for their communities, including environmental justice, urban waters, youth and underserved communities and areas designated as distressed communities in Connecticut.

a. Tools. This Work Plan provides funding for development of several programmatic tools. As an example, CTDEEP is developing a watershed and nonpoint source decision support framework. In the first year of the project, CTDEEP will develop new statewide watershed metrics and their relationship to nitrogen loadings in context of local landscape geographies that have relevance at the municipal and land owner levels. In the second year of the project, CTDEEP will assemble an interactive online assessment and decision-support tool that connects the land cover metrics to overall aquatic ecosystem health and nitrogen loadings. This tool will provide land managers and policy makers a better understanding of local watershed condition and nitrogen loading implications.

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
Project/Activity Name:	Watershed and Nonpoint Source Decision Support Framework	
NEW Project/Activity Purpose & Description:	In the first year of the project, the major task will be developing new statewide watershed metrics and their relationship to N loadings in the context of local landscape geographies that have relevance at the municipal and land owner levels. In Year 2, the project will assemble an interactive online assessment and decision-support tool that connects the land cover metrics to overall aquatic ecosystem health and nitrogen loadings.	
Responsible Partner(s) Role(s):	CTDEEP	
Outputs/Products:	1. Statewide (CT) watershed land cover (30m) trends assessments at the smallest basin scale available. 2. Statewide watershed land cover (1m) assessments that include forest cover, impervious cover, and riparian cover. 3. N loading assessments at the basin level based on latest land cover and land cover metrics and using best approach as determined by Footprints/CT DEEP discussions. 4. Website decision support tool featuring an online interactive map showing the results of these assessments. 5. Dissemination of decision support tool.	
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2021	
2019 Budget:	$218,000 [see Attachment 1, line 33];	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Basin scale land cover trends for entire state, land cover metrics based on high resolution data, and N loading assessments based on high resolution land cover. More granular understanding of land cover trends 1985-2015 for land managers and policy makers. Greatly improved information and understanding of local watershed condition. Improved, more granular understanding of N loading implications of local watershed land cover. Accessible local information for policy makers, land managers and land owners to support land use decisions.	
∆ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	
	2) Improving WQ Monitoring	
	3) Developing TMDLs	x

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
Project/Activity Name:	Phase II of the Application of Technical Approach for Establishing Nitrogen Endpoints and Allowable Loads for Three LIS Watershed Groupings	
CONTINUING Project/Activity Purpose & Description:	This project will (1) refine and complete the technical approach to recommend nitrogen endpoints and load reductions necessary to protect water quality in embayments and tributaries of the Long Island Sound (LIS) as begun under Phase I and which is ongoing under this Phase II; (2) continue to respond to technical comments from a formal Technical Review process and from the public during a public comment period; (3) continue to collaborate and communicate with other LIS nitrogen reduction efforts such as those from the Long Island Sound Nitrogen Action Plan (LINAP), Suffolk County, and the Connecticut Department of Energy and Environmental Protection (CTDEEP); (4) continue to identify gaps in the LIS water quality monitoring body of data; (5) continue to suggest reduction levels to develop nitrogen allocations for 23 priority LIS embayments based on the technical approach.	
Responsible Partner(s) Role(s):	EPA with contractor support	
Outputs/Products:	1. Final report that analyzes and responds to comments and questions from EPA, the external technical review, Technical Stakeholder Group, and the public; presentation to the EPA Project Team for review. 2. Modified Phase I Subtask Memos. 3. Public presentations of work products.	
Milestones *(project start/end dates)*	October 1, 2018-October 31, 2020	
2019 Budget:	$267,437 [see Attachment 1, line 32];	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Improved nitrogen management based on sound technical analysis of water quality monitoring data; improved understanding of eutrophication conditions and stressor-response relationships; improved understanding of controls necessary to reduce nitrogen inputs in the watershed.	
Δ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	x

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
Project/Activity Name:	Technical Integration of Nitrogen Modelling	
ONGOING Project/Activity Purpose & Description:	The scientific goal of this project is to update and run a state-wide HSPF model (CTWM), which is currently calibrated for flow and nutrients at a coarse watershed scale. The model simulates hydrology and water quality to guide future management actions. The model will be a component of embayment specific analyses that will be used to establish management actions.	
Responsible Partner(s) Role(s):	CTDEEP	
Outputs/Products:	Recalibrated and validated Hydrologic Simulation Program Fortran (HSPF) model for the Connecticut portion of the LIS watershed. This model was previously calibrated by a consultant in 2002 (Love and Donigian, 2002). The update process would include acquiring/reviewing/setting up the previous model, improving geospatial resolution, expanding land use and water quality parameters, updating hydrologic calibration and extension of model simulation period, performing calibration for water temperature, sediment/total suspended solids, chemical oxygen/biological oxygen demand, and nutrients; as well as running implementation scenarios. Output from the HSPF model will be used as input to the in-estuarine process model of choice. The HSPF model would also identify pollutant source contributions which would in turn facilitate development of a management plan such as a TMDL, TMDL Alternative or Watershed Based Plan. In addition, the output of this modeling effort could input phosphorus and nitrogen loading information for the Long Island Sound wide eutrophication model anticipated to be developed over the next 3-5 years.	
Milestones *(project start/end dates)*	October 1, 2019- September 30, 2021	
2019 Budget:	$1,065,000 [See Attachment 1, line 26]	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Support future development of watershed scale actions plans such as TMDLs, TMDL alternatives, or Watershed Based Plans to address nutrient-related impacts on coastal embayments in Connecticut as well as providing a means to improvement implementation of the existing LIS TMDL.	
Δ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x
	4) Controlling NPS Pollution on a Watershed Basis	x

CCMP/Work Plan Goal:	CCMP Implementation Support and Technical Assistance	
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	x

CCMP/Work Plan Goal:	CCMP Implementation Support and Technical Assistance	
Project/Activity Name:	Development of a Nonpoint Source and Stormwater Tracking Tool for the LIS Watershed – Phase 2	
Continuing Project/Activity Purpose & Description:	Develop and distribute an RFP for proposal solicitation, select contractor, and complete NPS and SW tracking tool.	
Responsible Partner(s) Role(s):	NEIWPCC lead with support from the Watersheds & Embayments and Water Quality Monitoring Workgroups	
Outputs/Products:	Development of a Nonpoint Source and Stormwater BMP Tracking Tool. Quantitative assessment of nitrogen load reductions associated with NPS and SW BMPs for selected sub-basins.	
Milestones *(project start/end dates)*	October 1, 2019- September 30, 2021	
2019 Budget:	$0; Funded in FY 18 but work is ongoing	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Improved nitrogen planning, increased efficiency of NPS and SW BMP implementation, improved tracking of nitrogen reduction efforts, and quantitative TMDL evaluations.	
∆ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	

CCMP/Work Plan Goal:	CCMP Implementation Support and Technical Assistance
Project/Activity Name:	Nutrient Trading Program: Options and Obstacles
NEW Project/Activity Purpose & Description:	Scoping analysis exploring opportunities and obstacles to an interstate nitrogen water quality trading program for the entire LISS watershed, building upon the lessons of the Connecticut Nitrogen Credit Exchange (NCE) and projects proposed around the country.
Responsible Partner(s) Role(s):	NEIWPCC lead with support from the Watersheds & Embayments Workgroups
Outputs/Products:	Report and presentation identifying a key set of challenges common to a water quality trading program and proposed solutions for the Long Island Sound watershed.
Milestones *(project start/end dates)*	October 1, 2019- September 30, 2021

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
2019 Budget:	$85,000 [See Attachment 1, line 34]	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Use of water quality trading innovations to meet Long Island Sound goals for nitrogen management and extend its reach to achieve broader, integrated benefits demonstrated by Ecosystem-based Management concepts and Integrated Watershed Management approaches.	
Δ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	x
	7) Wetlands Program Support/Implementation	

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
Project/Activity Name:	Hydrodynamic Modification Modeling	
NEW **Project/Activity Purpose & Description:**	Contractor will do hydrodynamic modification modeling, and subsequent water quality modeling, on multiple waterbodies on the north shore of Suffolk County. The project will plan for where hydrodynamic modifications best compliment the Suffolk County Subwatershed Wastewater Plan efforts and thus reduce nitrogen impairments in associated waters. The project will identify where hydrodynamic modification could occur and model potential benefits of those modifications.	
Responsible Partner(s) Role(s):	NYSDEC	
Outputs/Products:	Workplan that shows embayments to be modeled, any data that needs to be collected, and types of physical alterations; QAPP approved by NYSDEC; additional data needed to run Environmental Fluid Dynamics Code model accurately; model results for the selected number of embayments and physical alterations; final report.	
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020	
2019 Budget:	$500,000 [see Attachment 1, line 24]	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Improved understanding of embayments current conditions; improved understanding of where hydrodynamic modifications can assist in reducing nitrogen and other environmental impacts in the water; increased knowledge of the types of projects and their associated costs to improve ecological conditions.	
Δ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x
	4) Controlling NPS Pollution on a Watershed Basis	x

CCMP/Work Plan Goal:	CCMP Implementation Support and Technical Assistance	
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	

CCMP/Work Plan Goal:	CCMP Implementation Support and Technical Assistance
Project/Activity Name:	Nassau County Subwatershed Plan
NEW **Project/Activity Purpose & Description:**	Project will revise modeling efforts to include in the Nassau County Subwatershed Plan. Current efforts being completed by the Long Island Nitrogen Action Plan are based off of out-of-date groundwatersheds. This project will use the new groundwatershed information from USGS to update the model to provide more accurate nitrogen sources.
Responsible Partner(s) Role(s):	NYSDEC
Outputs/Products:	1) Completed Nitrogen Loading Model with data associated with each sub-groundwatershed for north shore of Nassau County. 2) Report with percentage of nitrogen per source per sub-watershed.
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020
2019 Budget:	$250,000 [see Attachment 1, line 25]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Informed decisions directed towards nitrogen reduction strategies. Improved scientific basis for management decisions.
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards
	2) Improving WQ Monitoring
	3) Developing TMDLs: x
	4) Controlling NPS Pollution on a Watershed Basis: x
	5) Strengthening NPDES Permits
	6) Supporting Sustainable Wastewater Infrastructure
	7) Wetlands Program Support/Implementation

CCMP/Work Plan Goal:	CCMP Implementation Support and Technical Assistance
Project/Activity Name:	Living Resource Modeling
NEW **Project/Activity Purpose & Description:**	Develop an integrated model for Long Island Sound to assist the DEP in water management planning and assessment activities. This project is Phase II.C to develop a new integrated modeling framework for LIS. Goal is to develop, calibrate and validate ecological models linked to watershed, water quality and hydrodynamic models to assist DEP in making informed policy and funding decisions regarding cost-effective and defensible strategies for mitigating any identified ecological risks associated with excess nutrients, suspended solids or other ecological stressors. Living resource models are intended to forecast

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**
	potential impacts of climate change, ocean acidification, and sea-level rise on living resources.
Responsible Partner(s) Role(s):	NYCDEP
Outputs/Products:	1) Project scoping which includes assembling a Technical Advisory Committee (TAC) to provide advice on model development. 2) Develop system-wide forecast model to link living resources to changes in future conditions. 3) Pilot test embayment scale living resource models. 4) Management model for bioextraction and "green" nitrogen removal technologies.
Milestones *(project start/end dates)*	October 1, 2019-December 31, 2022
2019 Budget:	$500,000 [see Attachment 1, line 23]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Better informed policy and funding decisions regarding cost-effective and defensible strategies for mitigating any identified ecological risks associated with excess nutrients, suspended solids or other ecological stressors.
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x 6) Supporting Sustainable Wastewater Infrastructure: x 7) Wetlands Program Support/Implementation: x

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**
Project/Activity Name:	Revise and reprint English and Spanish versions of *Living Treasures* booklet
NEW **Project/Activity Purpose & Description:**	Review, revise and reprint the *Living Treasures: The Plants and Animals of Long Island Sound* booklet. Text and graphics will be revised. The booklet will serve as an education resource tool and help reach a more diverse audience for Hispanic audiences.
Responsible Partner(s) Role(s):	CT Sea Grant College Program
Outputs/Products:	10,000 copies of *Living Treasures* booklet; 5,000 copies of *Tesoros Vivientes* booklet
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020
2019 Budget:	$22,950 [See Attachment 1, line 11]

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
Outcomes: *(anticipated and/or completed accomplishments)* **Short, Intermediate & Long Term**	The booklet supports increased educator and student understanding of LIS and LIS-related issues and diversified potential audiences by improving access to basic information about Long Island Sound for Hispanic audiences.	
Δ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	
	2) Improving WQ Monitoring	
	3) Developing TMDLs	
	4) Controlling NPS Pollution on a Watershed Basis	
	5) Strengthening NPDES Permits	
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	x

b. Training. The LISS will continue to fund the CT and NY Sea Grant LIS Mentor Teacher program, which trains a cadre of K-12 educators to train-the-trainers in the use of LIS as a teaching tool and resource for NY and CT teachers. The Long Island Sound Mentor Teacher (LISMT) program has consistently recruited high quality, creative, and respected teachers to assist their peers in incorporating LIS content into curricula within the scope of the CT Science Frameworks.

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**
Project/Activity Name:	LISS Mentor Teacher Training Program
ONGOING Project/Activity Purpose & Description:	Increase awareness and understanding of the importance of Long Island Sound and its watershed by training a cadre of teachers to mentor the student population.
Responsible Partner(s) Role(s):	CT Sea Grant/NY Sea Grant; direct implementation
Outputs/Products:	Recruit four mentor teachers and facilitate planning sessions for workshop development (grade level cohorts K-2, 3-5, 6-8); conduct two LIS Mentor Teacher workshops for K-12 formal and informal educators; support LIS Educators Conference
Milestones *(project start/end dates)*	October 1, 2018-September 30, 2019
2019 Budget:	$30,640 CT [See Attachment 1, line 10]
Outcomes: *(anticipated and/or completed accomplishments)* **Short, Intermediate & Long Term**	Development of grade appropriate, multidisciplinary workshops utilizing LIS curricular resources; provision of LIS resources and appropriate pedagogy to result in increased educator and student understanding of LIS and issues facing LIS; educated teacher ranks in K-12 grades in New York and Connecticut portions of the Long Island Sound watershed.
Δ (+/-) in Pressure Targets	**N/A**

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	
	2) Improving WQ Monitoring	
	3) Developing TMDLs	
	4) Controlling NPS Pollution on a Watershed Basis	
	5) Strengthening NPDES Permits	
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	x

CCMP/Work Plan Goal:	**CCMP Implementation Support and Technical Assistance**
Project/Activity Name:	Workshop on Sustainable Behavior Change Campaigns
NEW Project/Activity Purpose & Description:	Conduct a workshop on Community Based Social Marketing to transfer knowledge to community groups and municipalities on a proven method to enhance local environmental behavior change campaigns.
Responsible Partner(s) Role(s):	NEIWPCC/LISS Communications Team
Outputs/Products:	Two all-day workshops – one in Connecticut and one in New York – or a single 2-day workshop. Representatives from 60-100 environmental and community groups and municipalities in CT and NY will receive on-site training from a specialist in socal marketing to improve efficacy of local LIS-related projects.
Milestones *(project start/end dates)*	October 1, 2018-September 30, 2019
2019 Budget:	$55,000 [See Attachment 1, line 13]
Outcomes: *(anticipated and/or completed accomplishments)* **Short, Intermediate & Long Term**	Community leaders will have the knowledge to create campaigns with measurable outcomes that will contribute to achieving goals identified in the CCMP. Improved water quality due to reduced nitrogen loading. Increased use of safe and sustainable practices by homeowners. Greater public understanding of individuals' role in the LIS ecosystem and practices to reduce pollution in waterways. Increased local campaigns with measurable goals in changing behaviors that cause polluted waterways.
∆ (+/-) in Pressure Targets	**N/A**

CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	
	2) Improving WQ Monitoring	
	3) Developing TMDLs	
	4) Controlling NPS Pollution on a Watershed Basis	
	5) Strengthening NPDES Permits	

CCMP/Work Plan Goal:	CCMP Implementation Support and Technical Assistance	
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	x

c. Direct Assistance. The LISS is one of the oldest of the NEPs, and it has technically capable support staff in diverse fields of expertise, from scientists to managers to field personnel. The combined resources of the Management Conference, which include the states of New York and Connecticut's environmental management agencies, New York City, and other Federal and state institutional partners, are sufficient to carry out CCMP implementation, and dwarf the amount of NEP and EPA LIS funding provided for this purpose. The partners provide such technical assistance and build such implementation capacity for local environmental and other groups as may be necessary and appropriate to their ongoing missions. The LISS does fund staff in partner agencies to support direct implementation. Staff include the LISS habitat restoration coordinators in both states.

CCMP/Work Plan Goal:	CCMP Implementation Support & Technical Assistance
Project/Activity Name:	Long Island Sound Nitrogen Reduction Coordination
CONTINUING Project/Activity Purpose & Description:	Facilitate the LIS Nitrogen Reduction Coordination Workgroup including developing a membership roster, mission/goals, and securing approval of the mission/goals from the LISS Management Committee and state partners. Expected participants will be from county, state, and federal agencies.
Responsible Partner(s) Role(s):	NEIWPCC with support of a LIS Nitrogen Reduction Coordination Workgroup
Outputs/Products:	At least two meetings or conference call. Develop written summaries of nitrogen-related activities/recommendations. Support a greater level of communication between agencies and all levels of agency staff. Work group goals/expected outcomes in conjunction with membership. Memorandum or other written summary of the workgroup activities, actions, and recommendations. At least one face-to-face meeting of the county, state, and federal partners leading nitrogen reduction efforts in and around Long Island Sound.
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2021
2019 Budget:	Total: $40,690 [See Attachment 1, line 35]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Improved communication and planning across the watershed with state and federal agencies. Committed consensus and greater levels of communication on regional planning for nitrogen removal activities in a synergistic way between local, state, and federal agencies. Continued and enhanced implementation of the TMDL and nutrient removal. Reduced nitrogen loads delivered to LIS, reduced hypoxia, improved attainment of state water quality standards.
∆ (+/-) in Pressure Targets	**N/A**

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards, x 2) Improving WQ Monitoring X 3) Developing TMDLs X 4) Controlling NPS Pollution on a Watershed Basis X 5) Strengthening NPDES Permits X 6) Supporting Sustainable Wastewater Infrastructure X 7) Wetlands Program Support/Implementation
Project/Activity Name:	LISS Habitat Restoration/Coordination
ONGOING Project/Activity Purpose & Description:	Preparing, assisting municipalities, and evaluating project applications for habitat restoration, assessment, monitoring and research funding. Develop partnerships to restore LIS habitats. Work with regional staff to help partners prepare project work plans that are compatible with state regulations. Coordinate NYSDEC and CTDEEP activities associated with the LISS Habitat Restoration Initiative.
Responsible Partner(s) Role(s):	NYSDEC (via NEIWPCC); CTDEEP
Outputs/Products:	Engage new and existing LISS partners in LISS habitat restoration activities; increase project proposals for habitat restoration activities in the LIS watershed; plan, coordinate and implement restoration of the twelve priority habitat types as outlined in the LISS Habitat Restoration Strategy adopted by the Policy Committee in 1998; work with LISS communications team to issue press releases, promotional materials, and other communication items addressing habitat restoration in the LIS watershed; report at mid-year and end-of-year on progress is achieving restoration/protection/reopening targets for EPA's Strategic Plan and budget; develop and publish coastal forest and shellfish chapters of the Habitat Restoration Manual.
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020
2019 Budget:	Total: $474,963 [$190,722 CTDEEP and $284,241 NYSDEC Via NEIWPCC. See Attachment 1, line 36]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate, Long Term**	Restored and protected habitat in the LIS watershed; increased public awareness about current or planned habitat restoration and restoration activities in the LIS watershed; progress towards LISS Habitat Restoration Initiative (HRI) goals for restoring habitat and river corridors that improve health of living resources in the LIS environment; additional and leveraged funding brought to restoration activities and increased acreage/miles improved to benefit LIS water quality and biological health; public outreach about HRI and accomplishments; implementation of habitat restoration projects and effective communication to the public; developed and published HRI manual chapters.

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**	
∆ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards,	
	2) Improving WQ Monitoring	
	3) Developing TMDLs	
	4) Controlling NPS Pollution on a Watershed Basis	
	5) Strengthening NPDES Permits	
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	x

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**
Project/Activity Name:	Bioextraction Coordinator
NEW **Project/Activity Purpose & Description:**	Aims to improve water quality in Long Island Sound by removing excess nitrogen through the cultivation and harvest of seaweed and shellfish. The coordinator will help assess the efficacy of and potential challenges involved in advancing seaweed and shellfish aquaculture to remove excess nitrogen loads from NY and CT surface waters.
Responsible Partner(s) Role(s):	NYSDEC (via NEIWPCC)
Outputs/Products:	Develop a pilot project with participation by researchers and growers from one or more project locations. Produce a report which identifies markets for, and cultivation costs of potential bioextraction species and evaluation of overall economic viability of bioextractive activities through an independent, third-party study. Host 1-2 half-day seaweed symposia for aquaculturists, researches, and regulators to gather to discuss seaweed opportunities and challenges.
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2021
2019 Budget:	$382,513 [see Attachment 1, line 30]
Outcomes: *(anticipated and/or completed accomplishments)* **-Short, Intermediate & Long Term**	Improved water quality, habitat, sustainability and resiliency of LIS and the surround communities. Supported growth of the seaweed aquaculture industry; and improved water quality, habitat, and resiliency of LIS and the surrounding communities.
∆ (+/-) in Pressure Targets	**N/A**

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	
	2) Improving WQ Monitoring	
	3) Developing TMDLs	
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	x

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**	
Project/Activity Name:	Long Island Sound Senior Scientist/Coordinator Position	
ONGOING Project/Activity Purpose & Description:	Support to coordinate the science and research programs in the LISS.	
Responsible Partner(s) Role(s):	NEIWPCC	
Outputs/Products:	Coordinate with LISS partners to ensure an effective and efficient scientific research program for LIS.	
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2021	
2019 Budget:	$ 279,055 (see Attachment 1, line 29)	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short; Intermediate; & Long Term**	Coordinated science and research program; increased understanding of management issues and scientific basis for actions developed in response; increased application of knowledge gained from scientific research project to management actions.	
∆ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	x
	2) Improving WQ Monitoring	x
	3) Developing TMDLs	x
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	x
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	x

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**
Project/Activity Name:	Modeling Coordinator
NEW **Project/Activity Purpose & Description:**	Serve as staff specialist in the capacity of project manager to oversee and coordinate the state-wide HSPF modeling project and embayment watershed/groundshed studies. Provide in-house technical expertise to review and understand modelling tools and scenarios and coordinate the modelling task sub-awards that DEEP will oversee. Work with state and federal partners to review, manage, and approve all modelling product deliverables of the modelling contract subawards; attend LISS water quality work monitoring group meetings; provide technical support to the LISS watersheds and embayments work group and other LISS committees and work groups.
Responsible Partner(s) Role(s):	CTDEEP
Outputs/Products:	Watershed model calibrated for flow, nutrients and associated water quality parameters; provide LIS watershed wide covers of watershed models calibrated at the HUC 10 scale; LIS enhanced implementation; generate current and future loading scenarios for stream and lake TMDLs; generate current and future loading scenarios for embayment studies
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2021
2019 Budget:	$ 110,268 (see Attachment 1, line 31)
Outcomes: *(anticipated and/or completed accomplishments)* **-Short; Intermediate; & Long Term**	Coordinator will facilitate development of models which will help attain ecosystem target for nitrogen loading and have all practices and measures installed to attain the allocations for stormwater and nonpoint source inputs from the entire watershed by 2025.
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards: x 2) Improving WQ Monitoring: x 3) Developing TMDLs: x 4) Controlling NPS Pollution on a Watershed Basis: x 5) Strengthening NPDES Permits: x 6) Supporting Sustainable Wastewater Infrastructure: 7) Wetlands Program Support/Implementation: x

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**
Project/Activity Name:	Assessment of Research Vessel Condition
NEW **Project/Activity Purpose & Description:**	Assessment of the current conditions of the vessel and determine any needed upgrades to operational equipment and functionality of sampling equipment. Survey will assess the condition of the hull and on board systems including

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**
	electrical, sanitary, freshwater system, hydraulics, propulsion, stability and safety systems.
Responsible Partner(s) Role(s):	CTDEEP
Outputs/Products:	Final report on the conditions and sea worthiness of the research vessel John Dempsey with recommendations for repairs, upgrades or replacements
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020
2019 Budget:	$40,000 (see Attachment 1, line 22)
Outcomes: *(anticipated and/or completed accomplishments)* **-Short; Intermediate; & Long Term**	Safe, reliable, sea worthy vessel that monitoring staff can rely on to continue their work on LIS. Continued water quality monitoring and ground fish trawl surveys.
∆ (+/-) in Pressure Targets	**N/A**
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards 2) Improving WQ Monitoring: x 3) Developing TMDLs 4) Controlling NPS Pollution on a Watershed Basis 5) Strengthening NPDES Permits 6) Supporting Sustainable Wastewater Infrastructure 7) Wetlands Program Support/Implementation: x

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**
Project/Activity Name:	Nitrogen Smart Communities
NEW **Project/Activity Purpose & Description:**	Develop the Long Island Nitrogen Smart Communities (NSC) program. The NSC program will help communities and municipalities develop, implement and achieve nitrogen reduction goals. Project will help inform the way a community would become a NSC community by determining what types of documents, activities, or practices a community would have to commit. A pilot initiative will be launched in two municipalities (one in Nassau County and one in Suffolk County).
Responsible Partner(s) Role(s):	NYSDEC with Long Island Regional Planning Council
Outputs/Products:	Assessment of similar programs; program outline, including documents, guidelines, and requirements for municipality participation; outreach and marketing plan to engage municipalities; two pilot municipalities engaged in the development of a NSC program plan; final report/case study on lessons

CCMP/Work Plan Goal:	**CCMP Implementation Support & Technical Assistance**	
	learned. Nitrogen source assessment of pilot municipalities. Implementation plan for pilot municipalities.	
Milestones *(project start/end dates)*	October 1, 2019-September 30, 2020	
2019 Budget:	$200,000 (see Attachment 1, line 14)	
Outcomes: *(anticipated and/or completed accomplishments)* **-Short; Intermediate; & Long Term**	Ability to increase the participation of municipalities in a NSC program. Increase the knowledge of municipalities on their nitrogen sources. Increase the planning capabilities of municipalities to reduce nitrogen sources.	
∆ (+/-) in Pressure Targets	**N/A**	
CWA Core Program Project Support Core programs are:	1) Strengthening WQ Standards	
	2) Improving WQ Monitoring	
	3) Developing TMDLs	
	4) Controlling NPS Pollution on a Watershed Basis	x
	5) Strengthening NPDES Permits	
	6) Supporting Sustainable Wastewater Infrastructure	
	7) Wetlands Program Support/Implementation	x

C. PREVIOUS YEAR'S (FY2018) PROJECTS/ACTIVITIES HIGHLIGHTS

1. GOALS AND ACCOMPLISHMENTS. ***Describe goals that the program met and highlight programmatic accomplishments as well as project/activity short-term and intermediate outcomes. Highlight long-term environmental results achieved wherever possible. Include outcome and/or environmental results information about projects that required substantial NEP staff time but which were sponsored/funded by others, e.g., foundations, Federal or state partners.***

A. CCMP GOAL AREA: CLEAN WATERS/HEALTHY WATERSHEDS

1. Point Source Load Reduction. The LISS partners continued the point source nitrogen reduction program in Long Island Sound in 2018. The total Trade-Equalized (TE) point source nitrogen load for 2018 was 22,623 TE lbs/day. This is below the wasteload allocation set in the 2000 Nitrogen TMDL. In total, the 106 New York and Connecticut wastewater treatment plants (WWTPs) discharging to Long Island Sound have reduced nitrogen by more than 42 million pounds annually compared to baseline levels established in the 2000 TMDL. In 2018 the annual total nitrogen discharged from wastewater treatment plants (WWTP) in CT and NY increased for the first time since 2011 but remained below the Total Maximum Daily Load (TMDL) allocation and permit limits. The observed increase was likely caused by a greater than normal amount of precipitation in 2018. Rainfall entering a wastewater treatment plant, either through the sewage pipe system or by depositing directly onto sewage storage tanks, can reduce the efficiency of the plant's ability to treat and remove nitrogen before discharging into Long Island Sound

While the LISS does not directly fund this goal area and important CCMP activity, funds for STP nitrogen upgrades result from a combination of EPA State Revolving Funds, Connecticut's state Clean Water Fund and Bond Acts, and New York State's Clean Water/Clean Air Bond Act funds and other sources, including NYC bonds and funding for NYC STP upgrades. **Attachment 6** depicts the reductions in Trade-equalized point source loadings from 1995-2018.

2. Area/Duration of Hypoxia. The maximum area of hypoxia (less than 3 milliliters (ml) of dissolved oxygen (DO) per liter of bottom water in 2018 was 52 square miles. The 2018 5-year rolling average for the maximum summertime area of low dissolved oxygen (hypoxia) in Long Island Sound was estimated at 89 square miles. This represents a 57 percent decline in the five-year rolling average compared to the pre-2000 average of 205 square miles (i.e., before the Total Maximum Daily Load was put in place by EPA and the states). The hypoxia areas in 2015, 2018, and 2017 are the second, third and fourth smallest recorded in the past 32 years of monitoring. The severity of hypoxia has also declined, with no area in the open waters below 1 mg/l dissolved oxygen in eight of the past nine years. The LISS provides funding to CTDEEP to conduct the LIS WQ monitoring program year-round, with additional monitoring runs during the summer months [Attachment 1, line 15]. Other ambient factors affect the formation of the hypoxic zone in the Sound, including water and air temperature, rainfall, solar radiation, wind direction and velocity, currents, storm events and any resulting biological effects such as algae formation. The 2018 hypoxic event was estimated to have begun on July 30 and lasted an estimated 35 days. Between August 15 and August 22, there was a clear period when DO concentrations rose above 3.0mg/L for 8 days. DO concentrations dropped below 3.0 mg/L again and remained below 3.0 mg/L until September 8. This is also evident in the continuous data collected by the LISICOS Execution Rocks Buoy. **Attachment 7** depicts the area/duration of the maximum hypoxia event in Long Island Sound since 1987 as measured by CTDEEP.

3. NPS Load Reductions/On-Site Treatment. The CCMP calls for actions to address NPS (NPS) pollution to the Sound, including actions to address on-site waste treatment systems (OWTS), or septic systems. The LIS TMDL addresses NPS pollution, requiring a 10 percent reduction through direct projects or best management practices and other methodologies.

Nitrogen Reduction Strategies: EPA is implementing a strategy to aggressively continue progress on nitrogen reductions, in parallel with the States' continued implementation of the 2000 Total Maximum Daily Load (TMDL), and achieve water quality standards throughout Long Island Sound and its embayments and near shore coastal waters. The strategy recognizes that more work must be done to reduce nitrogen levels, further improve DO conditions, and address other nutrient-related impacts in Long Island Sound. The nitrogen reduction strategy complements the 2000 TMDL in important ways. Foremost, while the 2000 TMDL is premised on achieving water quality standards for DO in the open waters of LIS, the EPA strategy expands the focus to include other nutrient-related adverse impacts to water quality, such as loss of eelgrass, that affect many of LIS's embayments and near shore coastal waters. Information on the effort is available at http://longislandsoundstudy.net/issues-actions/water-quality/nitrogen-strategy/.

NYSDEC, in cooperation with Suffolk and Nassau Counties, the Long Island Regional Planning Council, local municipalities, environmental and business groups, and many other stakeholders, has been engaged in the development of the comprehensive Long Island Nitrogen Action Plan (LINAP), http://www.dec.ny.gov/lands/103654.html. As part this program, the LINAP collaborative is developing technically robust "sub-watershed plans" to fully address nitrogen pollution in the waters of Long Island, include Long Island Sound embayments. The sub-watershed plans will prioritize embayment areas for actions for nitrogen loading reductions.

CTDEEP also is engaged in the Second-Generation Nitrogen Strategy, which endeavors to complement the sound wide TMDL by assessing local impairments and local nitrogen sources contributing to them.

Bioextraction: Through a partnership with NEIWPCC and the NYSDEC, a new initiative has been developed that aims to improve water quality in NY coastal waters and the Long Island Sound by removing excess nitrogen through the cultivation and harvest of seaweed and shellfish. The Bioextraction Initiative is engaged in assessing the efficacy of and potential challenges involved in advancing seaweed and shellfish aquaculture to remove excess nitrogen loads from NY and CT surface waters. The Initiative is actively involved in reviewing and reporting on literature and policies; and providing recommendations to streamline the regulatory process. Additionally, the Initiative is working with industry professionals to develop markets for and assess cultivation costs of potential bioextraction species, and evaluate overall economic viability of seaweed and shellfish bioextraction operations. As part of this program, a publicly available GIS-based siting tool to identify most suitable site for bioextraction is being developed by incorporating environmental and conflict use data.

Impervious Cover Mapping: Using FY18 funds, Connecticut DEEP is using its ongoing Cooperative Agreement with the University of Connecticut's Center for Land Use Education and Research to produce updated impervious cover maps for the New York portions of the lower Long Island Sound watershed. In June of 2015 CT DEEP engaged the UConn Center for Land Use Education and Research (CLEAR) in a project to conduct an update of the Center's *Changing Landscape Project* using 2015 Landsat imagery, for the area of the state of Connecticut only. This project completes the analysis for the NY, MA, and RI portions of the lower LIS watershed, thus bringing it into alignment with the 2010 land cover datasets previously developed for the LISS by CLEAR.

CLEAR's *Changing Landscape* (CL) project is a nationally unique research project that charts the changes that have occurred in Connecticut's landscape since 1985. CL was created by the UConn Center for Land Use Education and Research (CLEAR) for the specific purpose of being able to map and measure land cover change over time. This project adds the non-Connecticut portions of the lower watershed to the 2015 land cover dataset produced for the CT portions.

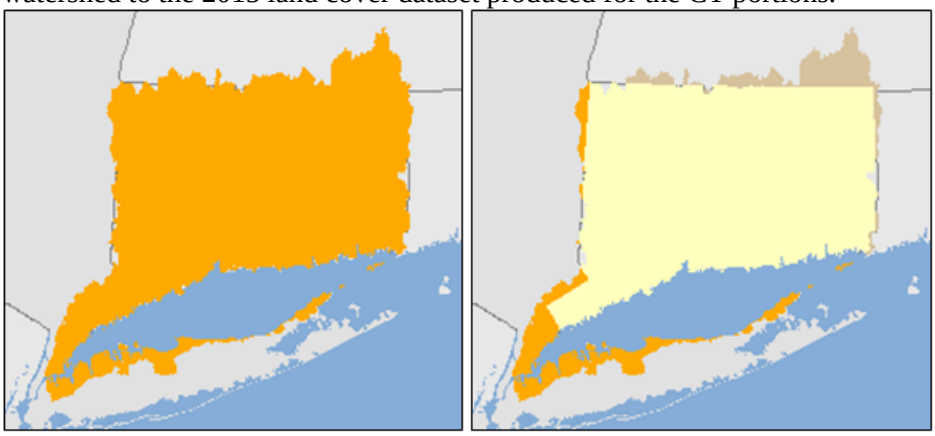

Figure 1. Study area. Left, as one unit. Right, highlighting portions of NY, RI and MA that with CT comprise the Lower LIS watershed.

The project has four phases, the first three of which have been completed by August 1, 2018, the last by September 2019:

1. *Conduct land cover analyses from Landsat 2015 imagery*. Computer algorithms developed by CLEAR will be used to classify the 2015 lower (non-Connecticut) LIS landscape into the 12 distinct land cover classes of the CL. Change analysis was performed to detect changes in land cover since 2010.

2. *Perform additional analyses to create land cover change data and maps.* The raw land cover and land cover change data has been analyzed to create data tables documenting land cover change, and to integrate this data with both the new CT data and the earlier sampling dates of the study (1985, 1990, 1995, 2002, 2006, 2010).
3. *Calibrate and run "ISAT: model.* The Impervious Surface Analysis Tool, or ISAT, was developed by CLEAR in collaboration with the NOAA Coastal Services Center (now Office for Coastal Management). ISAT provides an estimate of total impervious surface coverage for a given watershed. CLEAR has calibrated ISAT with the new 2015 land cover data and is running it for the study area using USGS Hydrologic Unit Code (HUC) 12-digit watersheds (HUC-12) as the geographic framework.
4. *Create a user-friendly website*. The CL website has been updated with new maps, tables, charts, interactive maps, and downloadable data. The project team developed a new site, incorporating the data and maps from the existing *Long Island Sound Watershed's Changing Landscape*. The webpage can be found at Welcome to the Long Island Sound Watershed's Changing Landscape.

B. CCMP GOAL AREA: MANAGEMENT & CONSERVATION OF LIVING MARINE RESOURCES AND THEIR HABITATS

1. Habitat Restoration and Protection. As reported in EPA's NEPORT reporting system, LISS partners restored 37.1 acres and protected 487.4 acres of coastal habitat in 2018. The LISS only provides funding for individual habitat restoration projects as they may be eligible for competitive funding under the LISS Futures Fund Large Grant program, described below in Section D. Because of the complexity of planning, organizing and carrying out restoration projects in both states, the LISS funds two habitat coordinators, one each in NYSDEC (via NEIWPCC) and CTDEEP, who develop priority LIS projects, including fish passage projects, in their state. These staff positions are included in the description of LISS-funded staff in this Work Plan in Attachment 2. It should be noted that the acres restored/protected and river miles reopened were not all funded by the LISS; the CCMP called for many and varied funding sources to implement its actions. LISFF projects do help contribute to the total acres restored/protected, to the extent that eligible projects are qualified, apply, and are approved for funding.

2. Fish Passage Restoration. As reported in EPA's NEPORT reporting system, LISS partners reopened 38.6 river miles to fish passage in 2018. The LISS-funded CTDEEP and NYSDEC habitat restoration coordinators develop projects to reopen fish passage in each state. Because Connecticut's river and stream network along the LIS shoreline is much more extensive than New York's, the bulk of the fish passage projects are in Connecticut rivers and streams. Historically there were approximately 562 miles of river in Connecticut that supported diadromous fish runs; currently there are approximately 490 miles of river reaches open to fish passage. This is not meant as a management target for restoration. It should be noted that the river miles reopened were not all funded by the LISS; the CCMP called for many and varied funding sources to implement its actions.

3. Eelgrass Mapping. USFWS completed its project to map eelgrass in LIS. Over the summer and fall of 2017, USFWS mapped 1,465 acres of eelgrass in the study area, which resulted in a GIS database of 156 polygons. Of these polygons, 51% were field visited and most of them were the larger beds in the study area. Thus, more field-time was spent trying to identify bed edges for the larger beds mapped. The largest contiguous bed we mapped was in Lords Point, Stonington, CT (165 acres). Additionally, the most eelgrass in our study areas was found east of the Thames River along the Connecticut coast. The USFWS created a web-map was created of the final eelgrass delineations, which can be found at http://edc.maps.arcgis.com/apps/View/index.html?appid=5e9065b777d14249a5dbd05bf84ab955. The data listing for the orthophotography was created by the University of Connecticut and can be found at here: http://cteco.uconn.edu/data/flight2017_Ecoast/index.htm. The report was finalized December 18,

2018 and posted on the LISS website.

4. Blue Plan: As stated on CTDEEP's website, the purpose of the Blue Plan is to protect traditional uses, minimize conflicts, and maximize compatibility, now and in the future. This includes preserving Long Island Sound's ecosystem and resources, and facilitating a transparent, science-based decision-making process. After three years, three public hearings, six regional public meetings, and countless webinars, calls, and meetings with interested stakeholders, organizations, and commissions, a draft of the Long Island Sound blue plan was released in March 2019. There was a formal 90-day public comment period from March 20, 2019 to June 21, 2019. The legislation [Connecticut General Statutes Section 25-157t] requires CTDEEP to adopt a final draft of the long Island Sound Resource and Use Inventory and Long Island Sound Blue Plan not later than 90 days after the end of the public comment Period. CTDEEP Commissioner Katie Dykes will work with the Blue Plan Advisory Committee and the Development Team through mid-September 2019 to review all of the comments received during the public comment period, and make revisions to the Plan to address those comments as warranted. The final draft will be submitted to the Connecticut General Assembly for consideration during the upcoming legislative season that starts in February 2020. The legislature's Environment Committee will hold its own public hearing on the final draft plan, and that Committee will make recommendations to the full legislature as to whether the plan meets the intent of the CGS Section 25-157t and should be approved.

C. CCMP GOAL AREA: MONITORING, MODELING & RESEARCH

1. LIS Scientific Research Program. The LISS, through the CT and NY Sea Grant programs, continued to monitor the three scientific research projects that were selected for funding in 2017 and the four new projects selected for funding in 2019. The abstracts of these projects may be found on the LISS website at http://longislandsoundstudy.net/research-monitoring/lis-research-grant-program/. These projects will continue to be reported on in subsequent NEP work plans as the projects are completed.

The CT and NY Sea Grant College Programs initiated the RFP cycle for FY2018 by releasing the call for pre-proposals on May 10, 2018. Pre-proposals were due by June 20, 2018 and were evaluated by an expert panel. A small subset of proposals was invited to submit full proposals by Fall 2018. Selections under the FY2017-18 two-year funding cycle were made and projects will take place from 2019-2021. More information about the four projects that were selected can be found on the LISS website, http://longislandsoundstudy.net/research-monitoring/lis-research-grant-program/2019-research-project-descriptions/.

The LISS STAC met in three times in 2018, with primary investigators of funded projects making presentations to report on progress. STAC meeting minutes are posted on the LISS website, http://longislandsoundstudy.net/about/committees/science-technical-advisory-committee/.

2. LIS Sentinel Monitoring Program. The LISS Sentinel Monitoring strategy is posted at http://longislandsoundstudy.net/research-monitoring/sentinel-monitoring/. Three pilot projects were funded with FY 17 prior year funding and have now been completed. For more information on the pilot projects, visit: http://longislandsoundstudy.net/research-monitoring/sentinel-monitoring/sentinel-monitoring-for-climate-change-research-projects/. In 2017 the Sentinel Monitoring work team focused on updating the Sentinel Monitoring Strategy. The report, *Sentinel Monitoring for Climate Change in the Long Island Sound Estuarine and Coastal Ecosystems of New York and Connecticut (Vol 2)*, was completed and posted on the LISS website in 2018. The work team also reviewed drafts of the LIS Climate Vulnerability Assessment conducted by Dr. Juliana Barrett of Connecticut Sea Grant. Dr. Juliana

Barrett presented the completed LIS Climate Vulnerability Assessment at the July 18, 2019 Management Committee Meeting.

3. Climate Ready Estuaries Under an agreement, UCONN acquired, deployed and tested the pH and total CO2 sensors for monitoring acidification in LIS. These systems require additional development to reduce operations and maintenance effort and to improve data quality. In addition, remote sensing reflectances and derived products from several sensors and methodologies were tested. Algorithms to retrieve chlorophyll concentrations were tested. The evaluation of data suggests that data from new sensors, such as Sentinel, may allow the distribution of near real-time CHL products for LIS in the future. This work allowed for a more thorough application of a local algorithm, leading to interesting observations of the relationships between optical patterns and environmental forcing that may drive their variability over time and space. Lastly, work continued by CT Sea Grant to conduct a vulnerability analysis of the LISS CCMP implementation actions to climate change. The Sentinel Monitoring for Climate Change Work Group provided assistance to the assessment and reviewed a draft plan in April 2018. The completed assessment was presented to the Management Committee on July 18, 2019.

D. CCMP Goal Area: Implementation Support and Technical Assistance

1. Long Island Sound Futures Fund (LISFF) Projects, FY2018. The LISFF supported 36 sub awards, totaling $2.57 million to local government and community groups to improve the health and ecosystem of Long Island Sound. The LISFF 2018 projects will reach more than 800,000 residents through environmental and conservation education programs. Water quality improvement projects will treat at least 100,000 gallons of water runoff reducing more than 15,300 pounds of nitrogen. The funds will be matched by $3.1 million from the recipients, resulting in $5.67 million in funding for on-the-ground conservation projects. The LISS initiated the Long Island Sound Futures Fund in 2005 through the U.S. EPA's Long Island Sound Office and NFWF. To date the Futures Fund has invested $19.6 million in 416 projects. With grantee match of $36 million, the program generated $55.6 million for locally based conservation. The projects have opened 163 river miles for fish passage, restored 1,090 acres of critical fish and wildlife habitat and open space; treated 204 million gallons of pollution, and educated and engaged 4.7 million people from communities surrounding the sound.

2. LIS Stewardship Initiative. The LISS website contains an updated online Stewardship Atlas, http://longislandsoundstudy.net/issues-actions/stewardship/stewardship-areas-atlas/. The LISFF supported several Stewardship Initiative projects and public involvement efforts centered around trails days at stewardship sites.

3. CCMP Non-Base Program Projects. In FY2019 funds were provided to enhance CCMP implementation support for the Nitrogen Reduction Strategy. Details on progress and products relating to the first project are available at http://longislandsoundstudy.net/issues-actions/water-quality/nitrogen-strategy/. The work is being conducted with the support of an EPA contract with Tetra Tech.

E. CCMP Goal Area: Public Outreach, Information & Education.

1. LISS Communications. The LISS partners produce their own materials and press releases to communicate their accomplishments and plans to their public or special audiences. The LISS, via a grant to NEIWPCC, maintains its website for public information and access, and produces *SoundBytes*, an electronic email product to keep constituents informed in topical and timely areas. *Sound Update and Outlook* are also produced several times a year, but paper copy distribution has been phased down to conserve resources and be more 'green.' LISS-produced materials emphasize the bi-state nature of public information on the Sound, its ecology or status, while individual partners' public information programs

may focus on single state or communities of interests' priorities or needs. Examples of these publications are on the LISS website.

2. COMPLETED PROJECTS. ***For completed projects that were funded by a CWA §320 sub-award, indicate: project purpose; entity that led project implementation; final grant amount – if project came in under budget, describe how remaining funds will be reallocated to ensure expenditure during the project period; project deliverable(s) and project completion date.***

The LISS is an ongoing partnership of Federal, state and local organizations implementing the cleanup and restoration plan for Long Island Sound. The LISS is not organized by 'project' and its program functions are distributed across its partners. Therefore, unless there are specific and discrete sub-grant projects that have been completed, this reporting category does not adequately represent the LISS organizational and reporting structure. However, in FY2018, several partners' assistance awards funded in prior fiscal years have been completed and their EPA awards closed out:

- LI-96185001, $344,201 to UCONN for the Connecticut Public Outreach and Education 2016;
- LI-96161101, $752,982 to UCONN for the Water Quality Enhancement to Support Hypoxia Management.
- LI-96267817,$685,000 to NYSDEC for LIS Stewardship Land Acquisition in East Setauket, NY.

3. SUCCESS STORIES/TRANSFERABLE ACTIVITIES, TOOLS. The LISS is willing to discuss any of its ongoing programs and activities with NEP staff that were felt to be worthy of technology transfer to other NEPs; this can be done in conjunction with this Work Plan. The LISS website, the nitrogen TMDL, the bioextraction projects funded in prior years, the LISS environmental indicators, *Sound Health* and *Protection & Progress* are all examples of successful and transferable products and activities from which the other NEPs may benefit**.**

4. SUPPORT OF CWA CORE PROGRAM IMPLEMENTATION. ***Information about the anticipated role the NEP will play in the use of CWA tools; use role definitions in the September 28, 2007 Program Evaluation Funding Guidance: Primary; Significant; Support.***

Based in CWA Sections 119 and 320, this FY2019 NEP Summary Work Plan supports, directly or indirectly, many CWA core programs as indicated in the Office of Water's National Program Guidance. In turn, these core EPA regulatory programs support CCMP implementation through permits that establish nutrient levels, or programs that reduce NPS pollution to the Sound. Because of the LISS nitrogen TMDL, over the last several years, both the states of Connecticut and New York revised their ambient water quality standards (**CWA §304**) for DO pursuant to EPA's 2000 national guidance for DO in marine waters. Connecticut conducts the LISS ambient water quality monitoring (WQM) program under **CWA §106**. The data compiled by the LISS WQM program is one of the most robust and extensive datasets on ambient conditions available to scientists, researchers and managers. The LISS nitrogen TMDL (**CWA §303(d)**) set firm reduction targets and encouraged trading at point sources, and NPDES/SPDES permits (**CWA §402**) have been modified to incorporate TMDL nitrogen limits on a 15-year schedule.

The states of New York and Connecticut recognize the significant investments required to support wastewater infrastructure and have passed state bond act funding to sustain efforts to upgrade facilities to reduce nitrogen loads to the Sound as established in the nitrogen TMDL The State of Connecticut designated LIS waters in 2007 as a No Discharge Zone under the **CWA §312** and the State of New York has accomplished a similar designation in NY LIS waters in 2011. The states use authorities and funding under **CWA §319** to address priority problem areas of the Sound that originate in the watershed on land.

These actions are primary support of CWA core programs, and are ongoing and integral to LISS CCMP implementation to restore and protect Long Island Sound and its watershed.

5. SUPPORT FOR NEP REGIONAL PRIORITIES. ***NEP regional priorities include urban waters, fertilizers/lawn care, nutrients, climate change, NDZs, public access, environmental justice, citizen science and fish advisories.***

The LISS supports many of the NEP regional priorities, either directly through funded projects, or indirectly through previously-funded work or from support to partners who are charged with implementing a priority area. For example, The LISFF supported 36 sub awards totaling $2.57 million to local government and community groups to improve the health and ecosystem of Long Island Sound. The LISFF 2018 projects will reach more than 800,000 residents through environmental and conservation education programs. Water quality improvement projects will prevent 108,000 gallons of stormwater runoff from flowing into the sound, reduce more than 15,300 pounds of nitrogen and collect 2,200 pounds of floating trash. The funds will be matched by $3.1 million from the recipients, resulting in $5.67 million in funding for on-the-ground conservation projects. See: http://longislandsoundstudy.net/about/grants/lis-futures-fund/2018-large-grants/.

The LISFF FY2018 supported EPA's Environmental Justice initiatives by providing funding for projects in communities in which inner-city and disadvantaged youth are given the opportunity to visit and explore Long Island Sound -- some for the first time -- and to accomplish meaningful conservation work on public lands and waters.

6. EXTERNAL FACTORS. ***Description of external factors that had an impact on: overall work plan implementation, attainment of specific goals; achievement of project milestones and/or output completion; and description of adaptive management strategies the program used to deal with those factors.***

In FY2019, funding available to the LISS increased again, to approximately three and a half times what it was from the FY2016 Enacted level. This increase necessitates increased emphasis on fiscal management and project oversight. The LISS also needs to further implement program implementation tracking, as was highlighted by the Government Accountability Report 18-410, which was released in July 2018. The LISS worked with GAO throughout 2017 as it conducted its assessment of the program. The LISS lost an EPA program analyst in 2017 due to retirement and brought in a new program analyst at the end of April 2019. Despite back filling the program analyst position, tight staffing, implementation of ambitious initiatives such as the Nitrogen Strategy, and increased program evaluation and tracking, strains existing staff. Finally, the statutory funding authorization for CWA §119 and §320 expired in 2010. In 2011 the statutory funding authorization for the Long Island Sound Stewardship Act [P.L. 109-359] expired. The final legislative results of any future reauthorization bills may impact future LISS program implementation and direction.

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LONG ISLAND SOUND STUDY **ATTACHMENT 1**
SUMMARY OF FY2019 LISS FUNDING UNDER CWA §119 AND §320
BY PROGRAM ELEMENT

LISS PROGRAM ELEMENT	ACTIVITY/TASK	2019 OUTPUTS/PRODUCTS/SERVICES/TASKS [PRIOR YEAR REFERENCES]	LISS GRANTEE OR FEDERAL IA	2019 BUDGET AMOUNT	ENVIRONMENTAL OUTCOMES
Coordination and Reporting of Environmental Actions and Results	**EPA Long Island Sound Program Office Support**	1) Telecommunications; internet; copier; postage; supplies, materials; EPA travel account.	EPA LISO	$10,500	Coordinated federal, state, and local government actions to implement the CCMP; clear annual goals and objectives framed within available funding; public and financial support for restoration and protection of Long Island Sound
		2) EPA HQ administration	EPA LISO	$4,000	
		3) ORISE-Technical Support	EPA LISO	$5,000	Better accessibility and use of data on pollution loads, compliance conditions, watershed stressors, and water quality responses. Improved assessment and reporting of programmatic and environmental outcomes.
	State Coordination & Technical Assistance	4a) Assist in all aspects of LISS program development, reporting and support.	CTDEEP	$302,869	Involvement of relevant technical staff and programs in LISS activities to protect and restore Long Island Sound, its resources and its habitats, and to protect public health and meet commitments to the LISS partnership. NYSDEC positions is state supported.
		4b) Assist in all aspects of LISS program development, reporting and coordination support.	NYSDEC	[$0]	
	Management Conference Administrative Support	5) National NEP travel; Management Conference meetings; CAC meeting support; state travel support for local and national meetings and conferences; other planning and reporting support.	NEIWPCC	$89,338	Increased citizen involvement and participation at local and national meetings; increased understanding of issues and ability to inform and advise management conference partners on program direction and policy.
		6) CCMP Implementation Tracking and Reporting	EPA	[$0]	Improved management and coordination of implementation actions as measured by reported program indicator outputs and outcomes.
	COORDINATION SUBTOTAL:			**$411,707**	**= 2.8%**
Public Outreach, Information, Participation and Education	**Public Information & Education Program**	7) LISS communications coordination; project management & support.	NEIWPCC	$420,021	Increased citizen involvement in CCMP implementation and program direction; informed and increasing public knowledge and citizen participation in LIS issues; increasing understanding of the state of LIS health; better public assessment of progress and production of key reports to citizens involved in the LISS leading to changes in management direction or CCMP implementation.
		8) LISS NY communications coordination, UPDATE, presentations, press releases.	NY Sea Grant	$233,406	
		9) LISS CT communications coordination, presentations, press releases.	CT Sea Grant	$62,238	
		10) K-12 Mentor Teacher Program in New York and Connecticut	CT Sea Grant	$30,640	Development of grade appropriate, multidisciplinary workshops utilizing LIS curricular resources; provision of LIS resources and appropriate pedagogy to result in increased educator and student understanding of LIS and issues facing LIS; educated teacher ranks in K-12 grades in New York and Connecticut portions of the Long Island Sound watershed.

		11) Revise and reprint English and Spanish versions of *Living Treasures* booklet	CT Sea Grant	$22,950	The booklet supports increased educator and student understanding of LIS and LIS-related issues and diversified potential audiences by improving access to basic information about Long Island Sound for Hispanic audiences.
	Small Grants Program	12) LISS Futures Fund Small Grants Program for public information, education, outreach, <$10K projects.	NFWF	$50,000	Informed public and increased citizen participation to improve stewardship and individuals' actions beneficial to a healthy LIS; increasing awareness of the state of LIS health and promoting changes in lifestyle that might benefit the Sound; improved habitat and water quality and increased public awareness and participation in LIS affairs; fulfilled public expectations for knowledge about LIS and educational needs.
	Public Engagement	13) Workshop on Sustainable Behavior Change Campaign	NEIWPCC	$55,000	Community leaders will have the knowledge to create campaigns with measurable outcomes that will contribute to achieving goals identified in the CCMP. Improved water quality due to reduced nitrogen loading. Increased use of safe and sustainable practices by homeowners. Greater public understanding of individuals' role in the LIS ecosystem and practices to reduce pollution in waterways. Increased local campaigns with measurable goals in changing behaviors that cause polluted waterways
		14) Nitrogen Smart Communities	NYSDEC	$200,000	Ability to increase the participation of municipalities in a Nitrogen Smart Communities program. Increase the knowledge of municipalities on their nitrogen sources. Increase the planning capabilities of municipalities to reduce nitrogen sources.
	PI&E SUBTOTAL:			**$1,074,255**	**= 7.4%**
Water Quality Monitoring, Modeling and Scientific Research	**Water Quality Monitoring**	15) LIS Water Quality Field Surveys	CTDEEP	$1,211,407	Improved water quality assessment to guide management activities; improved planktonic community assessment to guide management activities; improved dissolved oxygen assessment to protect living resources and to determine criteria compliance in CT/NY; greater safety of CT/NY residents who consume LIS seafood; better public involvement and management of LIS nutrient and dissolved oxygen conditions affecting living marine resources.
		16) Embayment and Watershed Data Collection for Modeling	CTDEEP	$505,000	Data available for researchers or stakeholders to complement their projects; improved understanding of dilution, productivity, and other processes in embayments under different scenarios; improved understanding of problems in embayments; support for future restoration plans; improvement management of priority embayments.
		17) CT River WQ Monitoring	USGS-CTDEEP	$45,000	Improved continuous water quality data for simulations or analyses in support of nitrogen management conditions.

		18) LIS Real-Time Water Quality Monitoring	UConn	$173,165	Assessment of management program impact; interpretation of stream flow variability on salinity in critical coastal habitats; better assessment of trends in managed nutrients; improved assessment of water quality models.
		19) IEC LIS Water Quality monitoring	IEC	$220,303	Improved resolution of water quality data; increase in number of stations covered; additional data points obtained.
		20) Unified Waters Study	Save the Sound, Inc.	$751,284	Increased community engagement and understanding of local water quality issues; improved resolution of water quality data; increase in number of stations covered; additional data points obtained; consistency of data collected and reported.
		21) Long Island Sound Tributary Sampling	USGS	$160,000	Data available for researchers or stakeholders to complement their projects; improved understanding of water quality of large river embayments; improved management of priority embayments
		22) Assessment of Research Vessel Condition	CTDEEP	$40,000	Safe, reliable, sea worthy vessel that monitoring staff can rely on to continue their work on LIS. Continued water quality monitoring and ground fish trawl surveys.
	Modeling	23) Living Resource Modeling	NYCDEP	$500,000	Better informed policy and funding decisions regarding cost-effective and defensible strategies for mitigating any identified ecological risks associated with excess nutrients, suspended solids or other ecological stressors.
		24) Hydrodynamic Modification Modeling	NYSDEC	$500,000	Improved understanding of embayments current conditions; improved understanding of where hydrodynamic modifications can assist in reducing nitrogen and other environmental impacts in the water; increased knowledge of the types of projects and their associated costs to improve ecological conditions.
		25) Nassau County Subwatershed Plan	NYSDEC	$250,000	Informed decisions directed towards nitrogen reduction strategies. Improved scientific basis for management decisions.
		26) Watershed Nitrogen Modeling Integration	CTDEEP	$1,065,000	Support future development of watershed scale actions plans such as TMDLs, TMDL alternatives, or Watershed Based Plans to address nutrient-related impacts on coastal embayments in Connecticut as well as providing a means to improvement implementation of the existing LIS TMDL.
	Research		CT Sea Grant	$715,284	Conduct o highest priority research relevant to the LISS CCMP is defined, openly solicited, and selected for funding using a well-developed process that is fair and technically based. New science-based information is p provided to inform decision making and actions toward reaching the vision and goals of the CCMP.
		27) LIS Research Program, FY 18 RFP for scientific research; STAC meeting support; LIS Research Conference	SUNY Research Foundation	$639,669	
	MONITORING, MODELING & RESEARCH SUBTOTAL:			**$ 7,158,625**	**= 49.0%**

CCMP Implementation Support, and Technical Assistance	**LIS Futures Fund Large Grant Program**	28) LIS Futures Fund Large Grants	NFWF	$2,320,000	Increase in participation of 'communities of practice,' including environmental justice, urban waters/distressed communities. Increase in acres of key coastal habitat restored. Increase in measurable nonpoint source controls addressing water quality problems in LIS and its embayments. Increase in riparian corridor development and protection. Increase in diadromous fish passage restoration. Increased public understanding of accomplishments and challenges faced in LIS and addressed by various LISS initiatives.
	Science and Modeling Synthesis	29) Long Island Sound Senior Scientist/ Coordinator	NEIWPCC	$279,055	Coordinated science and research program; increased understanding of management issues and scientific basis for actions developed in response; increased application of knowledge gained from scientific research project to management actions.
		30) Bioextraction Coordinator	NEIWPCC	$382,513	Improved water quality, habitat, sustainability and resiliency of LIS and the surround communities. Supported growth of the seaweed aquaculture industry; and improved water quality, habitat, and resiliency of LIS and the surrounding communities.
		31) Modeling Coordinator	CTDEEP	$110,268	Coordinator will facilitate development of models which will help attain ecosystem target for nitrogen loading and have all practices and measures installed to attain the allocations for stormwater and nonpoint source inputs from the entire watershed by 2025
	Regulatory and Compliance Assistance	32) EPA Nitrogen Contract Phase II	EPA	$267,437	Improved nitrogen management based on sound technical analysis of water quality monitoring data; improved understanding of eutrophication conditions and stressor-response relationships; improved understanding of controls necessary to reduce nitrogen inputs in the watershed.
		33) Watershed and Nonpoint Source Decision Support Framework	CTDEEP	$218,000	More granular understanding of land cover trends 1985-2015 for land managers and policy makers. Greatly improved information and understanding of local watershed condition. Improved, more granular understanding of N loading implications of local watershed land cover. Accessible local information for policy makers, land managers and land owners to support land use decisions.
CCMP Implementation Support, and Technical Assistance		34) Nutrient Trading Program: Options and Obstacles	NEIWPCC	$85,000	Use of water quality trading innovations to meet Long Island Sound goals for nitrogen management and extend its reach to achieve broader, integrated benefits demonstrated by Ecosystem-based Management concepts and Integrated Watershed Management approaches.
		35) Nitrogen Management Initiatives Coordination	NEIWPCC	$40,690	Continued and enhanced implementation of the TMDL and nutrient removal. Reduced nitrogen loads delivered to LIS, reduced hypoxia, improved attainment of state water quality standards.

	Habitat Restoration & Protection		CTDEEP	$190,722	Restored and protected critical coastal habitat in the LIS watershed; increased public awareness about current or planned habitat restoration and restoration activities in the LIS watershed; progress towards LISS Habitat Restoration Initiative (HRI) goals for restoring habitat and river corridors that improve health of living resources in the LIS environment; additional and leveraged funding brought to restoration activities and increased acreage/miles improved to benefit LIS water quality and biological health; public outreach about HRI and accomplishments; implementation of habitat restoration projects and effective communication to the public.
		36) Habitat Restoration and Stewardship Coordination and Implementation.	NYSDEC/ NEIWPCC	$284,241	
		37) LIS Stewardship Acquisitions	NYSDEC	$1,500,000	Acquisition of properties identified by the LISS Stewardship Initiative workgroup for protection of water quality, habitat and living resources.
		38) Restoration Final Design for Leetes Island Tidal Marsh, Guilford, CT	CTDEEP	$140,000	Ability for Leetes Island Marsh to support emergent vegetation after constant flooding is removed; restoration of the tidal marsh.
		39) Merwin Meadows Dam Removal and Sediment Remediation Project	CTDEEP	$400,000	Enhanced protection of important diadromous fisheries and wildlife habitat; enhanced riverine riparian habitat; improved water quality; expanded public access; fish passage; and reduced flood risk.
		40) Restoration of Sluice Creek Tidal Marsh, Guilford CT	CTDEEP	$120,000	Open connection between Sluice Creek marsh and the East River, which is an extension of the 600+ acre East River Marsh Complex and CT DEEP's East River Marsh Wildlife Management Area
	CCMP IMPLEMENTATION SUPPORT SUBTOTAL:			**$ 5,955,413**	**= 40.8%**
			Subtotal, all Elements =	**$14,600,000**	
			TOTAL FUNDING REQUEST =	**$14,600,000**	

ATTACHMENT 2

LONG ISLAND SOUND STUDY
NATIONAL ESTUARY PROGRAM WORK PLAN
LIST OF FY2019 LISS-FUNDED STAFF

ORGANIZATION/NAME	LISS TITLE	DESCRIPTION OF RESPONSIBILITIES/ACTIVITIES
CTDEEP		
Mark Parker	Environmental Analyst 3	Coordinates overall LIS program in CT.
Kelly Streich	Environmental Analyst 3	Provides technical support. (50%)
Katie Clayton-O'Brien	Environmental Analyst 2	Water quality sampling/analysis.
Matthew Lyman	Environmental Analyst 2	Water quality sampling/analysis.
Tommy Seda	Boat Captain	RV John Dempsey CTDEEP WQ Monitoring.
Christine Olsen	Environmental Analyst 2	Water quality sampling/analysis. (80%)
Harry Yamalis	Environmental Analyst 2	Coordinates habitat restoration plans/projects in CT.
NYSDEC		
Casey Personius*	LIS Coordinator	Coordinates overall LIS program in New York
NY Sea Grant		
Currently Interviewing Backfill	NY Outreach Coordinator	Develops and implements communications plans and public information/education program in NY.
Karen Palmeri	Administrative Support	Supports Extension Specialist. (33%)
NEIWPCC		
Robert Burg	LISS Outreach Coordinator	Coordinates the overall LISS communications program .
James Ammerman	Science Coordinator	Coordinates LISS science and research program.
Audra Martin	Environmental Analyst I	Overall LIS coordination within NEIWPCC and TMDL support.
Victoria O'Neill	NYSDEC Habitat Restoration Coordinator	Coordinates habitat restoration plans/projects in the New York portions of the LIS watershed.
CTSEA		
Judy Preston	CT Outreach Coordinator	Provides PI&E support and coordination in CT. (70%)

* funded from state match funds

Attachment 3

Organization & Base Program Activity	2019 Base Request	2019 Required Match	2019 Actual Match
1. EPA Long Island Sound Office	**$19,500**	**$0**	**$0**
a. Office operating expenses	$10,500	$0	NA
b. ORISE (N Technical)	$5,000	$0	NA
c. EPA HQ administration	$4,000	$0	NA
2. Connecticut Dept. of Energy & Environmental Protection	**$4,348,266**	**$2,898,844**	**$4,004,288**
a. CT State Coordination and Technical Support	$302,869	$201,913	$201,913
Modeling Coordinator	$110,268	$73,512	$73,512
b. LIS Water Quality Monitoring Program	$1,211,407	$807,605	$807,605
c. CT Habitat Restoration Coordination	$190,722	$127,148	$127,148
d. CT Overmatch: S.Hartford Conveyance & Storage Tunnel	State Overmatch	State Overmatch	$1,105,444
f. Assessment of Research Vessel Condition	$40,000	$26,667	$26,667
g. Restoration of Leetes Island Tidal Marsh, Guilford, CT	$140,000	$93,333	$93,333
h. Technical Integration of Nutrient Modeling - Phase II	$1,065,000	$710,000	$710,000
i. Embayment and Watershed Data Collection for Modeling	$505,000	$336,667	$336,667
j. Restoration of Sluice Creek Tidal Marsh, Guilford CT	$120,000	$80,000	$80,000
k. Watershed and nonpoint source decision support framework	$218,000	$145,333	$145,333
l. CT River Monitoring (USGS)	$45,000	$30,000	$30,000
m. Merwin Meadows Dam Removal Planning and Design	$400,000	$266,667	$266,667
3. NY State Dept. of Environmental Conservation (Land)	**$1,500,000**	**$1,200,000**	**$1,963,362**
a. NY Habitat Coordination [via NEIWPCC]			$195,494
b. Bioextraction Coordinator [via NEIWPCC]			$261,333
c. Support for Stewardship Land Acquisition	$1,500,000	$1,200,000	$1,200,000
d. NY State Match & Overmatch: Stewardship Acquisition	State Overmatch	State Overmatch	306,535
3. NY State Dept. of Environmental Conservation (Water)	**$950,000**	**$633,333**	**$633,333**
a. Hydrodynamic Modification Modeling	$500,000	$333,333	$333,333
b. Nitrogen Smart Communities	$200,000	$133,333	$133,333
c. Nassau County Subwatershed Plan	$250,000	$166,667	$166,667
4. Univ. of Connecticut outreach	**$115,828**	**$6,096**	**$6,096**
a. CT PI&E Coordination & STAC support	$62,238	$3,276	$3,276
b. K-12 Mentor Teacher Program	$30,640	$1,613	$1,613
c. Update and Reprint LISS Publications	$22,950	$1,208	$1,208
5. NY Sea Grant Cornell U.	**$233,406**	**$12,285**	**$12,286**
a. NY Public Outreach Program	$233,406	$12,285	$12,286
6. NE Interstate Water Pollution Control Commission	**$1,635,858**	**$798,892**	**$0**
a. Task 1 Outreach/Education Support	$420,021	$22,106	$0
b. Task 2 Meeting/Travel Coordination Support	$89,338	$59,559	$0
c. Task 3 Habitat Coordination [NYSDEC staff]	$284,241	$189,494	NYSDEC
d. Task 4 LIS Nitrogen Reduction Support	$40,690	$27,127	$0
e. Task 5 Science Coordinator	$279,055	$186,037	$0
f. Workshop on Sustainable Behavior Change Campaigns	$55,000	$2,895	$0
g. Nutrient Trading Program: Options and Obstacles	$85,000	$56,667	$0
h. Bioextraction Coordinator [NYSDEC staff]	$382,513	$255,009	NYSDEC
7. Interstate Environmental Commission	**$220,303**	**$146,869**	**$0**
a. Summer 2020 WQ Monitoring	$181,190	$120,793	$0
b. Procurement of a TOC Analyzer to enable Analysis of C	$39,113	$26,075	$0
8. Univ. of Connecticut	**$173,165**	**$115,443**	**$37,964**
a. Real-time Water Quality Monitoring	$173,165	$115,443	$37,964
9. EPA Nitrogen Contract	**$267,437**	**$0**	**$0**
10. National Fish & Wildlife Foundation	**$2,370,000**	**$1,380,702**	**$1,380,702**
a. LIS Futures Fund Large Grants	$2,320,000	$1,378,070	$1,378,070
b. LIS Futures Fund Small Grants	$50,000	$2,632	$2,632
11. Save the Sound- Unified Water Study	**$751,284**	**$500,856**	**$501,648**
12. Univ. of Connecticut STORRS Research award	**$715,284**	**$476,856**	**$223,775**
a. FY18 Research Projects	$175,958	$117,305	$44,000
b. Forward Funding for FY20	$539,326	$359,551	$179,775
12. NY Sea Grant – Research Foundation of SUNY	**$639,669**	**$426,446**	**$169,446**
a. FY18 Research Projects	$154,669	$103,113	$47,556
b. Forward Funding for FY20	$485,000	$323,333	$121,890
13. NY City Dept of Environmental Protection- Model	**$500,000**	**$333,333**	**$333,333**
14. USGS Interagency Agreement	**$160,000**	**$0**	**$0**
FY 2019 Total Request:	**$14,600,000**	**$8,929,956**	**$9,266,234**
FY2019 Allocation	**$14,600,000**		
Unallocated:	**$0**		
***Section 119 funds = $14,000,000 LIS and Section 320 funds = $600,000 NEP**		**Excess Match:**	**$336,278**

Attachment 4

Program Code/Grant #	Funding Opportunity # (grants.gov)	Project Officer	Region	Grants Specialist	Recipient	Description	Fed Award Amount (000B67)	Fed Award Amount (000B89)
LI-96261117-1	EPA-CEP-01 CFDA 66.437	Chris Dere	2	Janeime Castro/Kelsey Steele	NY State DEC	This project grant supports activities to acquire and preserve stewardship property along LIS.	$900,000	$600,000
New LI- 96257219-0	EPA-CEP-01 CFDA 66.437	Chris Dere	2	Janeime Castro/Kelsey Steele	NY State DEC	NY state Division of Water projects: hydrodynamic modeling effort, subwatershed plans, and nitrogen smart communities	$950,000	$0
LI-96261417	EPA-CEP-01 CFDA 66.437	Mark Tedesco	2	Janeime Castro/Kelsey Steele	Cornell University Office of Sponsored Programs	NYSEA PI&E and Mentor Teachers	$233,406	$0
LI-96263917	EPA-CEP-01 CFDA 66.437	Mark Tedesco	2	Janeime Castro/Kelsey Steele	New York City DEP	Living Resource Modeling	$500,000	$0
LI-96256619-0	EPA-CEP-01 CFDA 66.437	Nikki Tachiki	2	Janeime Castro/Kelsey Steele	SUNY Research Foundation (Sea Grant)	LIS Scientific Research and STAC Support	$485,000	$0
LI-96261317	EPA-CEP-01 CFDA 66.437	Bob Nyman	2	Janeime Castro/Kelsey Steele	SUNY Research Foundation (Sea Grant)	LIS Scientific Research and STAC Support Supplemental Amendment	$154,669	$0
LI-96259818	EPA-CEP-01 CFDA 66.437	Chris Dere	2	Janeime Castro/Kelsey Steele	Save The Sound	Unified Water Study of nitrogen impacts on LIS	$751,284	$0
LI-00A00372	EPA-CEP-01 CFDA 66.437	Aimee Boucher/Leah O'Neill	1	Katonya Parker	Interstate Environmental Commission	IEC Water Quality Monitoring	$220,303	$0
LI-00A00168	EPA-CEP-01 CFDA 66.437	Bob Nyman/ Leah O'Neill	1	Katonya Parker	CT Sea Grant Research	LIS Scientific Research and STAC Support Supplemental Amendment	$175,958	$0
New LI-00A00284-0	EPA-CEP-01 CFDA 66.437	Nikki Tachiki/ Leah O'Neill	1	Brian Tocci	CT Sea Grant Research	LIS Scientific Research	$539,326	$0
LI-00A00156	EPA-CEP-01 CFDA 66.437	Nikki Tachiki/ Leah O'Neill	1	Brian Tocci	CT Sea Grant	CT Sea Grant PI&E, Mentor Teacher, and Update and Reprint LISS Publications	$115,828	$0
New LI-00A00606-0	EPA-CEP-01 CFDA 66.437	Ian Dombroski	1	Katonya Parker	National Fish & Wildlife Foundation	NFWF LIS Futures Fund 2019	$2,370,000	$0
LI-00A00157	EPA-CEP-01 CFDA 66.437	Ian Dombroski	1	Monique Lloyd	Univ. of Connecticut	UCONN Dept Marine Services WQ Monitoring	$173,165	$0
New LI-00A00354-0	EPA-CEP-01 CFDA 66.437	Leah O'Neill	1	Diane Culhane	CTDEEP	CTDEEP 2019 CCMP Implementation	$4,348,266	$0
LI-00A00384	EPA-CEP-01 CFDA 66.437	Leah O'Neill	1	Katonya Parker	NEIWPCC	NEIWPCC CCMP Implementation	$1,635,858	$0

Contract		Leah O'Neill	1	Ray Cody	Phase 2 N Strategy	EPA contract for Nitrogen Strategy through Tetra Tech, Phase 2 - Option Period	$267,437	
Interagency Agreement		Leah O'Neill	1	Ian Dombroski	USGS	CT River water quality monitoring and tributary pilot	$160,000	$0
						Budget Total:	$13,980,500	$600,000
						Final Budget total:	**$14,580,500**	
						Unallocated:	**$0**	

Long Island Sound Study
Travel Documentation for FY2018 NEP Work Plan
April 2018 -June 2019

STATE TRAVEL SUPPORT					
Meeting Date	**Meeting Title**	**Meeting Location**	**Agency**	**Travel Expense**	**Grant Number**
5/1/2018	LISS Habitat Restoration & Stewardship Work Group	Westbrook, CT	CT DEEP	29.98	LI-96187401
5/30/2018	TAC- Hypoxia Model Planning	New Haven, CT	CT DEEP	106.59	LI-96187401
6/13/2018	TAC- Hypoxia Model Planning	New Haven, CT	CT DEEP	100.84	LI-96187401
6/19/2018	Restore America's Estuaries/Save the Sound Mtg	East Lyme, CT	CT DEEP	31.34	LI-96187401
7/19/2018	LISS Management Committee	Bridgeport, CT	CT DEEP	77.39	LI-96187401
7/24/2018	LISS Futures Fund Grant Review	Bridgeport, CT	CT DEEP	15.00	LI-96187401
7/19/2018	LISS Management Committee	Bridgeport, CT	NYSDEC	35.00	LI-96187401
7/24/2018	LISS Futures Fund	Bridgeport, CT	NYSDEC	35.00	LI-96187401
10/18/2018	LISS Management Committee	Bridgeport, CT	NYSDEC	30.00	LI-96187401
11/13/2018	LISS Management Committee	New York, NY	NYSDEC	28.75	LI-96187401
11/28/2018	LISS Habitat Restoration & Stewardship Work Group	Kings Park, NY	CT DEEP	92.06	LI-96187401
12/4/2018	LISS Futures Fund Awards	Port Jefferson, NY	CT DEEP	115.03	LI-96187401
12/4/2018	LISS Futures Fund Awards	Port Jefferson, NY	CT DEEP	30.00	LI-96187401
11/28/2018	LISS Habitat Restoration & Stewardship Work Group	Kings Park, NY	CT DEEP	36.91	LI-96187401
11/28/2018	LISS Habitat Restoration & Stewardship Work Group	Kings Park, NY	CT DEEP	120.60	LI-00A00384
12/6/2018	NERACOOS Annual Mtg	Portsmouth, NH	CT DEEP	179.51	LI-96187401
12/8-14/2018	Restore America's Estuaries	Long Beach, CA	CT DEEP	405.99	LI-96187401
1/30-31/2019	Basic Group Facilitation Training	New York, NY	NYSDEC	65.00	LI-00A00384
2/15/2019	LISS Science & Technical Advisory Committee	Stony Brook Univ, Setauket, NY	CT DEEP	30.00	LI-00A00384
2/15/2019	LISS Science & Technical Advisory Committee	Stony Brook Univ, Setauket, NY	CT DEEP	30.00	LI-00A00384
2/20/2019	Design Better Meetings	Long Island City, NY	NYSDEC	27.00	LI-00A00384
3/5/2019	Writing Mechanics Workshop	Manhattan, NY	NYSDEC	32.50	LI-00A00384
3/11-14/2019	ANEP EPA-NEP Training Workshop	Washington, DC	CT DEEP	1794.33	LI-00A00384
3/14/2019	LISS Citizens Advisory Committee	Manhattan, NY	NYSDEC	28.50	LI-00A00384
3/15/2019	LIS Research Conference	Port Jefferson, NY	CT DEEP	70.00	LI-00A00384
3/15/2019	LIS Research Conference	Port Jefferson, NY	CT DEEP	70.00	LI-00A00384
3/15/2019	LIS Research Conference	Port Jefferson, NY	CT DEEP	70.00	LI-00A00384
3/15/2019	LIS Research Conference	Port Jefferson, NY	CT DEEP	144.44	LI-00A00384
3/15/2019	LIS Research Conference	Port Jefferson, NY	NYSDEC	40.00	LI-00A00384

3/22-23/19	Long Island Natural History Conference	Brookhaven, NY	NYSDEC	45.00	LI-00A00384
3/27/2019	Zosterapalooza Eelgrass Summit	Boston, MA	CT DEEP	194.38	LI-00A00384
3/27/2019	Zosterapalooza Eelgrass Summit	Boston, MA	CT DEEP	83.00	LI-00A00384
4/25/2019	LISS Management Committee	Bridgeport, CT	NYSDEC	30.00	LI-00A00384
4/25-27/2019	New England Estuarine Research Society	York Harbor, ME	CT DEEP	593.87	LI-00A00384
5/21-22/2019	Powerful Presentations Meeting	Manhattan, NY	NYSDEC	67.00	LI-00A00384
6/5/2019	LISS Implementation Team	Stratford Point, CT	NYSDEC	104.46	LI-00A00384
6/18/2019	LISS Habitat Restoration & Stewardship Work Group	Fishers Island, NY	NYSDEC	54.00	LI-00A00384
6/18/2019	LISS Habitat Restoration & Stewardship Work Group	Fishers Island, NY	CT DEEP	25.00	LI-00A00384
6/18/2019	LISS Habitat Restoration & Stewardship Work Group	Fishers Island, NY	CT DEEP	182.00	LI-00A00384
			TOTAL STATE TRAVEL SUPPORT	**$5,250.47**	

CAC TRAVEL SUPPORT

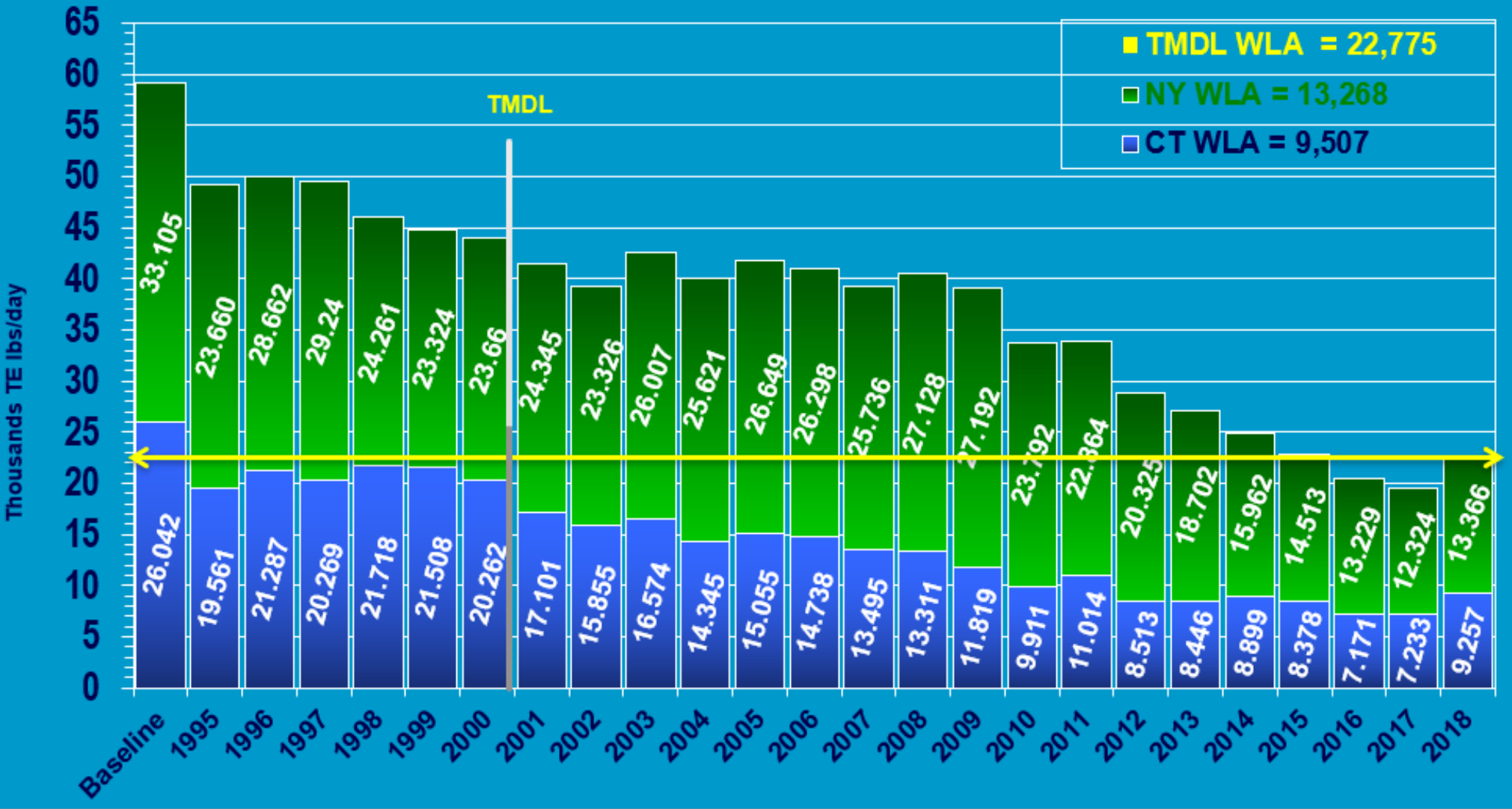
Meeting Date	Meeting Title	Meeting Location	Affiliation	Travel Expense	Grant Number
4/9/2018	**LISS Citizens Advisory Committee**	**New York, NY**	**TOTAL**	**$80.00**	LI-96187401
			CAC Member	56.50	
			CAC Member	23.50	
6/7/2018	**LISS Citizens Advisory Committee**	**Bridgeport, CT**	**TOTAL**	**$701.28**	LI-96187401
			CAC Member	86.56	
			CAC Member	55.07	
			CAC Member	116.00	
			CAC Member	21.00	
			CAC Member	59.55	
			CAC Member	188.70	
			CAC Member	174.40	
9/13/2018	**LISS Citizens Advisory Committee**	**Port Jefferson, NY**	**TOTAL**	**$488.91**	LI-96187401
			CAC Member	45.34	
			CAC Member	30.52	
			CAC Member	18.53	
			CAC Member	47.06	
			CAC Member	239.80	
			CAC Member	46.87	
			CAC Member	60.79	
12/13/2018	**LISS Citizens Advisory Committee**	**Bridgeport, CT**	**TOTAL**	**$417.62**	LI-96187401
			CAC Member	66.13	
			CAC Member	172.22	
			CAC Member	21.00	
			CAC Member	60.00	
			CAC Member	30.52	
			CAC Member	30.00	

			CAC Member	37.75	
3/14/2019	**LISS Citizens Advisory Committee**	**New York, NY**	**TOTAL**	**$404.39**	LI-96187401
			CAC Member	61.00	
			CAC Member	32.24	
			CAC Member	47.55	
			CAC Member	89.70	
			CAC Member	173.90	
6/13/2019	**LISS Citizens Advisory Committee**	**Bridgeport, CT**	**TOTAL**	**$661.53**	LI-96187401
			CAC Member	39.50	
			CAC Member	183.28	
			CAC Member	101.18	
			CAC Member	19.00	
			CAC Member	231.21	
			CAC Member	24.00	
			CAC Member	63.36	
			TOTAL CAC TRAVEL SUPPORT	**$2,753.73**	

LONG ISLAND SOUND STUDY

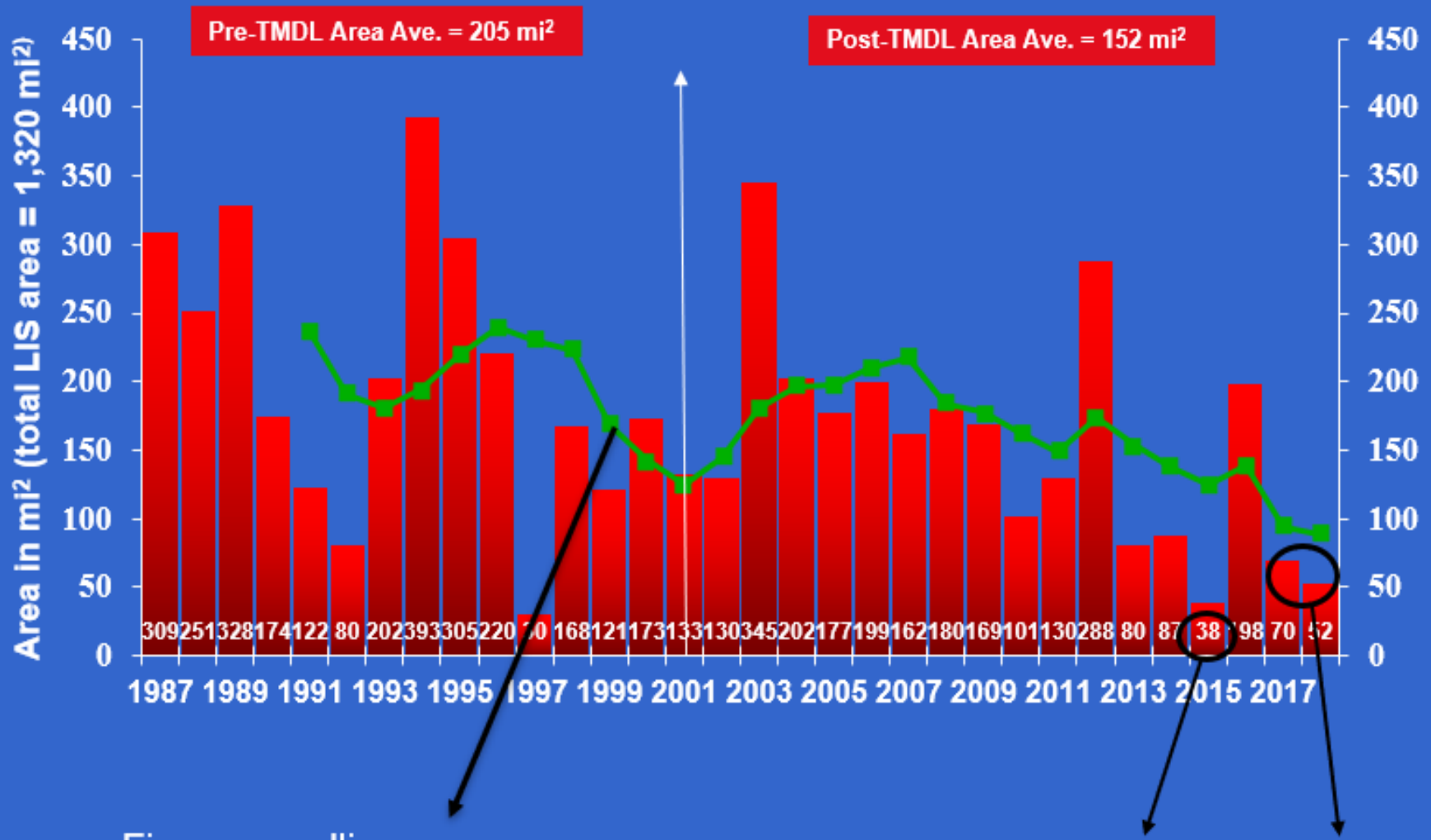
A PARTNERSHIP TO RESTORE AND PROTECT THE SOUND

Point Source Nitrogen Trade-Equalized Loads vs. Total Maximum Daily Load Waste Load Allocations 1995-2018 NY/CT STPs



Maximum Area of Hypoxia 1987-2018

state acute criteria 3mg/l



Five-year rolling average

Second, third and fourth smallest area in 32 years