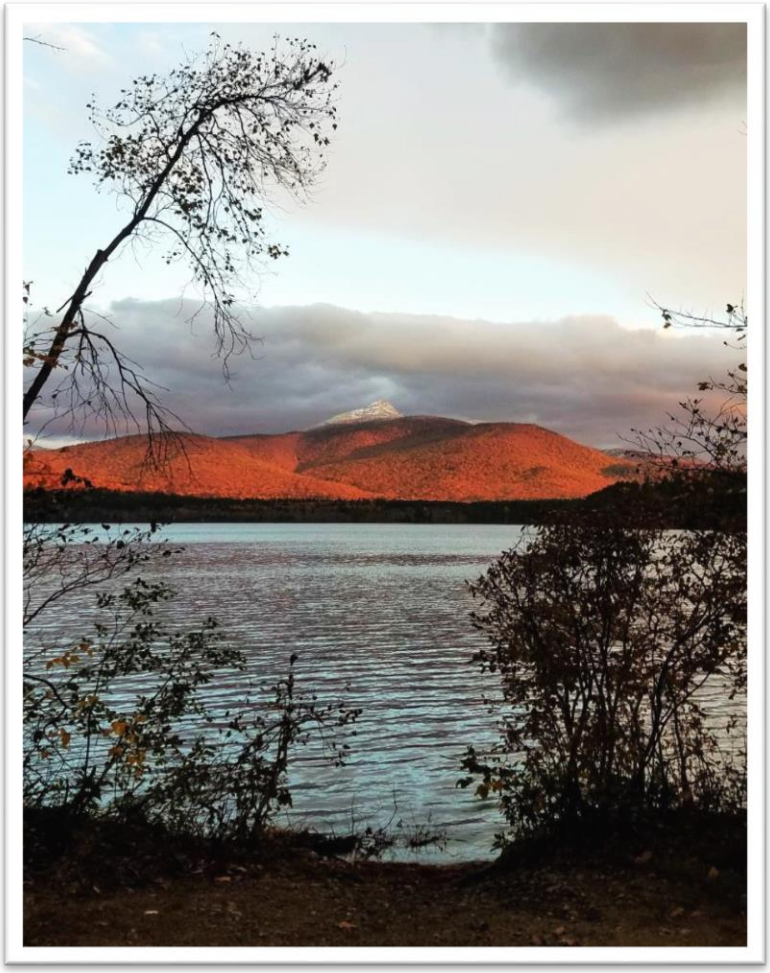
NHDES Wetlands Bureau Annual Report to U.S. EPA Region 1 for Calendar Year 2018



April 2019

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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NHDES Wetlands Bureau Annual Report to U.S. EPA Region 1 for Calendar Year 2018

Department of Environmental Services
Water Division / Wetlands Bureau
29 Hazen Drive / PO Box 95
Concord, NH 03302-0095

Robert R. Scott
Commissioner

Clark Freise
Assistant Commissioner

Collis G. Adams, C.W.S.
Administrator, Wetlands Bureau

Prepared by:

Mary Ann Tilton
Assistant Administrator, Wetlands Bureau

and
Rosemary Aures

Jeffrey Blecharczyk

Cheryl Bondi

Sandy Crystall, P.W.S.

Jocelyn Degler

Craig Rennie

Lori Sommer

Reviewed by: Jana Ford

Cover Photo by: Craig Rennie

April 2019

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INTRODUCTION

This report has been prepared for EPA to provide a summary of the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau regulatory trends, activities, and updates on EPA grant-funded projects as part of NHDES' priority and partnership agreement with EPA. The NHDES Wetlands Bureau operates under the authority of the New Hampshire Revised Statutes Annotated (RSA) 482-A, the wetlands dredge and fill statute. The Wetlands Bureau oversees NHDES' regulation of impacts to freshwater and coastal wetlands, surface waters and their banks, dunes, the tidal buffer zone, and areas adjacent to designated prime wetlands. The Wetlands Bureau also administers RSA 483-B, the Shoreland Water Quality Protection Act (SWQPA). Permitting and compliance activities for SWQPA are also reported on within this report. The regulation of impacts is accomplished primarily through the permitting process.

The mission statement of the Wetlands Bureau is "*to protect, maintain and enhance the environmental quality in New Hampshire through the powers set forth in RSA 482-A to regulate impacts to those areas "wherever the tide ebbs and flows" or "freshwater flows or stands*."

EPA GRANT UPDATES

This section provides information about the status of the Wetland Program Development Grants under which NHDES conducted various activities in 2018.

2013 Grant #1: Advancing Wetland Assessment in New Hampshire (CD98179201)
Under this grant, the remaining work completed in 2018 was Task 1, the evaluation of the applicability of Maine's macroinvertebrate protocols and model for wetland assessment in New Hampshire. The report, *Application of Four Methods to Assess Wetland Condition in New Hampshire: Macroinvertebrates, Vegetation and Two Rapid Assessments*, was submitted mid-year.

Task 1: Apply Maine's biomonitoring methods and statistical modeling for aquatic macroinvertebrates to New Hampshire.

Field work for this grant task was conducted in 2014 and 2015.

Analysis of the sampling and attainment class data revealed that the lack of predicted attainment classes for 10 of the 24 wetlands sampled reduced the ability to analyze the data, relative to the predicted attainment class and macroinvertebrate community. (The maximum number of samples in each attainment class was five.) Under the subsequent Wetland Biocriteria grant (CD00A00014), further analysis of the data is being conducted with the addition of results from sampling 20 wetlands in 2016 and 2017.

The use of field meters with three measurements at each wetland provided more data for analysis than the single measurement from water grab sample parameters. This improved the ability to compare results with predicted attainment classes for 14 wetlands. Specific conductance, dissolved oxygen percent saturation, and pH, were the only parameters that were considered statistically significant between two or more attainment classes.

- Specific conductance was significantly lower for wetlands assigned attainment class A when compared with wetlands assigned attainment classes B and C.
- Dissolved oxygen saturation at wetlands assigned attainment class C was significantly lower than the wetlands assigned attainment class B.
- The pH of wetlands assigned attainment class A was significantly lower when compared with wetlands assigned attainment class B.

The results of our analysis of floristic conservatism values, floristic quality assessment (FQA) metrics, and two rapid assessments--Maine's Wetland Human Disturbance Assessment (WHDA) and New Hampshire's Ecological Integrity Assessment (EIA)--found the strongest correlations between the number of nonnative species and the EIA-Land Use Index, and between the number of nonnative species and the EIA rank/score. The number of nonnative species also showed a strong correlation to the WHDA score and the EIA-buffer width metric. Mean C showed a strong correlation with both rapid assessments, EIA and WHDA. In addition, there was a moderately strong correlation between the EIA-Land Use Index and chloride concentrations.

The successful application of two rapid assessments and floristic quality assessment metrics has provided useful information about indicators of disturbance that can continue to be used, and perhaps refined as needed in future work. Further testing of the EIA-Land Use Index and relationship with chloride and other parameters would be valuable.

Tasks 2 - 7:
These tasks were completed and described in previous reports.

Task 8: Grant management
We managed and monitored the grant activities and funds, including oversight of our partner, NHB's activities. All Federal grant funds were expended by the end of the grant period.

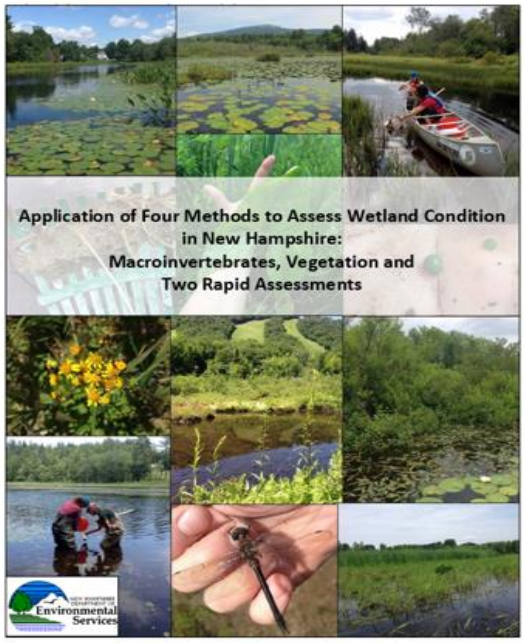


Figure 1: Cover of Application Methods to Assess Wetland Condition in New Hampshire

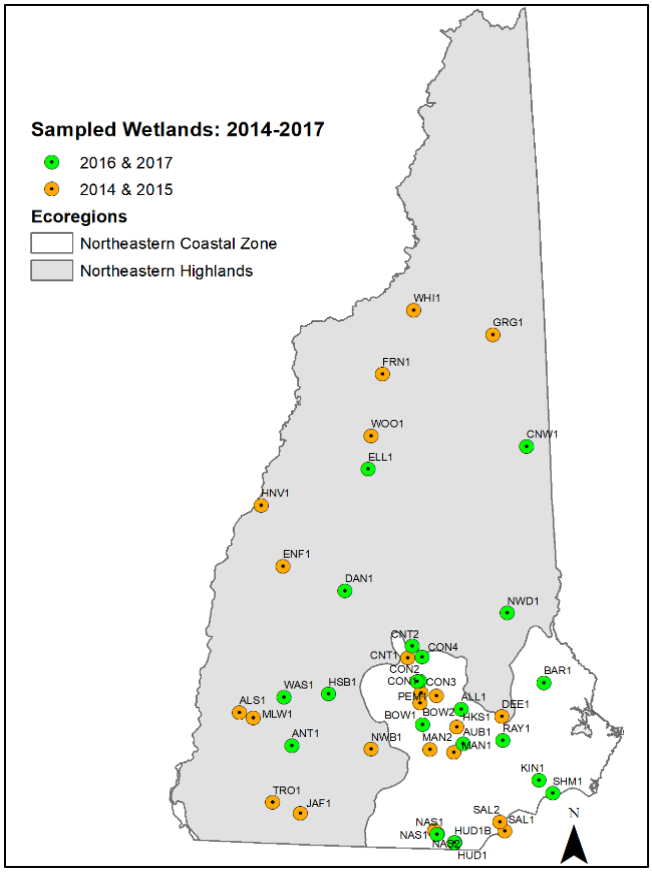


Figure 2: Wetlands Sampled by NHDES from 2014-2017

2015 Grant #1: Wetland Biocriteria and Outreach Tools in New Hampshire (CD00A00014)

The remaining tasks of this grant are:

1a. Investigate development of numeric biocriteria thresholds for aquatic life use support in fringing and emergent wetlands.
1b. Develop and test aquatic vegetation sampling protocols with Maine to use with the standard wetland biomonitoring protocols being used by New Hampshire and Maine.
2. Evaluate and document historical exemplary wetland systems so they can be reliably used for environmental reviews and conservation planning (NHB).
3. Develop thresholds for interpreting Floristic Quality Assessment (FQA) scores that are specific to New Hampshire wetland types (NHB).
4. Grant Administration, quality assurance, outreach and reporting.

Task 1a: Investigate development of numeric biocriteria thresholds for aquatic life use support in fringing and emergent wetlands

In April 2018, NHDES received the results of the macroinvertebrate identification and enumeration from the taxonomic contractor and provided those results to Maine DEP for processing through their predictive model. Maine DEP provided the model results in May for the 13 sites.

Of the 13 sites, 11 had attainment classes assigned. Two sites had low total mean abundance (less than 50 macroinvertebrates) or low generic richness (fewer than 15 genera) and thus an attainment class could not be assigned.

Maine DEP streamlined the draft predictive model that was been used for the past four years by NHDES. However, NHDES' data was run through the "old" draft model for consistency.

Data from sampling under this grant and the previous grant (a total of 44 wetland surveys) are being analyzed for inclusion in the final report that is underway.

Task 1b: Develop and test aquatic vegetation sampling protocols with Maine to use with the standard wetland biomonitoring protocols being used by New Hampshire and Maine.

Since NHDES held a joint training with Maine DEP in 2017, the Maine DEP wetland biomonitoring program has been applying a modified version of the protocol. Due to their work on developing their algae model, they will not be able to provide data to NHDES for analysis at this time.

Table 1: Sample Sites Information with Model Predicted Attainment Classes

Model-Predicted Attainment Class	Wetland Sampled 2017	Station ID	Town
NA (I) Low generic richness	Catamount Brook wetland	ALL1	Allenstown
B	Clark Pond	AUB	Auburn
C	Richardson Pond	BAR1	Barrington
C	Purgatory Brook wetland	BOW2	Bow
C	Kimball Pond	CNT2	Canterbury
C	Dollof Pond	CNW1	Conway
A	Hoit Road Marsh	CON4	Concord
NA (I) Low total mean abundance	Ellsworth Pond	ELL1	Ellsworth
C	Musquash Pond	HUD1B	Hudson
C	Powwow River	KIN1	Kingston
B	Fields Grove	NAS1B	Nashua
B	Lamprey River wetland	RAY1	Raymond
B	Tuxbury Pond wetland	SHM1	South Hampton
NA = not available I = Indeterminate status (no predicted attainment class due to low total mean macroinvertebrate abundance or low generic richness)			

Task 3: Develop thresholds for interpreting Floristic Quality Assessment (FQA) scores that are specific to NH wetland types (Natural Heritage Bureau)

Minimally-impacted reference condition thresholds for FQA indices (cover-weighted mean C) were determined for 14 vegetated wetland system types in New Hampshire.

NHB completed the report, *Reevaluating Exemplary Wetland Systems and Developing Thresholds for Interpreting Floristic Quality Assessment Scores*, which NHDES reviewed and submitted to EPA in June 2018. A description of the approach used and summary of the results are provided below.

The Natural Heritage Bureau (NHB) calculated minimally-impacted weighted mean C (wC) thresholds for the 14 selected wetland systems using relevé plot data from A to B+ (least impacted) examples of each system type. The New Hampshire CoC list (Bried et al. 2011; NEIWPCC 2013) was used in the calculations. For each system example (site), wC was calculated for each community-based plot within the system based on percent cover values of each species in the plot. These wC scores for each plot were then combined into a single wC for the system based on the percent cover value each plot (i.e., plant community) represented within the system. The wC was calculated for each site. The wC values for the multiple sites of a system type were combined to calculate the wC median and mean for each system type (Table 2; Figure 3).

Table 2: Minimally Impacted Weighted Mean C (wC) Thresholds by System Type

System	Abbrev	Median	Mean	Sites	Plots
Drainage marsh - shrub swamp system	DM-SS	2.90	3.26	5	18
Major river silver maple floodplain system	MRSMF	3.26	3.26	1	5
Temperate minor river floodplain system	TMRF	3.76	3.21	4	22
Calcareous sloping fen system	CSF	3.97	3.97	1	1
Temperate minerotrophic swamp system	TMS	3.99	3.99	2	3
Temperate peat swamp system	TPS	4.22	4.22	6	26
Black spruce peat swamp system	BSPS	4.56	4.34	3	8
Montane/near-boreal minerotrophic peat swamp system	M-BMPS	4.68	4.31	8	10
Forest seep/seepage forest system	FSFS	4.70	4.85	3	7
Coastal conifer peat swamp system	CCPS	4.80	4.80	2	10
Medium level fen system	MLF	5.04	5.04	11	56
Montane sloping fen system	MSF	5.46	5.47	3	12
Kettle hole bog system	KHB	6.04	6.08	8	34
Poor level fen/bog system	PLF	6.18	6.15	8	30
Totals				**65**	**242**

The wC system-specific values range from 3.26 for a drainage marsh - shrub swamp system to 6.15 for a poor level fen/bog system. Table 2 provides the list of wetland systems, mean and median values of weighted C, and the numbers of sites and plots on which the values were calculated. The primary factors contributing to lower number of sites and plots for some of the system types are type rarity or limited number of minimally impacted examples.

The system-specific wC values are shown below in Figure 3 using a box and whisker plot format. Median, 25th and 75th percentiles, and whiskers depicting the minimum and maximum extents are displayed.

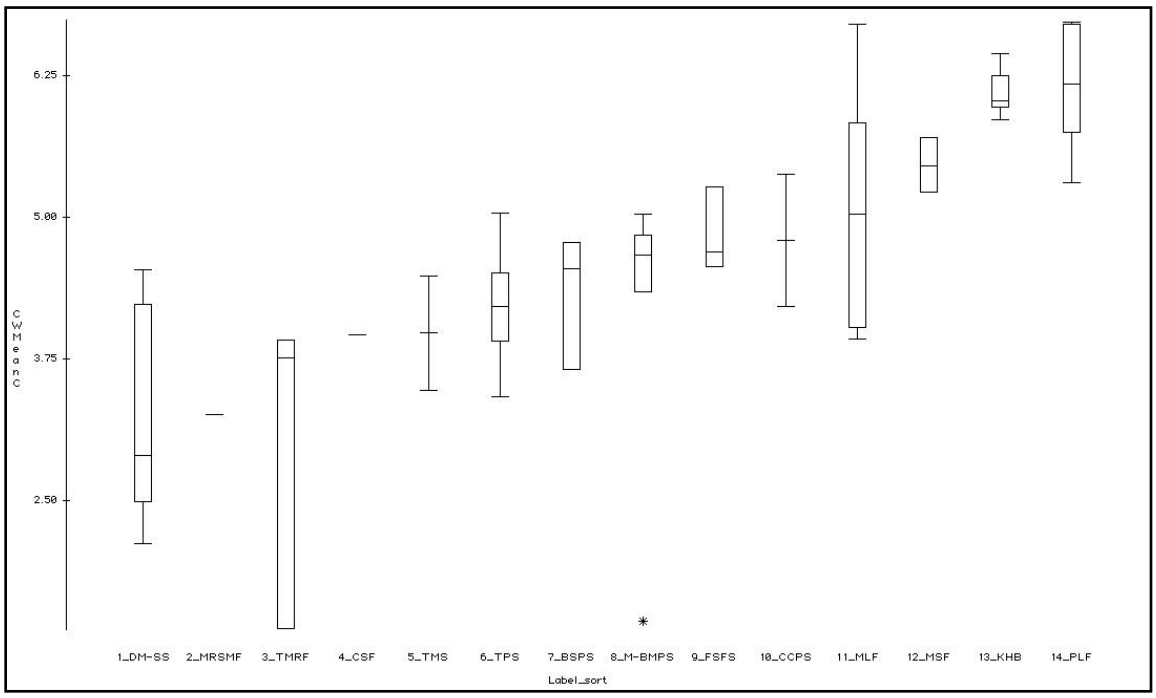


Figure 3: System-Specific wC Values for Wetlands Sites Sampled Shown in Table 2.

The figure above shows the box and whisker plots of minimally impacted weighted mean C values (Cw) by system type. Median, 25th and 75th percentiles, and whiskers depicting the minimum and maximum extents are displayed. For full system name, see "Abbrev" and "System" columns in the preceding Table 2.

Task 6: **Develop new wetlands message and outreach tools that incorporate new published research and eLearning methods and tools for the public**

Mary Ann Tilton and NHDES staff in cooperation with the New England Interstate Water Pollution Control Commission prepared and published the Wetlands Best Management Practice Techniques for Avoidance and Minimization as part of the EPA approved NHDES New Hampshire Wetlands Program Plan of 2017 through 2013. This 82-page manual includes explanations of the importance of wetlands and surface waters, various development concept, individual projects, and minimization concepts along with illustrations of various model options and designs for the education and use by homeowners, contractors, planners, and developers.

Lori Sommer, Cheryl Bondi, and Melinda Bubier along with additional NHDES staff prepared and published the Aquatic Resource Mitigation Fund Status, Trends and Program Improvements report. This report was developed to meet the requirements authorized under the NHDES Final In-Lieu Fee Program Instrument, signed by the US Army Corps of Engineers and NHDES on May 8, 2012. It provides a comprehensive summary of all program activity since its inception in 2006 through December, 2016. Through the reporting period, 146 applicants have used this form of mitigation and these funds have been used to support projects that restore, enhance, and preserve aquatic resources and upland buffers. Further details are available in the Aquatic Resource Mitigation Fund Program section of this document.

The NHDES Wetlands Permit Planning Tool (WPPT) is an interactive mapping tool developed by the Department in partnership with the NH-DOT, NH GRANIT, the University of NH, and a capital grant to facilitate inter-agency data sharing and to coordinate with the anticipated new Wetland Permitting Code of Administrative Rules anticipated to be released in 2019. The WPPT has been designed to assist municipalities, the general public, and environmental consulting firms to plan projects that require NHDES permitting in order to determine the level of permitting review required based on the project location or layout. This tool is not designed for legal, engineering, or on-site wetland delineation purposes, but is a screening tool available on line to inform landowners and designers during the planning phase of the natural resources in the vicinity to promote avoidance and minimization of impacts.

2017 Grant (Track 2): Enhancing Wetland Mapping and Assessment Tools for Wetlands Protection in New Hampshire (CD00A00262)

The major components of this grant are:

1. Update and enhance National Wetland Inventory (NWI) Maps and publish through the US Fish and Wildlife Service (FWS) and NH GRANIT (1/1/18 - 3/31/21).
2. Develop High Value Wetlands criteria, Map High Value Wetlands, and Scope Update of Water Quality/Wetland Assessment Base Layer (10/1/19 - 9/30/20).

3a. Natural Heritage Bureau (NHB) - Evaluate and document outdated exemplary wetland systems so they can be reliably used for environmental reviews and conservation planning (4/1/18 - 6/30/19).

3b. NHB - Develop floristic quality assessment (FQA) thresholds for wetland systems of high ecological value using vegetation data (10/1/18 - 9/30/20).

4. Grant administration, Quality Assurance, Outreach and Reporting (ongoing).

Component 1: Update and enhance NWI maps and publish through USFWS and NH GRANIT (Years 1 and 2)

The New Hampshire Department of Environmental Services (NHDES) has contracted with Ducks Unlimited (DU) to update the state's NWI data. The contract was approved by the Governor and Executive Council on May 2, 2018.

A web video kickoff meeting with DU, NHDES' Mary Ann Tilton, and Sandy Crystall was held on May 30, 2018 to introduce personnel and discuss the field visit to have been scheduled for the following September. The first field visit to review wetlands for training and classification purposes was held on September 11-13, 2018 attended by Sandy Crystall, five DU personnel, and Herb Bergquist of the US Fish and Wildlife Service. Over three days, 48 sites statewide were evaluated by two teams. Information, including vegetation and hydrologic regime, was recorded for the Cowardin classification determinations.

Since then, DU has provided data to NHDES on a monthly basis. As a result, by the end of 2018, two rounds of updated NWI data have been provided to NHDES for review, along with LiDAR derived layers for the Year 1 area as shown on Figure 3, including slope, Compound Topographic Index (CTI), Topographic Position Index (TPI), Stochastic Depression Analysis (SDA) and Maximum height. Sandy Crystall reviewed the information gathered and provided comments on the first draft dataset. This work is continuing through 2019 and beyond.

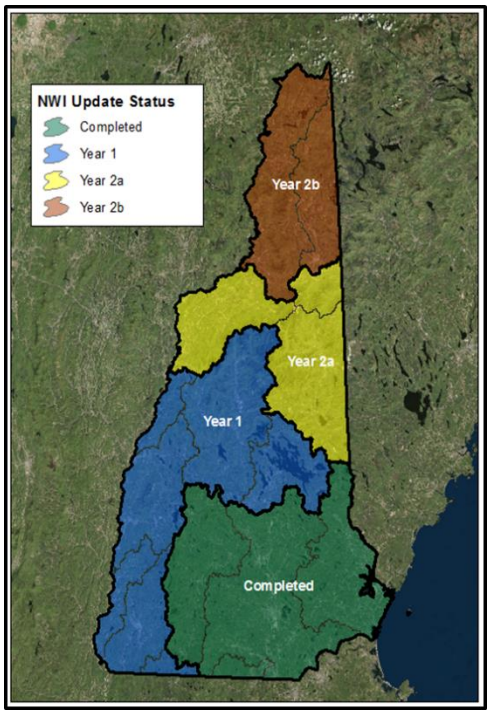


Figure 4: NWI Mapping Status

Although the NWI part of the project refers to Year One and Year Two areas, the timeframes for completion of that work spans more than one year for each area with completion of the full project taking longer than two years.

Component 2: Develop High Value Wetlands Criteria, Map High Value Wetlands and Scope Update of Water Quality and Wetland Assessment base layer (Year 2)

The work under this task was re-scheduled for the year 2020.

Baseline scientific literature, NHANRS report review, legislative flood study commission, and review of threats to sensitive wetland resources have begun. In 2019, NHDES will identify scientists and experts to serve on the Steering committee to review proposed criteria.

Component 3 (NHB): Evaluate and document outdated exemplary wetland systems for environmental reviews and conservation planning

The Memorandum of Agreement to provide the funding to our partner, the Natural Heritage Bureau (NHB) in the Department of Natural and Cultural Resources, was approved by the Governor and Executive Council on April 11, 2018.

The NHB is working with NatureServe to customize the EcoObs database for this project and for future use.

NHB has identified 95 outdated wetland natural community records that do not meet current data quality standards and represent the following wetland types:

- Alpine/subalpine bog system
- Brackish riverbank marsh system
- Coastal salt pond marsh system
- High-gradient rocky riverbank system
- Low-gradient silty-sandy riverbank system
- Moderate-gradient sandy-cobbly riverbank system
- Patterned fen system
- Salt marsh system
- Sand plain basin marsh system
- Sandy pond shore system

NHB completed its evaluation of 95 wetland community records in the NH Natural Heritage Bureau database, and identified 76 that will be subject to re-evaluation with the Level 2 Ecological Integrity Assessment (EIA). NHB conducted surveys at 10 wetland sites supporting high-gradient rocky riverbank systems, moderate-gradient sandy-cobbly riverbank systems, sand plain basin marsh systems, and sandy pond shore systems.

Component 3B (NHB): Develop thresholds for wetland systems of high ecological value using vegetation data (Year 2)

Work to complete this task is to be completed in year 2 including:

- Completing reviews of existing vegetation plot data and entering relevant information into EcoObs database.
- Determining minimally/least-impacted FQA condition thresholds for 10 wetland system types.

Component 4: Grant administration, Quality Assurance, Outreach and Reporting (ongoing)

Mary Ann Tilton, the grant project manager, was assigned to NHDES' high priority wetlands rulemaking effort. Sandy Crystall has been managing the grant, overseeing the work of our partner NHB, and working with DU to review and address mapping data needs and questions.

In addition to developing the detailed scope of work and contract documents, DU created, with input from NHDES, a technical procedures manual for the NWI mapping component. NHDES has conducted ongoing grant administration and monitoring of the budget.

EPA approved our request for a no-cost time extension that reflects the agreed-upon schedule with DU, our mapping contractor, and other grant project leads. In addition, we completed SF424 and 424A forms for the second part of the grant award, which was reduced by $1,000 to $174,000.

PERMITTING ACTIVITIES

Applications Received

The number of standard dredge and fill permit applications received by the Wetlands Bureau has remained relatively stable. In 2018, the Wetlands Bureau received 17 more standard dredge and fill permits than in 2017. This is illustrated in Table 3 and Figure 5 below.

Table 3: 10-Year Trend of Wetland Standard Dredge and Fill Applications Received (2009-2018)

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
539	514	485	501	501	581	527	581	572	589

Overall in 2018, the Wetlands Bureau received 137 more notifications and applications than in 2017. This is illustrated in Table 6 below. This number differs from the value graphed in Figure 2 because of the inclusion in this total of 35 ARM fund applications, and 6 Permit Amendments, 1 Permit Time Extension, and 3 miscellaneous technical notifications/applications.

Table 4: 10-Year Trend of All Wetland Permit Applications and Notifications Received (2009-2018)

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2,006	2,383	2,287	2,158	2,159	2,255	2,048	2,211	2,075	2,212

The number of Standard Shoreland permit applications received (including notifications) by the Wetlands Bureau has fluctuated over time. In 2018, the Wetlands Bureau received 67 more standard Shoreland permit applications than in 2017. This is illustrated in Table 7 and Figure 3.

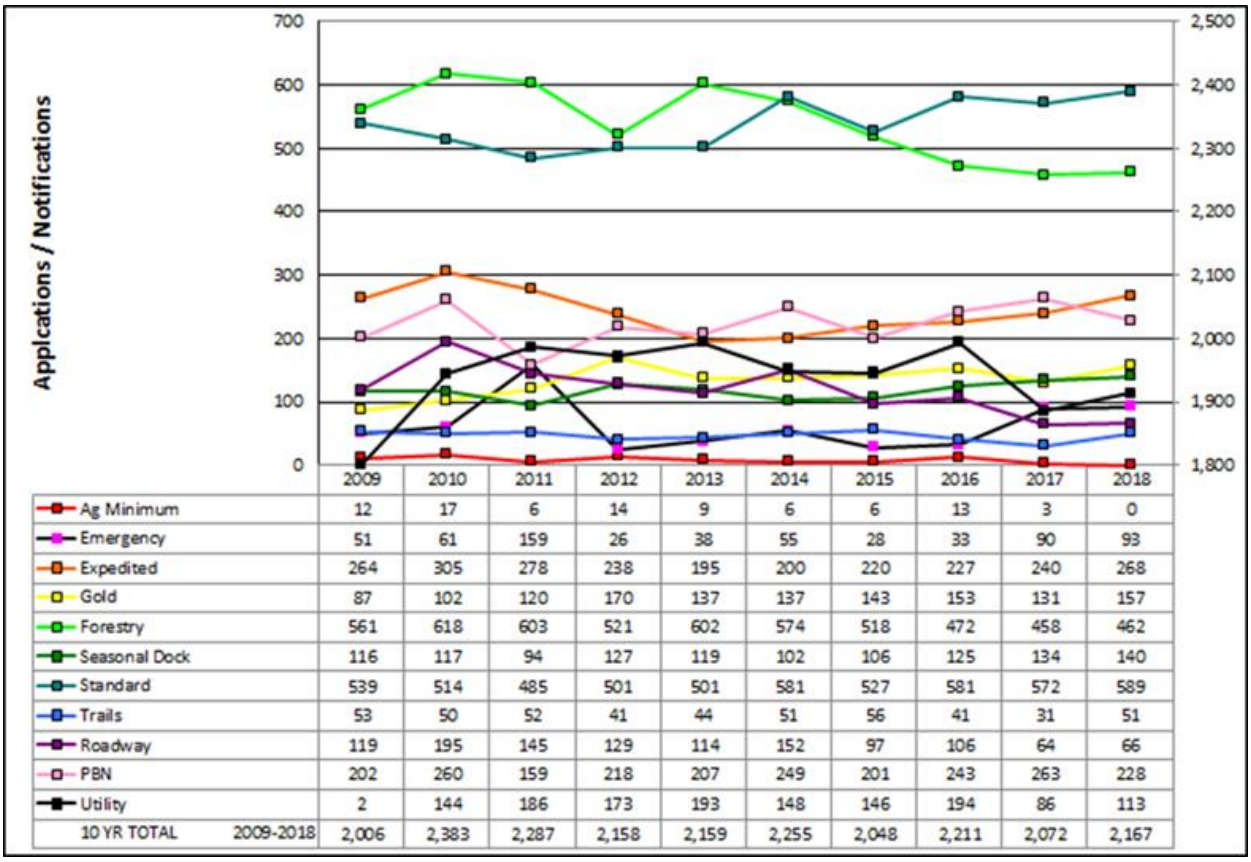
Table 5: 10-Year Trend of Standard Shoreland Permit Applications Received (2009 – 2018)

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
797	817	626	466	546	518	605	621	613	680

Similarly, the total number of all Shoreland permit applications received (including notifications) by the Wetlands Bureau also fluctuated. In 2018, the Wetlands Bureau received 45 less Shoreland applications than in 2017. This is illustrated in Table 8 and Figure 3.

Table 6: 10-Year Trend of All Shoreland Permit Applications Received (2009 – 2018)

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
802	823	781	915	1,075	1,086	1,196	1,167	1,250	1,205

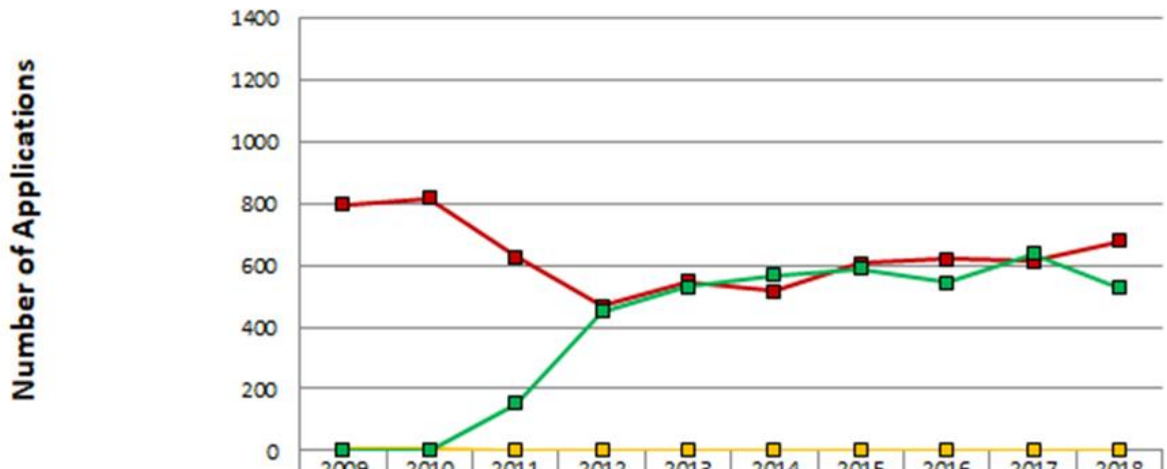


	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Ag Minimum	12	17	6	14	9	6	6	13	3	0
Emergency	51	61	159	26	38	55	28	33	90	93
Expedited	264	305	278	238	195	200	220	227	240	268
Gold	87	102	120	170	137	137	143	153	131	157
Forestry	561	618	603	521	602	574	518	472	458	462
Seasonal Dock	116	117	94	127	119	102	106	125	134	140
Standard	539	514	485	501	501	581	527	581	572	589
Trails	53	50	52	41	44	51	56	41	31	51
Roadway	119	195	145	129	114	152	97	106	64	66
PBN	202	260	159	218	207	249	201	243	263	228
Utility	2	144	186	173	193	148	146	194	86	113
10 YR TOTAL 2009-2018	2,006	2,383	2,287	2,158	2,159	2,255	2,048	2,211	2,072	2,167

Figure 5: 10-Year Trend of All Wetland Permit Applications Received (2009 – 2018)

Review of the 10-year trend of all wetland applications over the last nine years reveals that the total applications received per year peaked in 2014. NHDES saw an almost 5% increase in permit applications received in 2018 compared to 2017 and an 8% increase compared to 2009. By statue NHDES receives no fees for processing Seasonal Dock Notifications, however, these notifications take time and submissions have been increasing the last three years. Because of significant storm events in 2011, 2017, and 2018 permit staff were “all hands on deck” providing emergency response and follow-up. Emergency authorizations were at a record high in 2011 with 159 authorizations and remained high in 2018 with 93 reflecting increases in damage from intense storm events across the state compared to years 2012 through 2016. Additionally, NHDES coordinated with NHDOT on hundreds of bridge repairs, road washouts, and other related work.

Standard dredge and fill applications numbers have ranged from a high of 589 in 2018 to a low of 485 in the previous 9 years.



	2009 Total	2010 Total	2011 Total	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2018 Total
SWQPA Permits	797	817	626	466	546	518	605	621	613	680
SWQPA Exemptions, Variances, and Waivers	5	6	0	0	0	1	1	1	0	0
SWQPA PBN	0	0	154	449	529	567	590	545	637	525
SWQPA TOTAL	802	823	780	915	1075	1086	1196	1167	1250	1205

Figure 6: 10-Year Trend of All Shoreland Permits Received (2009 – 2018)

Figure 6 illustrates the ten-year trend for three categories of Shoreland applications. In 2011, the Wetlands Bureau stopped issuing Shoreland exemptions, variances, and waivers per changes in the statute.

Pre-Application Meetings

The Wetlands Bureau provides technical assistance to applicants by providing pre-application review of proposed projects. The pre-application review process accomplishes the following:

- Provides clear and consistent direction to applicants.
- Improves communications between state / federal agencies and local entities.
- Ensures open dialog of the permitting process.
- Reduces rework by all parties, saving time and money.
- Promotes environmentally-sensitive land use planning.
- Provides an efficient process that serves as an incentive for applicants to pursue “environmentally-superior” designs.

Over the last year, the technical staff participated in approximately 500 pre-application meetings.

Table 7 below illustrates the amount of impacts permitted based on project type for 2017 and 2018. Overall NHDES permitted a decrease in wetland impacts from 72 acres to 63 acres.

Table 7: Permitted Permanent Wetland Impacts by Project Type for Calendar Years 2017 and 2018

Project Type	2017 Acres	2017 Square Feet	Project Type Percent	2018 Acres	2018 Square Feet	Project Type Percent
Restoration / Enhancement	15.1	658,215	21%	23.2	1,011,943	37%
Dredge	10.4	455,038	14%	6.6	289,241	11%
Road Access/ Bridge/ Stream Crossings	22.9	997,697	32%	15.1	659,924	24%
Lot Development/ Commercial / Residential	13.8	602,089	19%	12.8	556,849	20%
Bank Stabilization	1.8	77,310	2%	2.3	101,398	4%
Other / Fill	7.0	306,591	10%	0.4	18,474	1%
Shoreline Structures	1.4	59,677	2%	2.0	86,483	3%
Total	**72.4**	**3,467,100**	**100%**	**63**	**2,728,296**	**100%**

It should be noted the 37% of all impacts in the 2018 were for Restoration and Enhancement projects. The total permitted impacts by wetland type are shown in Figure 7 below. Non-tidal wetlands are subject to the greatest loss at 29 acres or 78%. The tidal impacts are the lowest at 0.4 acre of the permitted impacts. Surface water impacts are 21% of the total impacts.

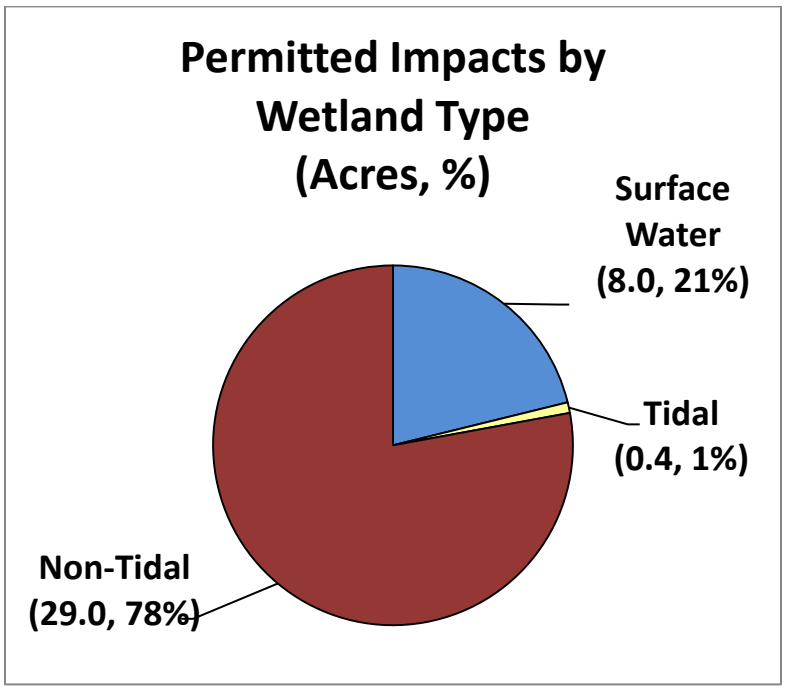


Figure 7: Permitted Wetland Impacts by Wetland Type for 2018

Figure 8 illustrates permanent impacts, by Cowardin wetland type, which required payment into the ARM Fund in 2017. The total amount of permanent wetland impacts which required mitigation was 7.5 acres, down from 13.4 acres in 2016[1]. In addition, there were approximately 12.8 acres of temporary impacts and 4.31 acres of conversion impacts associated with projects that paid into the ARM Fund. These projects are generally linear utility upgrade projects that use matting for access across wetlands or convert forested wetlands to scrub-shrub wetlands. In addition, one vernal pool, 923 linear feet of stream bank or channel, 1.0 acre of riparian buffer and 0.9 acre of vernal pool buffer were impacted.

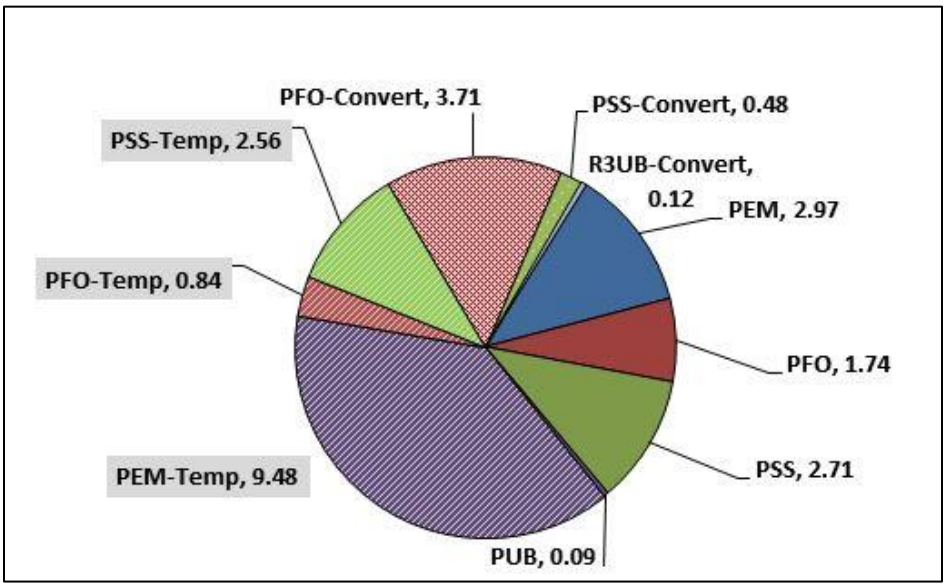


Figure 8: Types of Wetland Impacts in Acres that required payment into the ARM Fund in 2018 by Cowardin classification

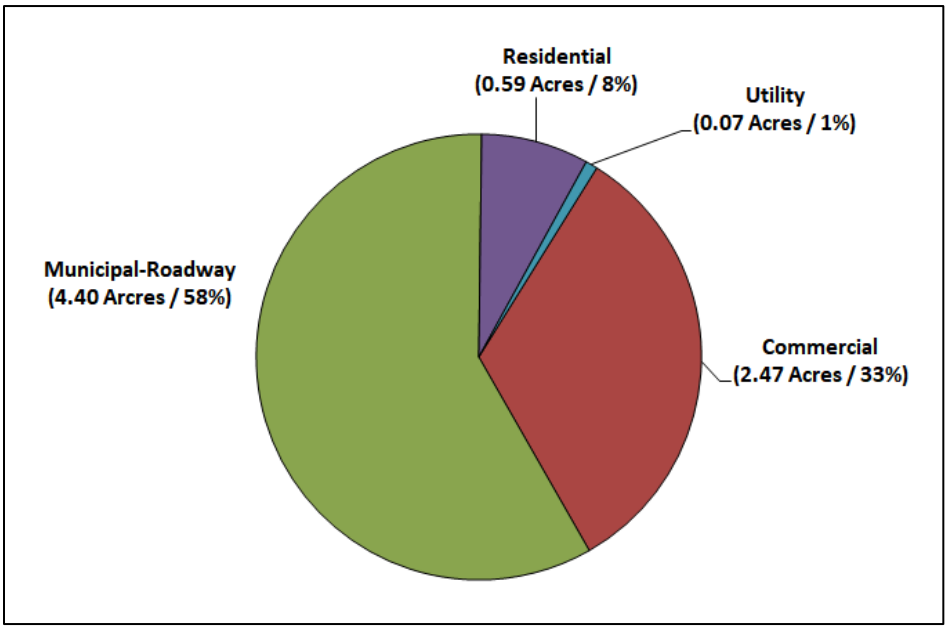


Figure 9: Summary of 2018 Wetland Impacts Requiring ARM Fund Payment by Project Type

Figure 9 illustrates the large percentage of municipal and highway projects which contribute to over half of the ARM Fund payments. (Impacts depicted in acres.)

Permit Program Improvements

In 2018, the NHDES Wetlands Bureau continued to uphold the quality of permitting reviews of both Shoreland and Wetlands permit applications and notifications via regular weekly section meetings, Peer Review and supervisor oversight.

During 2018 many key permit staff were involved in the review of draft wetland rules. Staff reviewed proposed definitions, standards and compared internal drafts with current practice and policy. Staff also selected original and final permit plan examples used to illustrate project by project avoidance and minimization measures for a new draft Wetlands Best Management Practice Techniques for Avoidance and Minimization manual to support the draft rules. This new BMP has been well received by conservation commissions, the general public, and will serve as an excellent training guide to enhance consistency in the NHDES wetlands technical review process.

The continuing updates to database revised in 2017 and updates in 2018 continue to increase the functionality in the import and export of information and reports as discussed in the Program Improvements of this report. With the new online permit questionnaire tool, NHDES staff are now able to email a link to applicants along with a PDF of the permit. Review of the incoming questionnaire responses is continually identifying suggestions for website improvement.

With the increasing number of complex and large scale projects, the Wetlands Bureau started and continues to use a permit team approach. The goal of the team approach is to ensure that complex and or large-scale application and plan reviews are conducted by a team of reviewers. Review teams for complex projects have included various mixes of an engineer, wetland scientists, biologists, fluvial geomorphologists, and management. Weekly meetings of the tidal area team, inland freshwater

wetlands team and the wetlands/shoreland team continue to group review more intricate submissions to ensure continuity of these reviews for various Shoreland and Wetlands Permit applications and Permit by Notification processes.

COMPLIANCE ACTIVITIES

Complaints Received

In 2018, the Wetlands Bureau received 262 written complaints. Almost half were for alleged violations of wetlands (RSA 482-A), over a quarter for Shoreland (SWQPA), and the balance were for other alleged violations of dock, shoreline, alteration of terrain or water quality laws.

Of the 169 complaints alleging violations of RSA 482-A, 114 (43.5%) related to the dredge / fill of wetlands, 27 complaints (10.31%) related to docking structures, 16 complaints (6.11%) related to beaches or retaining walls, and 12 complaints (4.58%) related to forestry and logging operations. In addition, 73 complaints (27.86%) related to the Shoreland Water Quality Protection Act, and four complaints (1.53%) related to water quality or turbidity issues. Table 8 and Figure 10, below, includes a breakdown by percentage:

Table 8: Number and Percentage of Complaints by Type for Calendar Year 2018

Category	Description	Number	Percentage
WET	Wetlands (Dredge and Fill)	114	43.51%
SWQPA	Shoreland Water Quality Protection Act	73	27.86%
DOCK	Dock	27	10.31%
AOT	Alteration of Terrain	16	6.11%
SHORE	Shoreline: Beaches, Retaining Walls	16	6.11%
FORESTRY	Forestry / Logging	12	4.58%
WQ	Water Quality	04	1.53%
TOTALS		**262**	**100%**

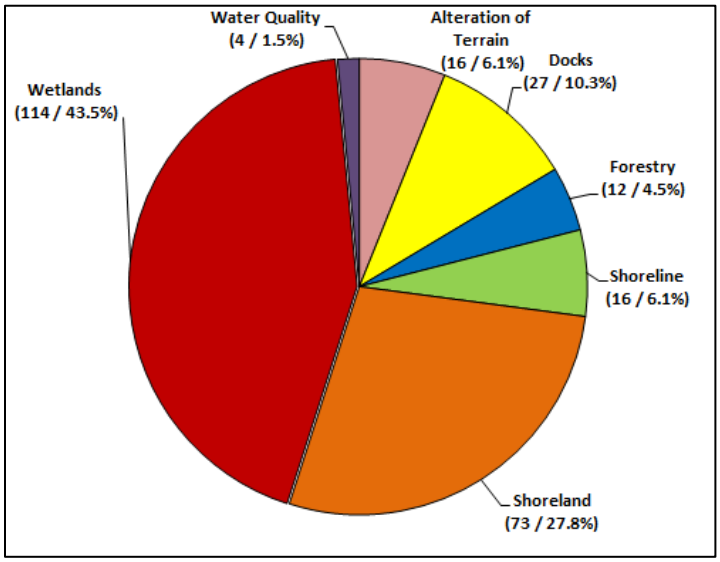


Figure 10: Number and Percent of Complaints by Type for Calendar Year 2018

The number of complaints received over the past 10 years decreased from 2009 through 2011 but since has remained relatively stable over the past seven years. However, complaints received in 2018 were at their highest number since 2010. This is depicted in Figure 11 below.

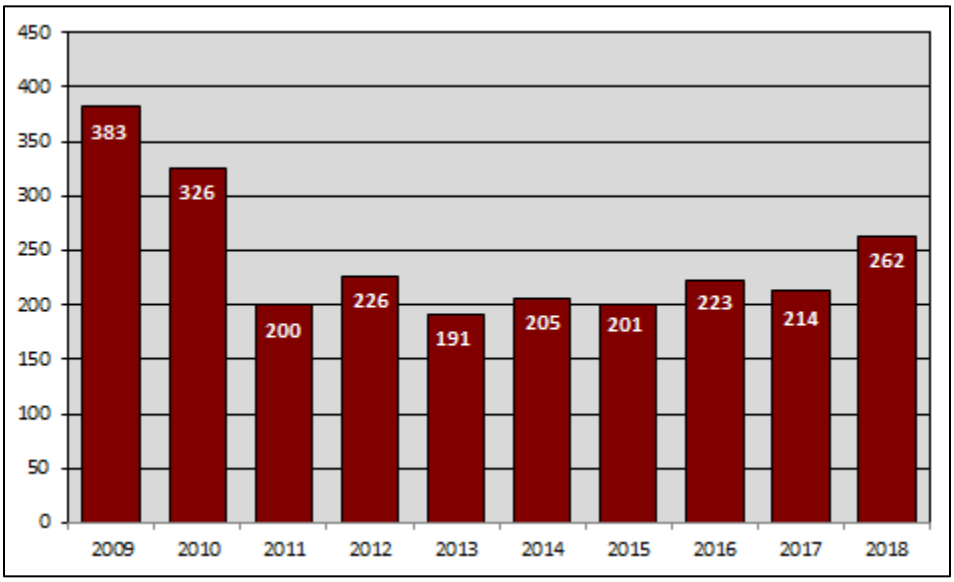


Figure 11: **10-Year Trend of Number of Complaints Received (2009 - 2018)**

The number of complaints received in 2018 by month tends to follow the seasons. Complaints received typically increase in the spring after snowmelt when construction season begins, peak during the summer months, subside during the autumn, and drop off significantly over the winter months as depicted in Figure 12 below.

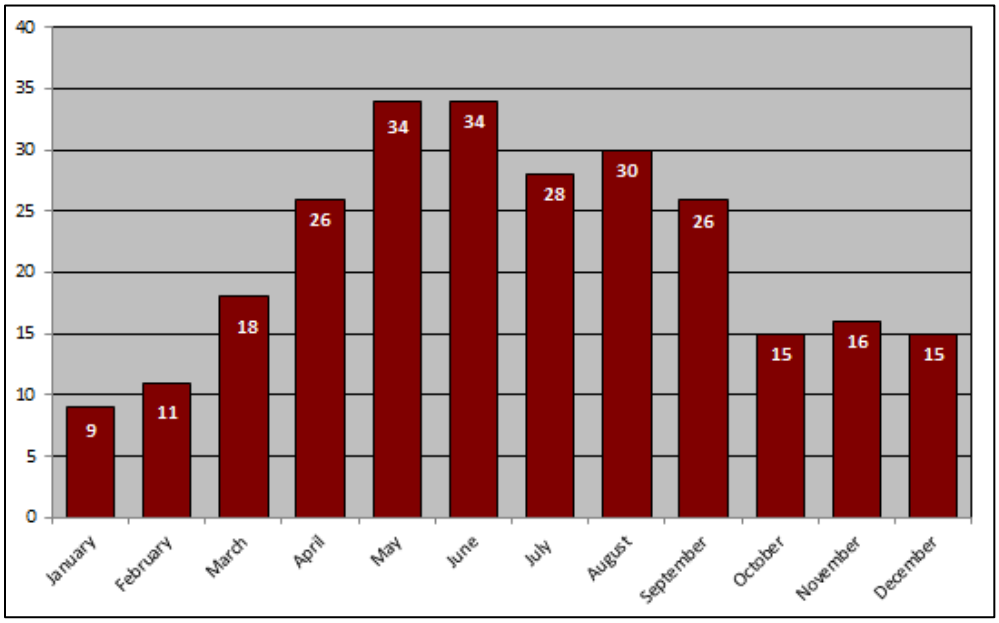


Figure 12: **Complaints Received in 2018 by Month (Total: 262)**

The type of complaint also tends to follow the seasons with wetlands (WET) complaints peaking in June, shoreland (SWQPA) complaints peaking in August, and dock (DOCK) complaints peaking in July. Alteration of Terrain (AOT) complaints peaked in March and August, while shoreline (beaches, retaining walls / SHORE) complaints also peaking in June and July. Water quality (WQ) and forestry complaints typically follow intense weather events. This is depicted in Figure 13 below.

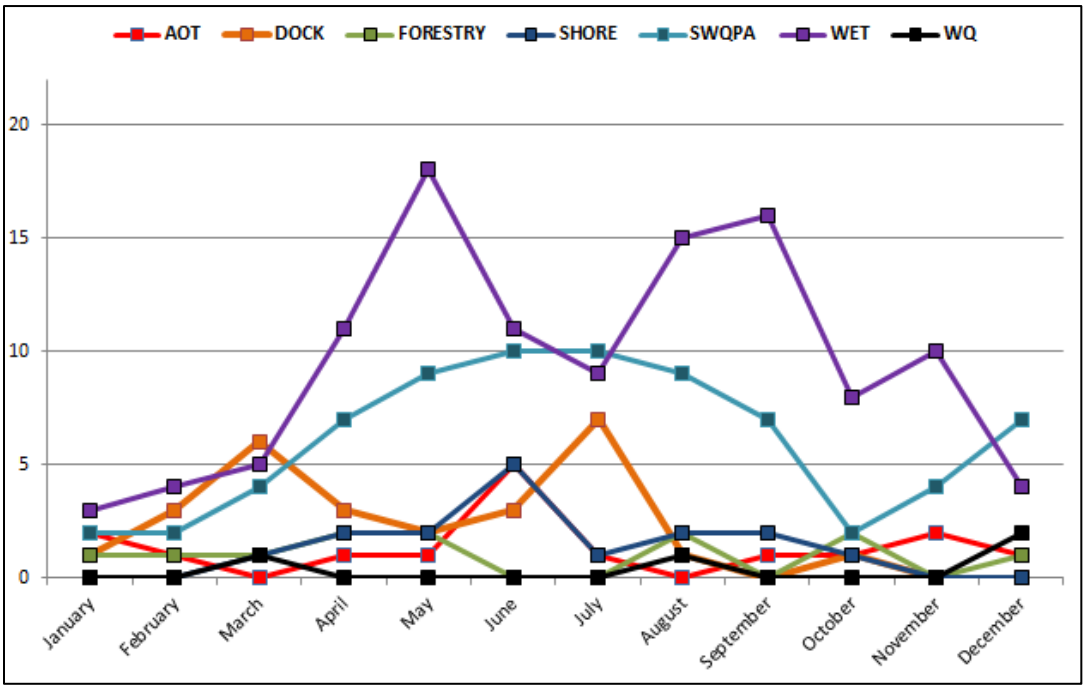


Figure 13: **Complaints Received in 2018 by Type and by Month (Total: 262)**

Compliance Actions Taken

Table 9: 10-Year Trend of Wetland Compliance Action by Type (2009-2018)

Compliance Action Type	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Complaints Received*	383	326	200	226	191	205	201	223	214	262
Informal Actions / Requests	50	41	40	20	22	265	337	276	273	284
Notices of Past Violations	19	05	12	07	58	49	20	07	07	13
Letters of Deficiency**	116	70	23	29	25	45	43	41	46	49
Administrative Fines	07	11	10	04	01	03	03	05	00	01
Administrative Orders	19	23	14	04	03	17	06	03	07	09
Referrals to the Department of Justice	06	05	03	01	02	05	09	05	03	05
TOTALS	**600**	**481**	**302**	**291**	**302**	**589**	**619**	**560**	**550**	**622**

*Complaints received include those alleging violations of RSA 482-A, NH Wetlands Statute and applicable rules, RSA 483-B, Shoreland Water Quality Protection Act and applicable rules, and RSA 485-A:17, Alteration of Terrain and applicable rules. Alteration of Terrain complaints are included since many times there are associated wetland allegations and / and or violations. Complaints received do not include those alleging violations of RSA 485-A relative to septic systems and waste disposal.

**Letters of Deficiency totals include those issued for RSA 482-A, NH Wetlands Statute and applicable rules, RSA 483-B, Shoreland Water Quality Protection Act and applicable rules, and RSA 485-A:17, Alteration of Terrain and applicable rules. Letters of Deficiency for Alteration of Terrain are included since many times there are associated wetland and / or Shoreland violations also involved. Letters of Deficiency do not include those alleging violations of RSA 485-A relative to septic systems and waste disposal.

When possible, the Wetlands Bureau attempts to resolve minimal violations during or immediately following a site inspection through informal means by issuing an on-site restoration request or by issuing a Letter of Deficiency. In cases where the impact is larger or more environmentally damaging, where the violator has a prior enforcement history, or if the violator is unwilling to work cooperatively with the Wetlands Bureau to correct the deficiencies, more formal action(s) may be taken in the form of an Administrative Order, referral to the Department of Justice, or imposition of administrative or civil penalties. A 10-year trend of wetland compliance actions by type is illustrated in Table 9.

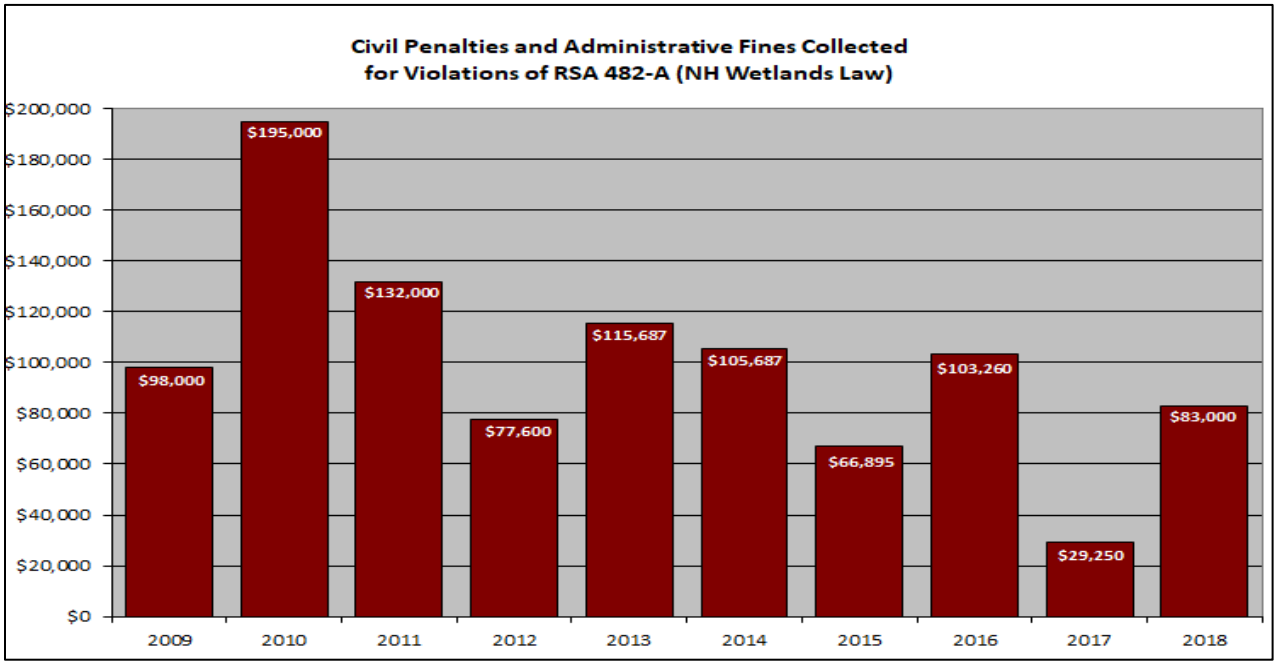


Figure 14: 10-Year Trend of Civil Penalties and Administrative Fines Collected for Violations of RSA 482-A

The Wetlands Bureau will also seek fines consistent with its statutory authority and the Compliance Assurance Response Policy (CARP). In 2018, the Wetlands Bureau collected approximately $83,000 in administrative fines and civil penalties. The reduction in money collected can be attributed to receiving fewer complaints than in the past and a reduction in compliance staff to perform inspections of permitted sites. A ten-year trend of civil penalties and administrative fines collected for violations of RSA 482-A are illustrated in Figure 14.

2018 Permit Compliance Initiative

The compliance section has historically relied on the public to report suspected wetland violations. This "complaint-based" system, while effective, has resulted in a "reactive" approach to compliance. In response to new initiatives within the Land Resources Management Program, in 2016 the permitting

and compliance section began to conduct inspections of various permitted projects. Conducting field inspections of permitted projects allows NHDES staff to establish and maintain a stronger field presence with a more proactive approach, ensuring that projects adhere to the conditions specified in the corresponding permit.

Thus, in addition to performing inspections of files associated with complaints, in 2018 the Alteration of Terrain and Wetlands programs conducted inspections of permitted projects. The purpose of these inspections was to ensure compliance with permits and permit conditions, perform inspections that are not solely complaint-based, and respond to stakeholder comments. A cross-section of permit types (notifications, standards, etc.) and towns were selected. During the inspections, staff used program-specific checklists to determine whether the completed projects were consistent with the approved plan, consistent with permit conditions, and therefore in compliance with the permit.

One intern performed 189 inspections of approved / issued Wetlands notifications / permits. Of those 189, 129 (68.3%) were in full compliance, 20 (10.6%) were in partial compliance, 7 (3.7%) were in non-compliance, and 33 projects (17.5%) had not been started.

The same intern also performed 9 inspections of approved / issued Shoreland notifications / permits. Of those 9, 4 (44.4%) were in full compliance, 3 (33.3%) were in partial compliance, 0 (0.0%) were in non-compliance, and 2 projects (22.2%) were not started.

One staff member performed 83 inspections of Alteration of Terrain permits. Of those 83 inspections, 40 (48.2%) were in full compliance, 30 (36.1%) were in partial compliance, 0 (0.0%) were in non-compliance, and 13 projects (115.7%) were not started.

In total, 281 projects associated with Wetlands, Shoreland, and Alteration of Terrain permits were inspected in 2018 to which 173 (61.6%) were in full compliance, 53 (18.9%) were in partial compliance, 7 (2.5%) were in non-compliance, and 48 projects (17.1%) were not started.

Other permit compliance inspections were conducted by other permitting and compliance staff but were not consistently tracked, and thus, are not included in these numbers.

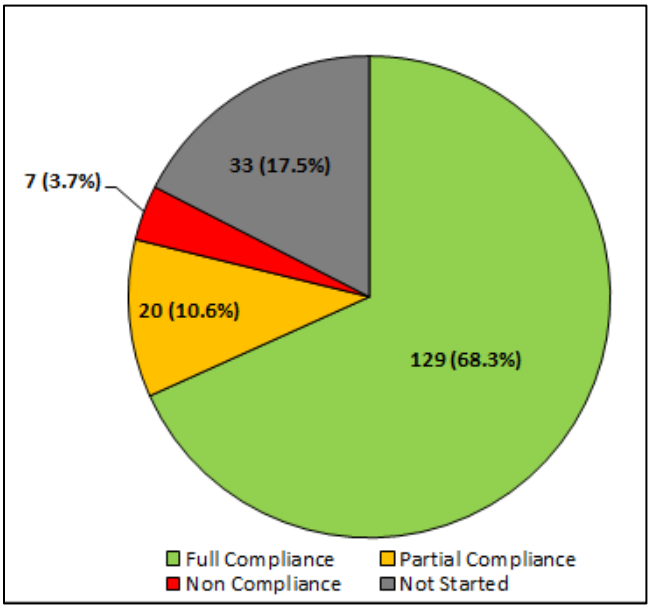


Figure 15: Summary of 2018 Wetland Compliance Inspections of Permitted Projects (With Compliance Status)

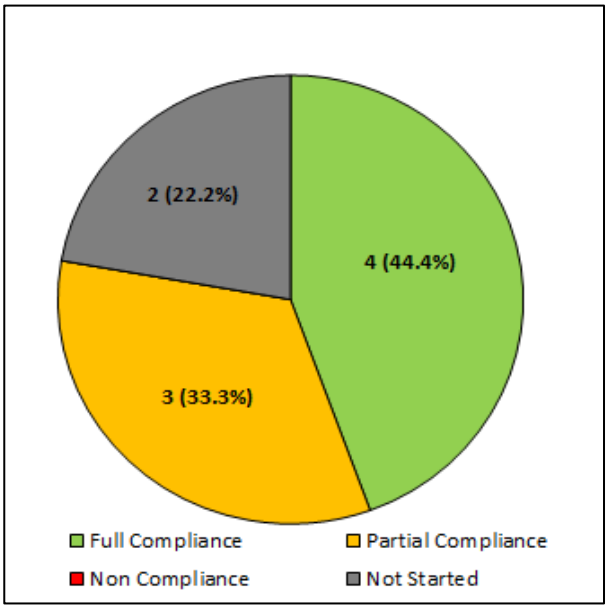


Figure 16: Summary of 2018 Shoreland Compliance Inspections of Permitted Projects (With Compliance Status)

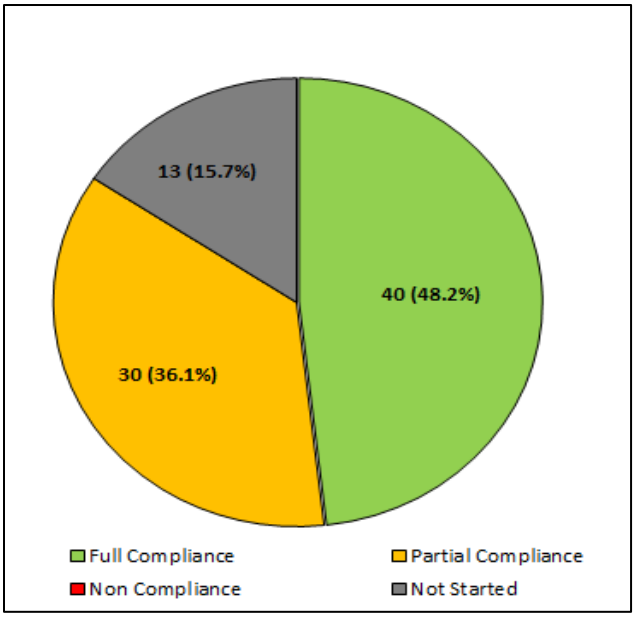


Figure 17: Summary of 2018 Alteration of Terrain Compliance Inspections of Permitted Projects (With Compliance Status)

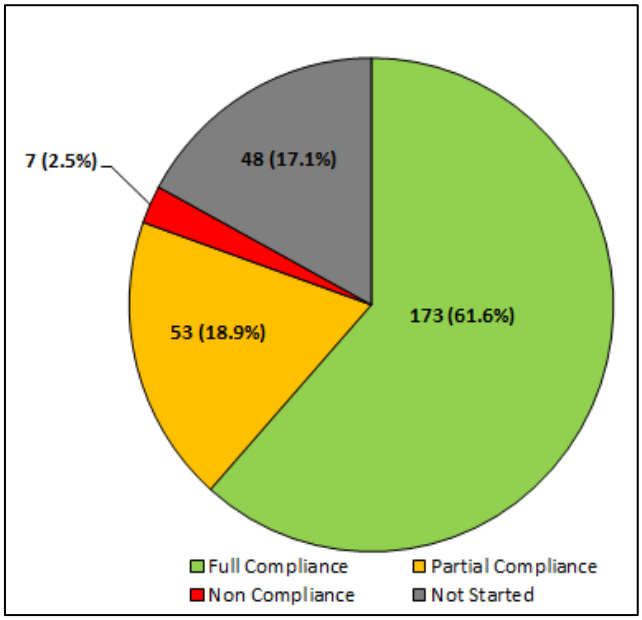


Figure 18: Summary of All Compliance Inspections of Permitted Projects (Wetland, Shoreland, Alteration of Terrain) (With Compliance Status).

Since 2017, the percentage of compliance inspections of permitted projects has reduced from 66.4% to 61.6%.

AQUATIC RESOURCE MITIGATION FUND PROGRAM

Since the ARM Fund was established in 2006, 175 applicants have used this form of compensatory mitigation and these funds have been used to support projects that restore, enhance, and preserve aquatic resources and associated upland buffers. The program has been very successful for grant applicants and has resulted in approximately 24,203 acres of land conservation, 115 acres of wetland restoration / enhancement, 15 acres of tidal restoration/enhancement, and approximately 68 miles of stream passage improvements. The ARM Fund in-lieu fee option has become a good option for applicants needing to provide compensatory mitigation. The total funds collected since the program was established totals approximately $17,900,000 and has funded 106 projects.

In Calendar Year 2018 (01/01/2018 through 12/31/2018), 19 permits involving a payment were issued that resulted in 5.19 acres of wetland loss, 7,190 linear feet of stream loss, and 11.4 acres of temporary impacts including secondary impacts due to conversion of forest wetlands to emergent or scrub shrub wetlands. The ARM Fund received approximately $2.2 million in the payments collected. During this time frame, ARM Fund grants were awarded to restore 1.5 acres of floodplain forest wetland enhancement, provide 7 miles of restored stream connectivity, develop a living shoreline with 0.36 ac of tidal enhancement, and preserve an additional 8,177 acres of land. For the total funds collected in fiscal year 2018, over $9.8 million of additional funds were leveraged to complete the grant projects. Table 10 provides a list of the projects permitted from January 1, 2018 to December 31, 2018 where the wetland permit holders selected payment to the ARM Fund to satisfy mitigation requirements.

The 2012 Federal In-Lieu Fee Instrument establishes guidelines, responsibilities, and standards for the establishment, use, operation and maintenance of the ARM Fund. The signatories to this instrument recognized that cooperation between and among the Army Corps, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and NHDES is critical to the continued development of a high-quality mitigation program and share a commitment to continue efforts that have been on-going since adoption of the ARM Fund program. As a five-year update, the Instrument was amended and signed. A five-year status and trends summary was prepared and is available on the NHDES web page. A 10- year amended Instrument will be formally updated in 2022.

Table 10: Wetland Permits Issued in CY 2018 Using ARM Funds (1/1/2018 - 12/31/2018)

NHDES File # Town	Service Area	Wetlands Loss		Stream Impacts (Linear Feet)	Temporary Impacts		ARM Fund Revenue
		Square Feet	Acres		Square Feet	Acres	
2017-361/ Littleton	Middle CT	28,950.00		1,311			$107,769.53
2016-1488/ Hillsborough	Contoocook	97,493			1,274	0.03	$109,624.00
2017-1809/ Bedford	Merrimack			65			$15,927.60
2017-1302/ Walpole - Charlestown	Lower CT	33,672		4,880			$1,318,873.52
2016-593/ Lebanon	Lower CT	8,340					$36,728.79
2017-2049/ Tamworth	Saco			96	15,024	0.34	$23,523.84
2017-1156/ Londonderry	Merrimack	34,077					$168,189.91
2018-282/ Winchester	Lower CT	2,512			80,231	1.84	$40,695.43
2018-882/ Northfield	Merrimack			49			$12,136.32
2018-498/ Loudon	Merrimack	7,966		433			$106,102.32
2018-1249/ Hampton	Salmon Falls-Piscataqua	60					$604.99
2018-2664/ Brentwood	Salmon Falls - Piscataqua			31			$7,678.08
2007-2429/ Berlin	Upper CT						$1,000.00
2016-1953/ Londonderry	Merrimack				311,625	7.15	$99,269.01
2018-595/ Ossipee	Saco			183	87,106	2.00	$61,643.35
2018-2234/ Canaan	Lower CT			34			$8,421.12
2018-1604/ Concord	Merrimack			108			$26,749.44
2018-253/ Derry	Merrimack	11,015					$55,532.50
2017-3475/ Salem	Merrimack	1,975					$9,990.98
TOTALS		**226,060**	**5.19**	**7,190**	**495,260**	**11.37**	**$2,210,460.73**

ARM Fund Awards Announced in January 2018

NHDES announced the availability of funds in nine service areas in January 2018. The amount of funding available in the nine service areas is noted in Figure 19.

Fifty-six pre-proposals were submitted and reviewed by NHDES and the Committee and feedback was provided. Thirty-six full application submittals were received August 31, 2018. No applications were submitted for the Androscoggin and Upper Connecticut River service areas. The funds in those service areas will be advertised in 2020.

The members of the Site Selection Committee, representatives from the Corps, EPA, Natural Resources Conservation Service and NHDES staff visited the sites on September 27, October 2, 4, 10, 12, 15 and 18. On October 24, 2018 the Committee and federal agency representatives convened to evaluate and rank the applications and determined funding amounts for the projects. The Committee's recommendations were approved by the Corps and the Wetland Council. The following summaries provide details of the awards announced by the Committee and a brief description of the gain in resources from each project awarded funds according to the service areas.

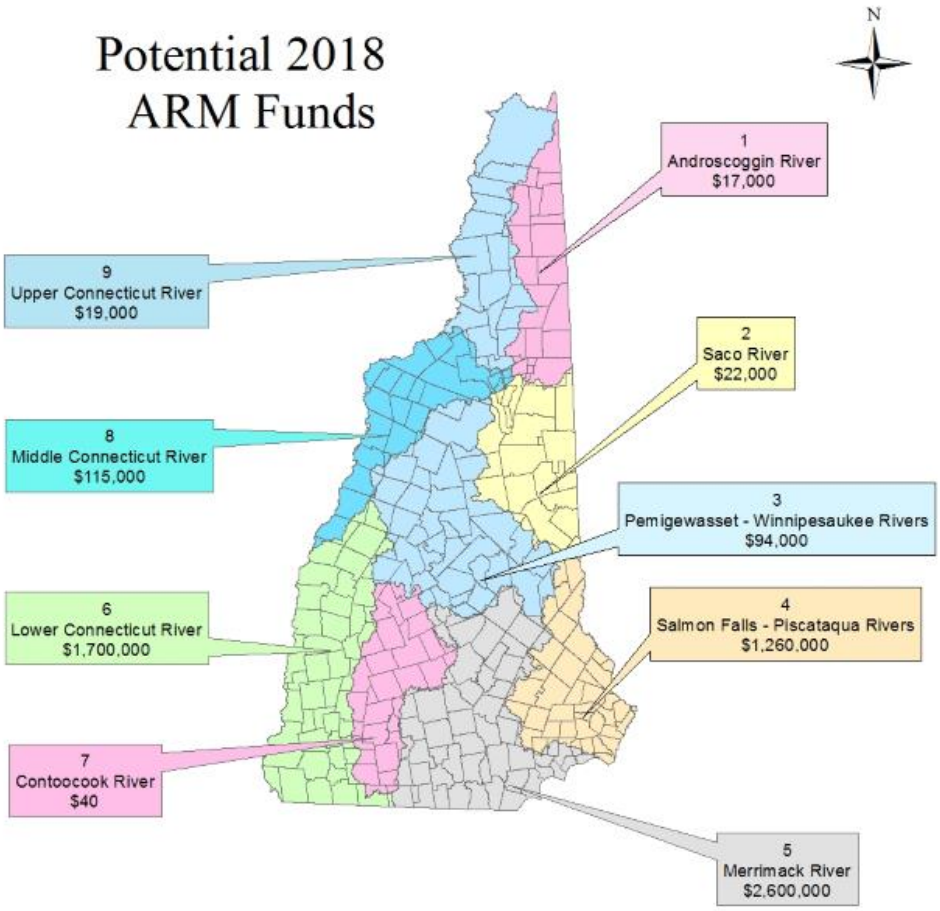


Figure 19: ARM Fund Monies Available by Service Area in 2018

Table 11: 2018 ARM Fund Distribution Summary		
Project name Applicant *Town*	**ARM Award Amount**	**Project Summary**
Saco Service Area		
World Fellowship Center/Whitton Pond Upper Saco Valley Land Trust *Albany*	**$41,600**	Three conservation easement parcels totaling approximately 422 acres, of the World Fellowship Center (WFC) campus in Albany will be acquired. The parcel includes 3,150 feet of shoreline on the 167-acre Whitton Pond, 2,200 linear feet of the Chocorua River, four pond-wetland complexes, one large and two small river floodplain wetlands, and two or more vernal pools. The undeveloped shoreline around Whitton and Back Ponds and the riparian forest and wetlands along the Chocorua River represent 76 acres of Tier 1 WAP Habitat. The Common Loon is a continuous breeding resident of Whitton Pond for over 100 years—one of the longest occupied sites in the state.
Pemigewasset- Winnipesauke Service Area		
Great Meadow Phase II Tuftonboro Conservation Commission *Tuftonboro*	**$76,500**	The Town will protect the "Great Meadow," a 509-acre wetland that contains most of the headwaters of the third order Melvin River, which is the largest inflow stream to Moultonborough Bay on Lake Winnipesaukee. The project includes a 50-acre property and a 90-acre property which abut the 204-acre, seven-lot town property, all of which overlies the Great Meadow wetland and aquifer. The parcel contains an intact aquatic resource buffer of over 11,000 feet of wetland edge. Wildlife habitat is exceptional, as is the underlying ecological integrity of the two parcels that lie within a 2600-acre unfragmented forest block and much of the Great Meadow lies within Tier 1 or Tier 2 WAP habitat.
Pemigewasset – Winnipesaukee & Salmon Falls- Piscataqua Service Areas		
Birch Ridge Community Forest Southeast Land Trust *New Durham*	**$207,870**	The project proposes to protect 2,019 acres of land that forms 12% of the watershed of Merrymeeting Lake in New Durham. The property extends from the Merrymeeting River to Rattlesnake Mountain, Mt. Eleanor, Birch Ridge, and reaches southward to Coldrain Pond and the Ela River. Straddling two watersheds, 1,311 acres drains north to Merrymeeting Lake in the Pemigewasset/Winnipesaukee watershed and 708 acres drains south to the Salmon Falls/Piscataqua watershed. The project includes three wetland restoration projects that will enhance the integrity of vernal pools and wetlands.

Salmon Falls – Piscataqua Service Area		
Governor's Run-Lamprey River Southeast Land Trust *Epping*	**$200,000**	Approximately 18 acres will be protected that includes 1,015 linear feet of two tributary streams to the federally designated Wild and Scenic Lamprey River and 2,800 linear feet along the western bank. The property includes nearly 3.41-acres of important high value wetlands and floodplains, including two documented and one probable vernal pool. Approximately 99% of the Property is designated as Tier 2 by the WAP and is within a "High Priority" site for Blanding's turtles and is a priority site for NHFG. The Property is within a 780-acre NHFG mapped unfragmented forest block that with the completion of this project will result in approximately 53% of the block conserved.
Lamprey River Shoreline The Nature Conservancy *Durham*	**$50,000**	The 10.5-acre tract along the Lamprey River in Durham will be acquired, adding it to TNC's abutting 233-acre Lamprey River Preserve. The property includes 1,660 feet of frontage on the Lamprey River and nearly an acre of floodplain forest and wetland habitat along the river. Connected to nearly 1500 acres of other protected land, it is an important link in a block of conserved properties along the designated Wild and Scenic Lamprey River. The property is also within an important Blanding's turtle protection area identified by the Northeast Blanding's Turtle Working Group, a cooperative project of the US Fish and Wildlife Service and the NH Fish and Game Department.
Living Shoreline at Wagon Hill Farm Town of Durham *Durham*	**$250,000**	The Town plans to restore salt marsh habitat and reduce erosion using state-of-the-science best management practices. A 0.36 acre living shoreline will be constructed and monitored to restore lost and degraded salt marsh, address erosion, and prepare for sea-level rise. Approximately 296 feet of shoreline, from the artificial beach area to a historic crib pier, will be regraded, and planted to restore 15,700 sq.ft. of salt marsh and tidal buffer. The project will control and restrict public access using fencing, maintaining water access at a defined location and providing an observation platform that overlooks the project and River.
Lubberland Creek Acquisition The Nature Conservancy *Durham*	**$100,000**	Protect a 30-acre parcel is located in the heart of the Crommet Creek Conservation Area (CCCA) in Durham. Acquisition will add to TNC's abutting 282-acre Lubberland Creek Preserve. The CCCA comprises 4,902 acres in Durham and Newmarket, and is the largest block of natural lands in the immediate Great Bay watershed and NH's North Atlantic Ecoregion, and includes the entire watershed of two tidal creeks that flow directly into the Great Bay estuary. The WAP ranks the entire tract as Tier 1, and it is within an important Blanding's turtle protection area identified by the US Fish and Wildlife Service and NHFG.

Lubberland Creek Restoration Project Town of Newmarket *Newmarket*	**$200,000**	The Town will restore Bay Road's crossing of Lubberland Creek and will achieve three primary goals: (1) to restore aquatic connectivity at the system's tidal/freshwater interface allowing diadromous fish passage at the perched Bay Road culvert, (2) to enhance the resilience of Lubberland Creek salt marsh, Great Bay estuary's second largest contiguous salt marsh, by removing the existing tidal restriction at Bay Road with a structure that will allow upstream salt marsh migration, and (3) to remediate the flood hazard of this road-stream crossing, which overtops during flood events and thereby compromises public safety and contributes excess sediments and nutrients to Great Bay. Lubberland Creek currently passes through a 36-inch squashed, corrugated metal pipe at Bay Road and will be replaced with a 16-foot span box culvert which will restore full aquatic organism passage from its current barrier status, with a vertical structural span of nine feet.
Mathes Family Limited Partnership Southeast Land Trust *Epping*	**$158,000**	The project will protect 129.6 acres of land located on the west bank of the designated Wild and Scenic Lamprey River. The parcel encompasses 2,330 linear feet of a tributary stream to the Lamprey River and 4,560 linear feet along the western bank of the Lamprey. The property includes nearly 40.4-acres of important high value wetlands and floodplains, including 3 documented vernal pools and there is habitat on the property to support nearby known occurrences of 3 rare turtle species. The Property is within a "High Priority" site for Blanding's turtles and is within a 1,670-acre NHFG mapped unfragmented forest block that with the completion of this project will result in approximately 56% of the block conserved.
Mullen Tract Southeast Land Trust *Fremont*	**$122,130**	The 33.8-acre parcel to be protected includes 1,290 linear feet of a tributary to Brown Brook, a tributary to the Piscassic River. The Mullen property includes nearly 12.5-acres of important high value wetlands, including 12.1-acres of Prime Wetlands, one documented vernal pool, and the landowner has documented occurrences of Blanding's turtle on the Property. Approximately 39% of the Property is identified as WAP Tier 1 with the remaining 61% designated as Tier 2 habitat. The Property is within a "High Priority" site for Blanding's turtles and is a priority site for NHFG.
Merrimack Service Area		
Brox Community Lands Conservation Easement Milford Conservation Commission *Milford*	**$20,000**	The Town will protect approximately 75 acres of the Brox Community Lands which consist of a mix of waterbodies with the associated marsh and shrub wetland habitats and vernal pools, a large open sand pit (due to past and present sand and gravel mining operations), and undisturbed forested areas. The wildlife habitats of the property have been ranked as Tier 2 by the WAP. The largest waterbody within the Brox property is about 35 acres of open water impounded by a beaver dam across Birch Brook and has supported many Great Blue Herons. Wildlife inhabiting the area dependent upon the dry, forested uplands surrounding the wetlands includes Blanding's turtle, Spotted turtle, and Eastern Hognose snake.

Piscataquog South Branch Connectivity Project Francestown Land Trust *Francestown*	**$185,975**	The project will protect and connect land along 2,000 feet of the South Branch of the Piscataquog River and its tributaries through the following: (1) Purchase a 12+ acre property along the west side of the South Branch to protect in perpetuity and (2) Protect in perpetuity 11.6 acres along the east side of the river, as a conservation easement donated by landowners in support of this project. The parcels contain upland and riparian forests and a 1.46-acre Red Maple-Black Ash Swamp; and upland forest, a floodplain forest containing 4.22 acres of Red Maple-Black Ash Swamp, vernal pools, and an intermittent stream that flows from the wetlands into the South Branch. This section of river is also listed as Wild Eastern Brook Trout Habitat.
Robert French Fee Piscataquog Land Conservancy *Weare*	**$185,000**	The project will protect 205 acres of exemplary aquatic resources and upland buffer including 22.58 acres of wetlands, comprised of a string of beaver-impounded wetlands that run north-south down the center of the property, and at least 11 vernal pools scattered across the remainder of the tract. The largest of the pools is a .65-acre black gum-red maple basin swamp that features trees approximately 400 years in age. The property includes a 4,700-foot riparian corridor along Bartlett Brook, which flows north towards the main branch of the Piscataquog River. The property has 88 acres of Tier 1 WAP habitat, 74 acres of Tier 2 habitat and would link 473 acres of previously unconnected conservation land.
Stillhouse Forest The Society for the Protection of New Hampshire Forests *Canterbury & Northfield*	**$150,000**	Protect 215 acres that includes over a mile of undeveloped frontage on the Merrimack River and is located directly across from Penacook & Boscawen Water Precinct's three main drinking water wells. This property has 20 acres of wetlands, two significant oxbows that support high quality silver maple floodplain forest, a mile-long perennial stream containing native brook trout, exceptional riparian wildlife habitat, several rare or threatened species, two exemplary natural communities, and 14 confirmed vernal pools. Two possible exemplary natural communities include the dry river bluff natural community and the silver maple-false nettle-sensitive fern floodplains which contain the vernal pools and silver maples that are hundreds of years old.
Merrimack River (CTAP) Service Area		
Country Hill Estates Parcel Preservation Concord Conservation Commission *Concord*	**$350,000**	The City will protect two parcels of land totaling 227.39 acres off District 5 Road in perpetuity. The protection of this property will add to a large block of conservation land, including the adjacent 546 acre Rossview Farm. There are approximately 27 acres of forested scrub-shrub and riverine/upper perennial wetlands associated with two streams, potential vernal pools and ephemeral pools observed north of Ash Brook. Under the current City regulations, the site could potentially support up to 40 single family house lots or 100 residential condominium units, including new roadways and other site improvements that would impact wetland and upland habitat.

Jennings Conservation Easement The Piscataquog Land Conservancy *Goffstown*	**$94,000**	The project will protect 52+/- acres of exemplary aquatic resources and upland buffer through purchase of a conservation easement. The property contains 11.6 +/- acres of wetlands, comprised of 10.2 acres of prime wetland in Paige Hill Marsh and an additional 1.29 acres along Harry Brook. The property also includes 1,380 feet of riparian corridor - 560 feet of Harry Brook and 820 feet of a tributary of Harry Brook that flows through Paige Hill Marsh. The property's wetlands and riparian corridors provide habitat for a variety of wildlife species, and the Spotted Turtle and Northern Black Racer has been documented within one mile of the property.
Parker Farm's Forest The Forest Society and *Auburn*	**$375,000**	The project will conserve an 87-acre parcel with 2,050 feet of undeveloped shoreline providing a critical forested buffer to Lake Massabesic which is the surface water drinking source for over 165,000 residents of the City of Manchester and surrounding towns. Much of the property supports a mature, Appalachian oak-pine forest and hemlock-beech-oak-pine forest. The land contains 4.9 acres of wetlands and several intermittent and ephemeral drainage ways which drain towards the lake. If conserved, the property will add to the thousands of contiguous acres of Manchester Water Works land around the lake and further guarantee undeveloped shoreline by another 2,050 feet.
Lower Connecticut Service Area		
Cranberry Bog Culvert Replacement and Stream Restoration Town of Winchester *Winchester*	**$215,488**	The Town will replace the failing Cranberry Bog culvert, provide for 2.68 miles of stream connectivity both upstream and downstream of the new culvert, address a perched culvert condition, and improve the stream to enhance aquatic habitat. The existing culvert is considered a Tier 3 crossing and is located on Snow Brook which flows to the Ashuelot River under Back Ashuelot Road. The existing culvert, a 48" x 60' long corrugated metal pipe will be replaced with a 5' x 12' x 60' long closed bottom pre-cast concrete box structure be installed in accordance with the NH Stream Crossing guidelines. The work includes wetland restoration and will create 4 ft. wide floodplain benches on both sides of the stream and stabilize a total of 160 square feet of the upstream bank and 610 square feet of the downstream bank by installing biodegradable coir fabric, and replanting native species.
Granite Lake Headwaters The Harris Center for Conservation Education *Stoddard*	**$200,000**	The project will protect a 515-acre parcel located south of Route 9, in a rural zone with a 2-acre minimum lot size. It directly abuts 2,275 contiguous acres of conserved land and is adjacent to an 11,500-acre corridor of protected land that stretches in an unbroken belt from Stoddard to Peterborough. This parcel has several deeply incised drainages on its steep northwestern and southeastern slopes and contains two confirmed vernal pools. The first order streams flow across the property for more than three miles draining west into Nye Meadow, a 45-acre natural wetland protected by NH Audubon, and then into Granite Lake, a 238-acre cold-water lake managed by NHFG for its lake trout population.

North Branch Sugar River Land Conservation Project – Ruger Property Acquisition New Hampshire Fish and Game Department *Newport, Croydon, Grantham*	**$475,500**	Two properties totaling 3,181 acres known as the Ruger lands within the watershed of the North Branch of the Sugar River will be permanently protected including approximately 416 acres of wetlands habitat plus 28 vernal pools and 10.85 miles of streams. The project will expand the extent of protected lands in a 48,750 acre unfragmented block of natural land cover, and provide habitat for numerous wildlife species including at least 12 species of greatest conservation need. The Brighton Forest parcel (1,905 acres) has 713.2 acres of WAP Tier 1 habitat, 366 acres Tier 2 habitat, and a variety of other habitat types including approximately 40 acres of managed shrubland under an existing powerline right-of-way, 14.6 acres of old field, and 237.67 acres of a variety of wetland types including a 132-acre marsh complex and 11 documented vernal pools. The Loverin Hill parcel has 532.2 acres of WAP Tier 1 habitat, 294.5 acres Tier 2, and 390 acres Tier 3 habitat which cover 98.2% of the parcel.
Thompson Brook Restoration The Cheshire County Conservation District *Surry*	**$74,195**	The project involves stream passage improvements to provide aquatic organism passage that is currently restricted and will be improved to fully passable by all organisms. There will be approximately two and a half miles of upstream, barrier free, aquatic habitat reopened by this project. The project will restore the box culvert barrier for fish passage using a backwatering technique at this priority site. The restoration includes two components: 1) redirect high energy stormwater flows away from the confluence of the tributary outflow and 2) to create a step pool structure to restore aquatic passage over the perched outflow end of the box culvert. Once that elevation is achieved, it will allow most aquatic species to move up stream through the culvert even during relatively low flow conditions.
Tunis District Headwater and Wetland Protection The Upper Valley Land Trust *Hanover*	**$299,644.75**	The Tunis project will result in the permanent protection of 337± acres of headwater wetlands, streams, and uplands east of Moose Mountain, providing critical connectivity between the Appalachian Trail, Hanover Town Forest lands, and other conserved properties. The properties include 30 acres of Black Ash-Northern Hardwood-Conifer Swamp, several acres of wet meadow shrub and forested swamp, 3000 linear feet of intermittent streams, 1700 linear feet along Tunis Brook which hosts wild Eastern brook trout, and numerous vernal pools. It lies within a 12,000± acre unfragmented forest block home to bear and moose and other wide-ranging species.
Lower Connecticut Service and Contoocook Service Areas		
Bearce Property The Monadnock Conservancy *Jaffrey & Rindge*	**$142,000**	The project will protect the Bearce property that includes 61 acres of wetlands; 139 acres of upland; approximately 9,241 feet of streams; and one confirmed vernal pool. Approximately 200 acres in size, half of the property is located in Jaffrey with the other half located in Rindge. The easement will allow for forest management and agriculture and include a 100-foot buffer in order to protect the aquatic resources. The land is quite developable with abundant road frontage on two Class V roads. The Bearce property is directly adjacent to the Monadnock Conservancy's 77-acre Mountain Brook Reservoir property and within a 1,521-acre forested block.

Middle Connecticut Service Area		
Jean Chamberlin North Ammonoosuc Conservation Trust *Bath*	**$35,000**	Protect the 10-acre parcel of land located in High Priority Water Supply Land and is located approximately 525 feet from the Woodsville Community Water Supply intake, which serves 2075 people. This project will protect land near the confluence of the Connecticut and Ammonoosuc Rivers and will add to a potential conservation area of over 500 acres near the confluence of these rivers. The property includes 1,138 feet of frontage on the Ammonoosuc River with a mostly wooded riparian forest buffer, and 3 acres of Flood Hazard Area associated with the Ammonoosuc River, including one acre in the 100-year zone and two acres in the 500-year zone.
Jean Chamberlin South Ammonoosuc Conservation Trust *Haverhill*	**$30,200**	Protect 32.5 acres of land near the confluence of the Connecticut and Ammonoosuc Rivers. The project includes 1.5 acres of riparian enhancement through planting the wooded buffer to at least 50 feet and to increase native riparian tree cover. The project will add to a potential conservation area of over 500 acres near the confluence of the rivers, includes significant wetlands features, is in a flood hazard zone, is in an active river area, includes 23 acres of Tier I grassland habitat, is a High Priority Water Supply land, and is located approximately 1590 feet from the Woodsville Community Water Supply intake.
Neil Chamberlin Conservation Area Ammonoosuc Conservation Trust *Bath*	**$50,300**	Protect a 204-acre parcel that includes 2,409 feet of riparian frontage on the Upper Connecticut River and supports continuous riparian forest with wooded buffer widths exceeding 100 feet. Its extensive road frontage and level fields make it very developable. The parcel includes 3,837 feet of first order streams; 25 acres of grassland habitat, 30-acres of Tier 2 WAP rocky/talus slope habitat, vernal pools, and approximately 4 acres of High Priority Water Supply land. The far northeast corner of the Conservation Area drains towards the Ammonoosuc and is within the Woodsville Water and Light water supply watershed. If successful, this project will add to a conserved area of over 500 acres near the confluence of the Connecticut and Ammonoosuc Rivers.

LEGISLATION AND RULEMAKING

Legislation

The Wetlands bureau had an active year in the legislature. The 2018 legislation is listed below:

- **HB 645-FN:** Sought to establish a voluntary dock registration procedure with NHDES for existing docking structures meeting certain criteria under RSA 482-A:3. Voting has been delayed into the 2019 Legislative session.
- **HB 682-FN:** An Act to establishing a water resources fund in the department of environmental services and charging certain application and permit fees. Voting has been delayed into the 2019 Legislative session.
- **HB 1104-FN:** Reduce the maximum time for NHDES to process applications for permits under RSA 482-A:3 (Dredge and Fill Permits) and the Administrative Procedures Act from 75 days to 50 days for projects with under one acre of jurisdictional impacts and from 105 to 75 days for all other projects. Also, relative to online filing with the Secretary of State's Office.
- **HB 10810:** Established a commission to study the effectiveness of the current statutes related to management of non-tidal public water ways and the construction or placement of structures within them**.** Signed by Gov. Sununu on May 25, 2018.
- **SB 368:** Establish an exemption from shoreland protection permitting requirements for maintenance and repairs of existing roads and for borings and test wells.

Rulemaking

While the process of revising and updating the wetlands rules has been going on for several years, and included 29 public meetings and 20 meetings with state partners, the process began in earnest on January 31, 2018 when NHDES released an initial draft of the revised rules. This was the first complete rewrite of the rules since 1991. Since that initial release, NHDES has hosted five public input sessions throughout the state and requested public comment on the draft rules by April 20, 2018, to guide the redrafting of the rules. During this time, NHDES received close to 2,000 public comments which were then carefully and thoroughly reviewed.

NHDES then began revising the draft rules and reconvened a wetlands rules stakeholder workgroup comprised of representatives of groups having diverse interests in the wetlands rules, including the Associated General Contractors, New Hampshire Timberland Owners Association, Business and Industry Association of New Hampshire, The Nature Conservancy, Coastal Focus Group, New Hampshire Association of Natural Resource Scientists (NHANRS), and the New Hampshire Stream Crossing Initiative Steering Committee, as well as representatives from other conservation interests, utility providers, landscapers, agriculture interests, and aquaculture.

Table 12: 2018 NHDES Wetlands Proposed Rules Public Input Sessions

Date and Time	Location
02/26/2018 6:00PM – 8:00PM	NHDES Headquarters - 29 Hazen Drive, Concord
02/28/2018 6:00PM – 8:00PM	NHDES Pease Field Office- 222 International Drive Suite 175, Portsmouth
03/01/2018 6:30PM – 8:30PM	Laconia City Hall -45 Beacon Street East, Laconia
03/05/2018 6:30PM – 8:30PM	Keene Public Library -60 Winter Street, Keene
03/15/2018 5:00PM – 7:00PM	North Country Resource Center- 629 Main Street, Lancaster

The Wetland Rules Workgroup met 11 times over the busy summer season, working diligently to make proposed changes to the rules by building consensus among the many parties involved. Each group was given the opportunity to be heard and their proposals were weighed by the group for adoption to the final draft rules.

Table 13: 2018 Wetland Rules Workgroup Schedule

Date and Time	Location	Topic
05/23/2018 09:00AM – 12:00PM	NHDES	Wetland Rules Workgroup - Env-Wt 100 Definitions
06/06/2018 12:30PM – 3:30PM	NHDES	Wetland Rules Workgroup - Env-Wt 100 Definitions
06/20/2018 12:30PM – 3:30PM	NHDES	Wetland Rules Workgroup - Env-Wt Chapter 300
06/27/2018 10:00AM – 12:00PM	NHDOT	Subcommittee Meeting
07/06/2018 11:00AM – 12:30PM	NHDOT	Subcommittee Meeting
07/11/2018 12:30PM – 4:00PM	NHDES	Wetland Rules Workgroup - Env-Wt Chapter 300
07/25/2018 12:30PM – 4:00PM	NHDES	Wetland Rules Workgroup - Env-Wt 400
08/08/2018 9:30AM – 12:30PM	NHDES	Wetlands Rules Workgroup - Env-Wt 500
08/22/2018 12:30PM – 4:00PM	NHDES	Wetland Rules Workgroup- Env-Wt 600
09/05/2018 10:00AM – 12:00PM	NHDES	Wetland Rules Workgroup - Env-Wt 700 and 800
09/07/2018 12:00PM – 4:00PM	NHDES	Wetland Rules Workgroup -Env-Wt 900 and Wrap-Up

The proposed rules include changes to address the many revisions to RSA 482-A that have been enacted since the last major rules overhaul in 1991. The changes also capture existing practices and help to achieve consistency between state and federal program requirements. Specifically, the proposed rules include many existing Army Corps of Engineers requirements in the federal general state permit, and streamlining the permitting process for applicants. Under the proposed rules, while still being protective of the environment and public health, more projects will be eligible for streamlined review, more projects will be eligible to be performed without a permit, and Permit-By-Notice (PBN) and

expedited review processing time will be reduced, allowing more projects to become shovel-ready sooner. The proposed new PBN process does not require conservation commission review or abutter notice, similar to the existing PBN process that has been successful within the Shoreland Program.

Table 14: 2018 NHDES Wetlands Proposed Rules Formal Rulemaking Public Hearings

Date and Time	Location
12/03/2018 2:00PM – 4:00PM	NHDES Headquarters 29 Hazen Drive, Concord
12/03/2018 6:00PM – 8:00PM	NHDES Headquarters 29 Hazen Drive, Concord
12/04/2018 6:00PM – 8:00PM	Keene Parks and Recreation Center 312 Washington Street, Keene
12/06/2018 6:30PM – 8:30PM	Laconia City Hall 45 Beacon Street, Laconia
12/11/2018 5:30PM – 7:30PM	North Country Resource Center 629B Main Street, Lancaster
12/13/2018 2:00PM – 4:00PM	NHDES Pease Field Office 222 International Drive, Suite 175, Portsmouth
12/13/2018 6:30PM – 8:30PM	NHDES Pease Field Office 222 International Drive, Suite 175, Portsmouth

COMMUNICATIONS AND OUTREACH / EDUCATION

Wetlands and Shoreland staff presented at 40 events around the state reaching several hundred attendees. Topics included changes to RSA 482-A, the NH Wetlands Law, changes to RSA 483-B, the Shoreland Water Quality Protection Act, wetlands and shoreland permitting changes, best management practices, routine roadway and culvert replacement procedures, timber harvesting using BMPs in wetlands, vegetation maintenance within the protected shoreland, landscaping at the water's edge, among others. Table 15 below lists the date, event and location in which staff gave presentations in 2018.

Table 15: Wetlands and Shoreland Presentations for Calendar Year 2018

Date	Event	Location
01/18/18	NHDES and NHDOT Aquatic Resource Mitigation Workshop	Concord
01/24/18	NHDES and NHDOT Aquatic Resource Mitigation Workshop	Londonderry
01/31/18	Seacoast Stormwater Coalition Meeting	Rochester
02/05/18	NH Association of Conservation Commissions Conservation Roundtable	Concord
02/06/18	NHDES and NHDOT Aquatic Resource Mitigation Workshop	Rochester
02/21/18	UNH Cooperative Extension Training Event for Pesticide Applicators	Concord
03/03/18	Gilford Islands Association	Gilford
03/14/18	Belknap County Conservation District Workshop on Stream Resilience	Meredith
03/19/18	Granite State Designers and Installers Septic System Conference and Expo	Manchester
03/21/18	NH Landscaper's Association Annual Meeting	Manchester
03/23/18	NH Water and Watershed Conference	Plymouth
03/28/18	MS4 Seacoast Stormwater Coalition Workshop	Dover
03/30/18	Landscaping for Water Quality	Sunapee
04/05/18	Wentworth Watershed Association Meeting	Wolfeboro
04/06/18	EPA Annual Meeting	Concord
04/10/18	Logging and the Law	Lancaster
04/12/18	Logging and the Law	Hillsborough
04/25/18	Logging and the Law	Campton
05/19/18	Pawtuckaway Lake Improvement Association Annual Meeting	Nottingham
05/21/18	NRSC Web Soil Survey and NHDES Aquatic Resource Mapper Workshop	Laconia
05/24/18	NH Association of Natural Resources Scientists Quarterly Meeting	Concord
06/01/18	NH Lakes Congress	Meredith
06/04/18	Lake Winnipesaukee Watershed Association Meeting	Meredith
06/13/18	NH City and Clerk's Annual Regional Meeting	North Conway
06/23/18	Landscaping at the Water's Edge	Hancock
07/04/18	Keysar Lake Association	Sutton
07/14/18	Kezar Lake Association Annual Meeting	North Sutton
8/3/18 – 8/4/18	Jericho ATV Event	Jericho
09/10/18 - 09/12/18	8th Biennial Northeast Transportation and Wildlife Conference	Amherst, MA
09/18/18	Hot Hole Pond Association and Loudon Officials	Loudon
10/04/18	Logging and the Law	Lancaster
10/06/18	Bradley Lake Association/ Highland Lake Association / Andover Officials	Andover
10/11/18	Logging and the Law	Hillsborough
10/24/18	Septic Designers and Installers Annual Training Event	Sunapee
10/25/18	Stream Restoration / Wood Addition Workshop	Albany
11/03/18	NH Association of Conservation Commissions Annual Meeting	Pembroke
11/5/18	Wood Addition Workshop Permitting Requirements	
11/12/18	Stream Restoration / Wood Addition Workshop	Gilford
11/23/18	NE Biological Assessment of Wetlands Workgroup Meeting	Cooperstown, NY
12/06/18	NH Association of Natural Resources Scientists Winter Quarterly Meeting	Concord
12/07/18	NH Land Surveyors Association Annual Meeting	Concord
12/07/18	Taking Action for Wildlife Workshop	Belmont
12/14/18	Granite State Airport Management Association	Concord

In 2018, the Wetlands Bureau also:

1. Enhanced and expanded Wetlands Frequently Asked Questions.
2. Enhanced and expanded Shoreland Frequently Asked Questions.
3. Created a "Rivers and Streams Protected under the Shoreland Protection Act" web tool.
4. Created a "SWQPA Urban Exemptions Interactive Web Map" tool.
5. Updated all Wetland Permit and Permit by Notification forms
6. Updated all Shoreland Permit and Permit by Notification forms

PROGRAM IMPROVEMENTS

NHDES continually strives to improve staff skills and knowledge as well as improve its programs and public information.

Table 16: NHDES Staff Training

DATES	ATTENDEES	EVENT	LOCATION
1/19/18	1	NHANRS Annual Conference	Concord
1/2/18, 1/11/18, 1/25/18	1	Shoreline Structures Training	NHDES Concord
2/22/18	1	USEPA Green Infrastructure Webinar	NHDES Concord
3/23/18	3	Watershed Annual Conference	Plymouth
3/29/18	1	Merrimack County Conservation District Water-Watershed Conference	Plymouth
4/4/18	1	NH Soils Matter Conference	NHDES Concord
4/6/18	1	Watershed Annual Conference	Concord
4/9 – 4/10/18	1	Environmental Compliance Inspection & Enforcement Training	Concord
5/8/18	1	Stream Crossing Assessment Training	NHDES Concord
5/9/18 – 5/10/18	5	Northeast Environmental Enforcement Project - Environmental Compliance, Inspection, and Enforcement Training	Concord
5/15/18	2	Stream Crossing Assessment Workshop	NHDES Concord
4/27 – 6/1/18	2	Wetlands Delineation Course	Portsmouth
4/27 – 6/1/18	1	UNH Professional Development - USACOE Wetland Delineation	Portsmouth
6/8/18	2	SADES Stream Crossing Assessment Training	Concord/Franklin
6/22/18	1	ASWM-NRCS Wetland Training: Wetlands in the Watershed Webinar	NHDES Concord
8/4/18	1	Jericho ATV Event, Patrol, and Outreach	Berlin
9/10 – 9/12/18	3	Northeast Transportation & Wildlife Conference	Amherst, MA
9/2018 - Current	1	Management of Certified Maintainer Program	NHDES Concord
10/25/18	1	NEBAWWG Work Group	Albany, NY
11/7/18	1	Cowardin Wetlands Classification Workshop	Portsmouth

Aquatic Resource Mitigation Program Improvements

Development of an online stream crossing mapping tool to assist in prioritizing stream restoration efforts across New Hampshire

The ARM fund collects payments for major impacts to streams and awards these funds annually to support stream restoration and stream passage improvement projects. In 2015, the NHDES Wetlands

Bureau received an EPA Wetland Program Grant– Track 2 "Building Climate Change Resiliency in New Hampshire by Prioritizing Wetland and Stream Mitigation Opportunities" to provide support to the *Stream Crossing* Initiative— a program involving five state entities, and several partners, with the mission to inventory stream crossings throughout the state to inform data-driven decisions on culvert replacement and stream restoration. The EPA grant enabled NHDES to hire a part-time staff person (from 2016-2018) to assist in working to achieve several tasks: re-establish statewide stream crossing steering team, collection field data in two focal watersheds, rank the surveyed stream crossings for aquatic organism passage and geomorphologic compatibility using established criteria, develop a culvert prioritization model, and conduct program outreach. This EPA grant closed in September 2018 and a final report was published in December 2018. Several of the achievements made in 2018 under this grant made significant contributions to the Aquatic Resource Mitigation Fund program.

Under the *New Hampshire Stream Crossing Initiative,* approximately 7,000 stream crossings have been surveyed across the state and scored for the aquatic organism passage, geomorphic compatibly, asset condition, and flood vulnerability. To better understand what types of information is needed and used in these decisions, several NHDES staff participated in a technical workgroup technical advisory committee Based on feedback from communities and the NH Regional Planning Commissions during several meetings, it was determined that culvert replacement decisions vary from town to town, region to region, and depend on the funding source targeted to replace the structure.

The stream crossing data is housed in an online geodatabase hosted by The University of New Hampshire Technology Transfer Center as an Arc GIS online map. The map and data were only accessible to members of *New Hampshire Stream Crossing Initiative* steering team and collaborators that possess an ESRI Arc GIS online account—there was a great need for a public-facing web map to provide the data to the public. In addition, the data needed to be presented in a way to allow stakeholders to query and sort records in order to prioritize which stream crossings are in the greatest need of replacement. The State Stream Crossing Steering Team decided to explore the use of web-based mapping tools as a public interface for the stream crossing data. The Team members agreed that a flexible tool that allows users to query and display the stream crossing data in their community, based upon their own priorities and funding ability, would best support municipalities and stakeholders involved in stream crossing replacements. In 2018, the NHDES Wetlands Bureau and Geological Survey partnered to develop the New Hampshire Aquatic Restoration Mapper, an interactive viewer to explore stream crossing and aquatic habitat data to identify and prioritize stream crossings for replacement to meet restoration, aquatic connectivity, and flood resiliency goals. The Aquatic Restoration Mapper is a decision support tool to help target restoration efforts and identify mitigation opportunities to improve stream connectivity, restore important fish habitats, and increase flood resiliency.

Figure 20: Aquatic Restoration Mapper Welcome Page

The web map includes several tools that allow the user to:

- View stream crossing survey data by town, watershed, or specify your own area of interest.
- Query and explore stream crossing data, including photographs from the field.
- Filter by AOP and geomorphic compatibility scores to identify deficient crossings.
- View the flood history of each culvert from town Hazard Mitigation Plans.
- Display summary statistics of scores in charts and graphs for presentations and reports.
- Easy to use pop-up windows that display information and provide links to NHFG species accounts.
- View stream habitat, fishery, and riparian data to understand the ecological importance and habitat connections of a restoration area.
- Export selected data as a text file to view and analyze in other software.
- Print maps of your project area to include in grant applications and presentations.
- Links to program information and user guides.

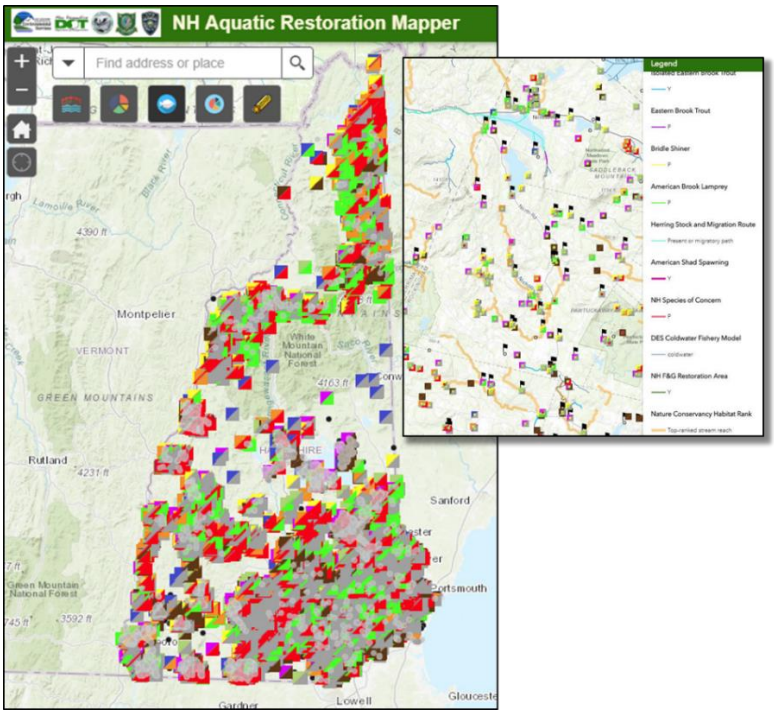


Figure 21: NH Aquatic Restoration Mapper Sample.

Conduct outreach and provide educational materials to support users of the New Hampshire Aquatic Restoration Mapper

To support individuals using the online mapping tool a series of guidance documents were created and several outreach events conducted. A simple instruction manual was developed and posted online to guide users in the various tools and the functions of the mapper. The workshops were geared toward educating municipalities, and other local conservation groups, in the process of identifying stream restoration projects that will increase flood resiliency, restore stream connectivity, and improve aquatic ecosystem function for compensatory mitigation. In addition, the NHDES ARM staff participated in a number of regional conferences to network with other state agencies and academic researchers.

Table 17: Outreach events participated in by NHDES staff

Date	Event	Location
1/18/2018	NHDES & NHDOT Aquatic Resource Mitigation Workshop	Concord
1/24/2018	NHDES & NHDOT Aquatic Resource Mitigation Workshop	Londonderry
2/5/2018	Conservation Roundtable – Association of Conservation Commissions	Concord
2/6/2018	NHDES & NHDOT Aquatic Resource Mitigation Workshop	Rochester
3/14/2018	Belknap County Conservation District Workshop: Stream Restoration	Meredith
3/23/2018	NH Water & Watershed Conference- NHDES and Plymouth State	Plymouth
3/28/2018	MS4 Seacoast Stormwater Coalition Workshop –NHDES Watersheds	Dover
5/21/2018	NRSC Web Soil Survey and NHDES Aquatic Resource Mapper workshop	Laconia
5/24/2018	NH Association of Natural Resources Scientists Quarterly Meeting	Concord
9/10/2018	Northeastern Wildlife and Transportation Conference	Amherst, MA
11/14/2018	New England Biological Assessment of Wetlands Workgroup- NEIWPCC	Cooperstown, NY
12/7/2018	Actions for Wildlife in a Changing Climate- NHFG and UNH	Laconia

Develop scoring criteria to evaluate stream passage improvement projects (culvert replacements and dam removal) for eligibility as compensatory mitigation

In-lieu fees collected by the Aquatic Resource Mitigation fund may be used to support stream restoration (e.g. dam removal, culvert replacements, in-stream wood additions, and bank stabilization) and wetland restoration projects (e.g. fill removal, hydrologic connectivity, plantings, etc.). In order to evaluate these projects and determine whether they are compensating for the functions and values lost in the watershed from permitted impacts, a set of evaluation criteria was needed. In 2017, ARM staff drafted a set of criteria that incorporated the important aspects of a stream and wetland restoration projects that need to be considered by the Site Selection Committee (SSC) when reviewing a grant application. In 2018, ARM staff hosted multiple meetings of the SSC and Interagency Review Team to review the proposed changes and improvements to the ARM Fund evaluation criteria. The new criteria were successfully used to score 11 applications in the 2018 grant round.

External Recognitions

Public response via the NHDES Surveys, emails, letters and phone calls are received throughout the year from applicants, the general public, planners, contractors and municipal authorities. Most are directed personally to staff members, but some are public recognitions of staff efforts and interaction with various stakeholders. Table 18 summarizes these responses.

Table 18: Recorded Kudos from various Members of the Public and Stakeholders

SOURCE	SUBJECT	DEPARTMENT ACTIVITY	SIMILAR REPONSES	RECOGNITION
Email	Appreciation of NHDES Staff Efforts	Walk In Assistance	8	Email to Staff
Email	Appreciation of NHDES Staff Efforts	Email Assistance	52	Email to Staff
Email	Appreciation of NHDES Staff Efforts	Telephone Assistance	8	Email to Staff
Email	Outstanding Customer Service	General Assistance	25	Email to Supervisor
Email	Outstanding Customer Service	Inspector of the Day	15	Email to Supervisor
Email	Outstanding Customer Service by 9 NHDES Staff Members in Concord and Pease offices	Public Presentations	1	Recognition from EPA
Letter	High quality work	High Quality and Effective Programs, Inter Agency Cooperation, and Publications	1	Recognition from EPA
Email	BMP Manual	Publicly Available Publications		Recognition from EPA

CONCLUSION

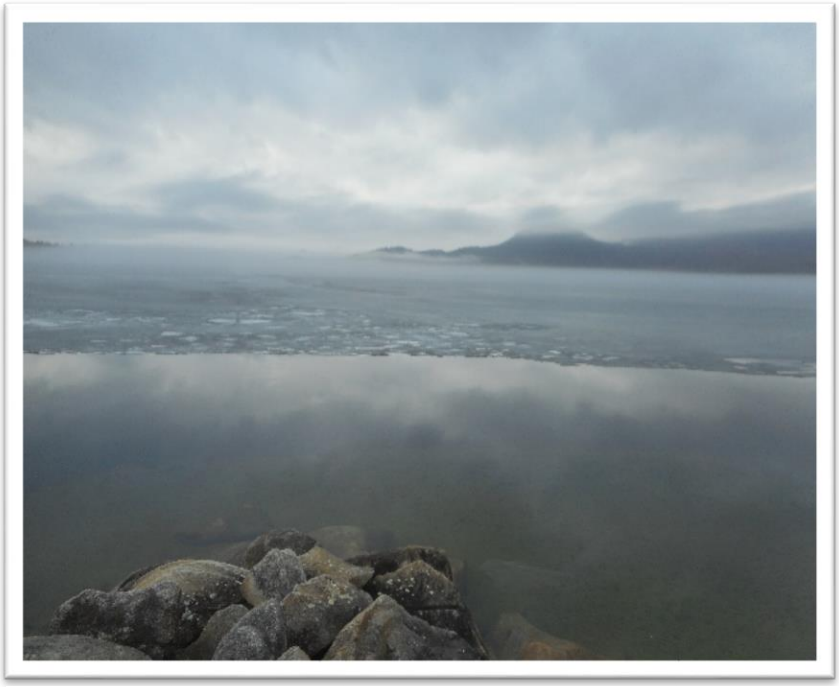


Figure 22: Newfound Lake in Bristol, NH
Photo courtesy of Rosemary Aures

In 2018, the NHDES Wetlands Bureau continued to make significant progress in achieving milestones under its Wetland Program Plan (2017 – 2023). EPA grant projects continue to support update efforts to national wetland inventory maps in two watersheds (Merrimack River and the Piscataqua-Salmon Falls River Watersheds). The Wetlands Best Management Practice Techniques for Avoidance and Minimization publication was developed to assist landowners and planners to better plan their projects to avoid or reduce impacts to precious natural resources and biota. The Aquatic Resource Mitigation Fund Status, Trends and Program Improvements publication has clearly shown and explained how the ARM funds are used to provide preservation and mitigation projects that preserve many wetlands in the State of New Hampshire.

In 2018, the Bureau dedicated significant time and resources to complete the major rewrite of the rules since 1991, the wetlands bureau finalized work on the program draft and conducted several public meetings to gain input from property owners and other stakeholders across the State.

In 2018, permitting staff dedicated significant time participating in approximately 500 pre-application meetings, providing technical review guidance to provide clear and consistent direction to applicants, improving communications between state / federal agencies and the applicants. Permitting staff also dedicated significant resources to requests for 94 emergency permitting instances in response to various localized storm events throughout the year and state. All in all, NHDES efforts have reduced despoliation and unregulated alterations to the State's water and wetland resources held in trust for now and the future.

In 2018, the Wetlands Bureau again received national recognitions from ELI and EPA. Wetlands Bureau staff were also recognized by the NHDES Commissioner in several areas at the annual NHDES awards ceremony.