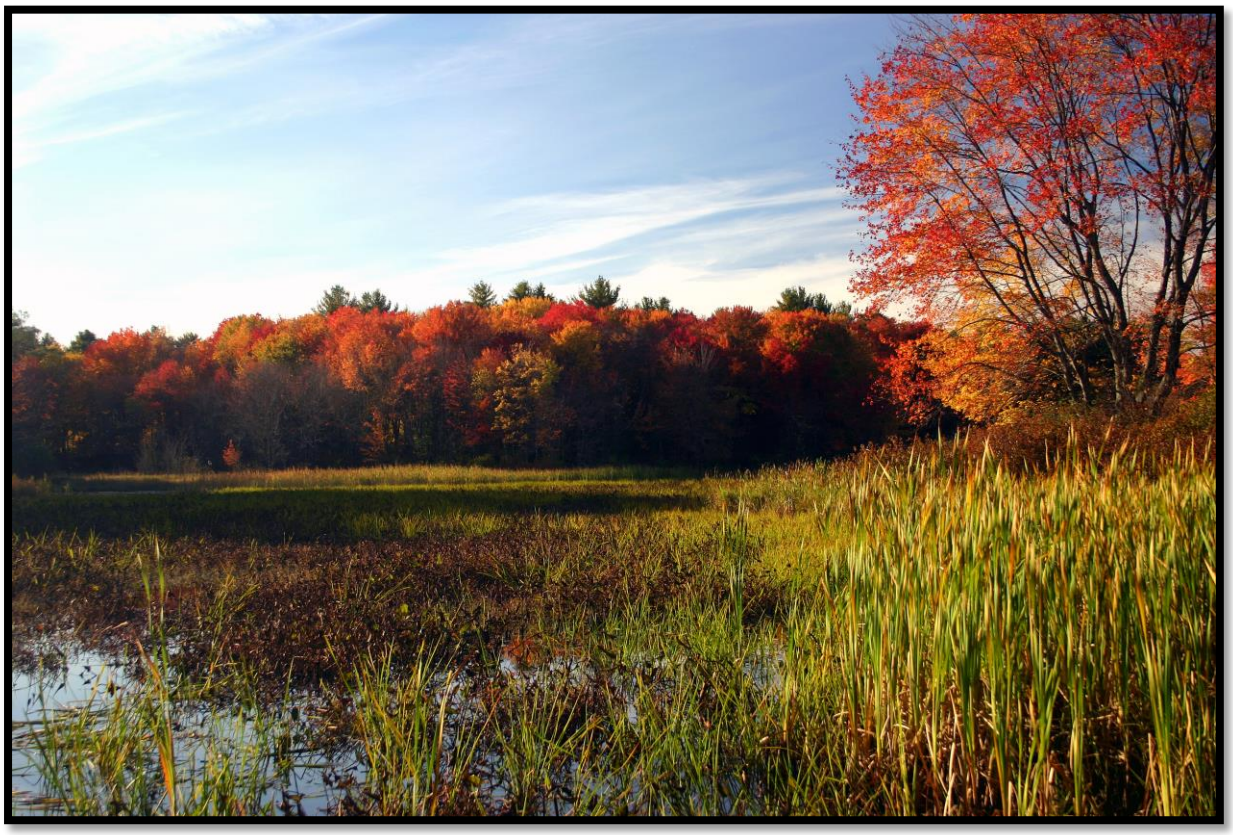
NHDES Wetlands Bureau

Annual Report to U.S. EPA Region 1 for Calendar Year 2022



NEW HAMPSHIRE
DEPARTMENT OF
Environmental
Services

October 2023

R-WD-23-01

NHDES Wetlands Bureau
Annual Report to U.S. EPA Region 1
for Calendar Year 2022

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

Robert R. Scott
Commissioner

Mark Sanborn
Assistant Commissioner

Rene Pelletier
Water Division Director

Prepared by:
Brian D. Young
Marie-Eve Jacques
Darlene Forst
Mary Ann Tilton
Jen Drociak
Jeffrey Blecharczyk
Emily Nichols

Reviewed by:
Philip Trowbridge

October 2, 2023

Table of Contents

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

This annual report has been prepared for the United States Environmental Protection Agency (EPA) to provide a summary of the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau regulatory trends, activities and updates on the EPA grant-funded projects as part of NHDES' Priority and Partnership Agreement with the 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 certain municipally designated prime wetlands. The Wetlands Bureau also implements RSA 483-B, the Shoreland Water Quality Protection Act (SWQPA), which regulates impact adjacent to certain surface waters. Permitting and compliance activities for SWQPA are reported on within this report. The regulation of impacts is accomplished primarily through the permitting process.

NHDES is guided by the New Hampshire Wetlands Program Plan in providing a framework and direction over a six-year period to strengthen and improve the program to better protect wetlands and aquatic resources.

FIGURE 1: PHOTOGRAPH OF A WETLAND ANALYSIS.

PERMITTING ACTIVITIES

APPLICATIONS RECEIVED[1]

The number of Standard Dredge and Fill Wetlands Applications received in 2022, 485, rebounded from the 10-year low of 319 applications seen in 2020. However, this number is still lower than the yearly 10-year trend of 529 applications (Table 1; Figure 2). The increase in activity in 2022 relative to 2020 may have been due in part to the overall increase in economic activity following recovery from coronavirus-driven closures.

TABLE 1: 10-YEAR TREND OF WETLAND STANDARD DREDGE AND FILL PERMIT APPLICATIONS RECEIVED.

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	AVERAGE
501	581	527	581	572	589	679	319	453	485	529

For all wetlands application types combined, the Wetlands Bureau received 213 fewer wetland applications in 2022 compared to 2021. The combined number of applications received in 2022 was 279 applications fewer than the 10-year average of 2,070 applications (Table 2). The total number of applications received each year remained constant between 2013 and 2019. Then, a sharp decrease occurred in 2020 followed by a rebound in 2021 then another drop in 2022.

TABLE 2: 10-YEAR TREND OF ALL WETLAND PERMIT APPLICATIONS AND NOTIFICATIONS RECEIVED.

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	AVERAGE
2,159	2,255	2,048	2,211	2,075	2,212	2,289	1,753	2,004	1,791	2,070

Overall, the number of Permits-by-Notification (PBN) received was up to 277 applications in 2022, compared to 239 applications in 2021. In contrast, the total number of Statutory Permits-By-Notification (SPN) applications was down from 857 in 2001 to 643 in 2022. All categories of SPNs were down when compared to 2021 leading with Seasonal Dock SPNs (177 to 89), Culvert SPNs (23 to 14), Utility SPNs (172 to 137), Forestry SPNs (443 to 364), and Trail SPNs (42 to 39).

[1] Permit modifications, such as amendment requests, name changes and time extensions, may have been under-reported prior to 2019. This might have occurred by focusing on the initial date applications were received, while overlooking the permitting actions taken on older, previously approved applications. Since 2019, all permit modification requests acted upon during the report year have been tallied separately from those initially received during the report year. Permit modifications under review at the close of the report year are excluded.

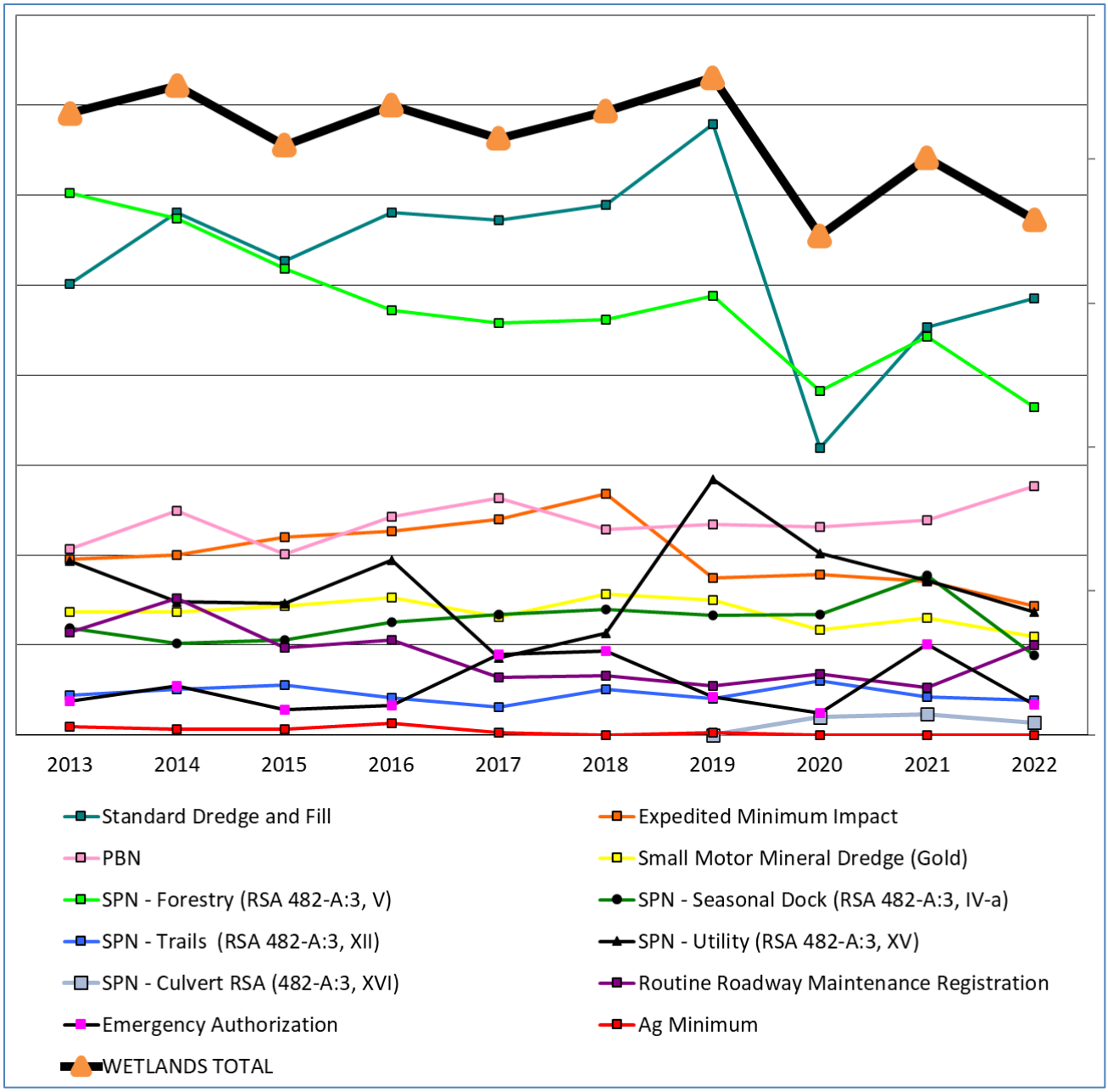


FIGURE 2: 10-YEAR TREND OF ALL WETLAND PERMIT APPLICATIONS/NOTIFICATIONS RECEIVED (2013 – 2022).

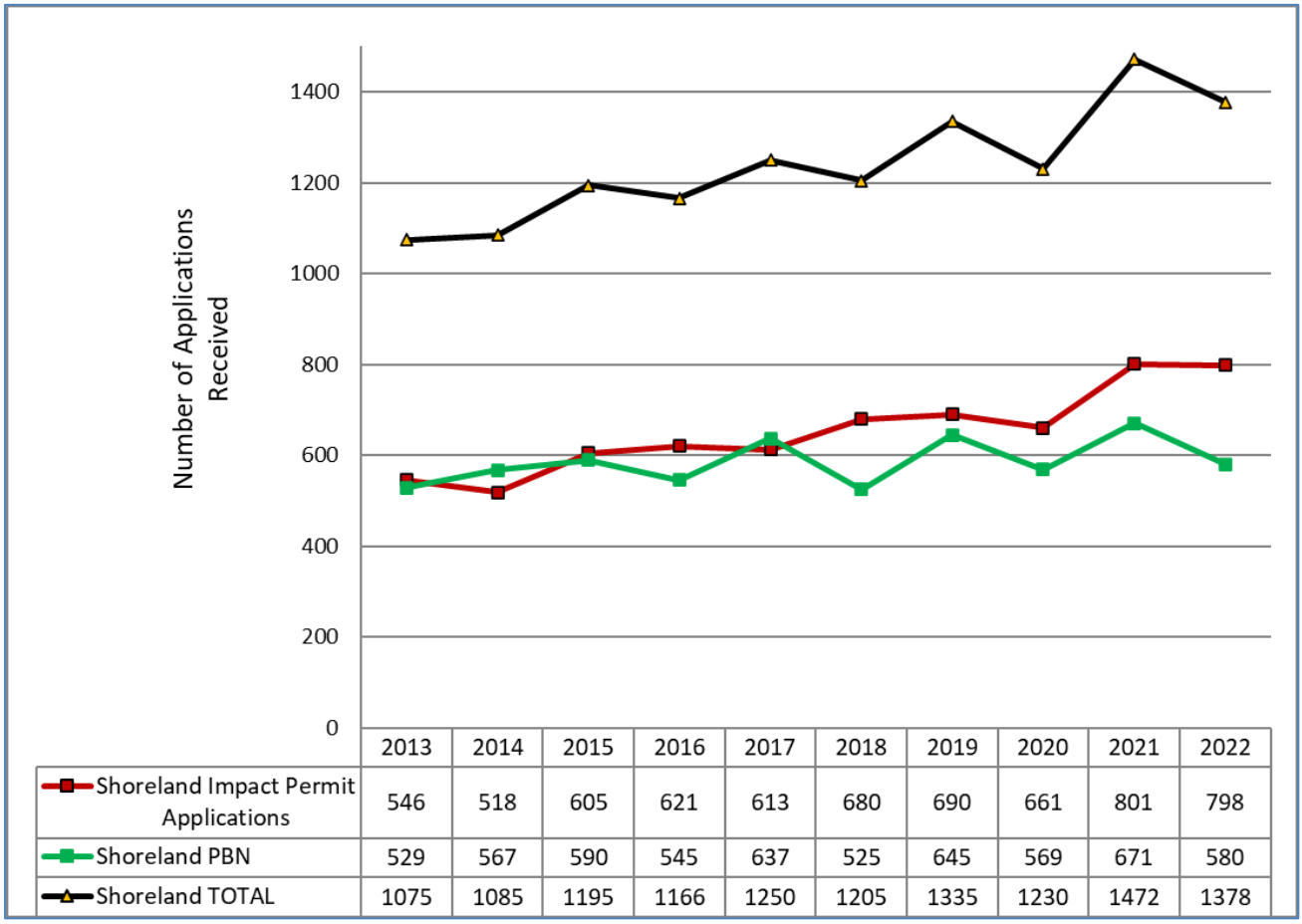
In 2022, NHDES received the second highest number of Shoreland Impact Permit Applications since 2013; this value greatly exceeded the 10-year average (Table 3, Figure 3). The number of Shoreland PBN applications received in 2022 dropped from 2021 but was close to the 10-year average (Table 4, Figure 3). The total number of Shoreland applications however was the second largest in the last 10 years with only 2021 exceeding it. (Tables 3 and 4 and Figure 3)

TABLE 3: 10-YEAR TREND OF SHORELAND IMPACT PERMIT APPLICATIONS RECEIVED (2013 – 2022).

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	AVERAGE
546	518	605	621	613	680	690	661	801	798	653

TABLE 4: 10-YEAR TREND OF SHORELAND PBN APPLICATIONS RECEIVED (2013 – 2022).

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	AVERAGE
529	567	590	545	637	525	645	569	671	580	586



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Shoreland Impact Permit Applications	546	518	605	621	613	680	690	661	801	798
Shoreland PBN	529	567	590	545	637	525	645	569	671	580
Shoreland TOTAL	1075	1085	1195	1166	1250	1205	1335	1230	1472	1378

FIGURE 3: 10-YEAR TREND OF ALL SHORELAND PERMIT APPLICATIONS/PBNS RECEIVED (2013 – 2022).

The online process to register non-tidal docking structures for maintenance and repairs initiated in June 2021 has entered its second year. Improvements to the process included the ability to accept online payments making it the first full e-permitting process in use by the Wetlands program. The number of applications increased from 2021 to 2022 for both electronic (12 to 55) and hardcopy (11 to 40) submissions. The experience gained in developing this online process will greatly inform the continued adaptation of operations to become fully digital.

MODIFICATION REQUESTS

Table 5 shows the number of modification requests acted upon in 2022. All modifications were approved, and most came in the form of amendments.

TABLE 5: 2022 PERMIT MODIFICATION REQUESTS.

Application Type	Amend-ment Approved	Amend-ment Denied	Name Change Approved	Name Change Denied	Time Extension Approved	Time Extension Denied
Wetland – Standard Dredge and Fill	14	-	2	-	-	-

Application Type	Amend-ment Approved	Amend-ment Denied	Name Change Approved	Name Change Denied	Time Extension Approved	Time Extension Denied
Wetlands – Expedited Minimum Impact	2	-	-	-	1	-
Wetlands – PBN	-	-	1	-	-	-
Shoreland – Impact Permit Application	21	-	5	-	-	-
TOTAL	37	0	8	0	1	0

PRE-APPLICATION MEETINGS

The Wetlands Bureau offers technical assistance to applicants by providing pre-application meetings to discuss 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 openness of the 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.

Table 6 summarizes pre-application meetings held in 2022. Only meetings required by rule or statute and/or meetings that meet **all** these conditions are reported:

- Take place by phone, video conference, or in-person, and before an application is submitted for review.
- Upon the request of the subject property owner, future applicant, or designated agent.
- To discuss a specific project with impacts within a defined jurisdictional area or, at a minimum, good pictures or plans showing resources on the property and resources to be impacted.
- Be for a well-defined project.
- Be limited to standard, expedited or shoreland impact permit applications.

TABLE 6: SUMMARY OF 2022 PRE-APPLICATION MEETINGS.

Number of NHDES Wetlands Bureau Staff Attendees per Meeting (A)	Number of Pre-Application Meetings Held (B)	Total Number of Instances Wetlands Bureau Staff Attended a Pre-Application Meeting (A*B)
1	90	90
2	41	82
3	17	51
4	9	36
5	5	25
7	1	7
Total	163	291

PERMITTED WETLAND IMPACTS, RESTORATION, AND ENHANCEMENT

Permitted permanent wetlands impacts changed from 33.8 acres in 2021 to 53.4 in 2022 (Table 7). Table 7 summarizes the impacts based on project type. Most of the impacts permitted in 2022 were for Lot

Development / Commercial / Residential (41.0%) followed by Road Access/Bridge/Stream Crossings (25.5%). The data for 2021 is located in the light blue columns and 2022 data is located in the tan columns.

TABLE 7: PERMITTED PERMANENT WETLAND IMPACTS BY PROJECT TYPE FOR CALENDAR YEARS 2021 AND 2022.

Project Type	Acres	Square Feet	Percent	Acres	Square Feet	Percent
Restoration / Enhancement	8.6	376,630	25.6	9.6	417,561	18.0
Dredge	8.3	361,711	24.6	3.1	134,927	5.8
Road Access/ Bridge/ Stream Crossings	5.3	230,508	15.7	13.6	591,765	25.5
Lot Development/ Commercial / Residential	4.5	194,158	13.2	21.9	951,994	41.0
Bank Stabilization	3.0	129,795	8.8	1.2	50,503	2.2
Other / Fill	2.3	99,304	6.8	2.1	90,283	3.9
Shoreline Structures	1.8	78,213	5.3	2.0	87,047	3.7
Total	33.8	1,470,319	100	53.4	2,324,080	100[2]

Figure 4 shows the recorded permitted impacts by resource type, grouping resource types into the following categories: non-tidal wetland, surface waters/shoreline, tidal, or sand dune/tidal buffer zone. It should be noted that the current database limits the recording of impacts for an application to a single resource type. Therefore, if an application included impacts to several resource types, the reviewer had to assign all impacts to the resource type that covered the most significant impacts, unless the project impacted a tidal wetland. If the project included any impacts to a tidal wetland, the reviewer had been instructed to assign all impacts to tidal wetlands. Stream impacts (including intermittent) were assigned the surface waters/ shoreline type unless the stream was associated with a non-tidal wetland being dredged or filled. In the latter case, a reviewer would assign the impacts to non-tidal wetland. Note that the Wetlands Bureau is currently in the process of improving its database to capture impacts more accurately by resource type; this effort is on track to be completed in 2022. Database enhancements will also eliminate the current over-simplification that results in less accurate impact tracking (refer to EPA Grant Updates).

[2] Percentage does not add to 100% due to rounding errors.

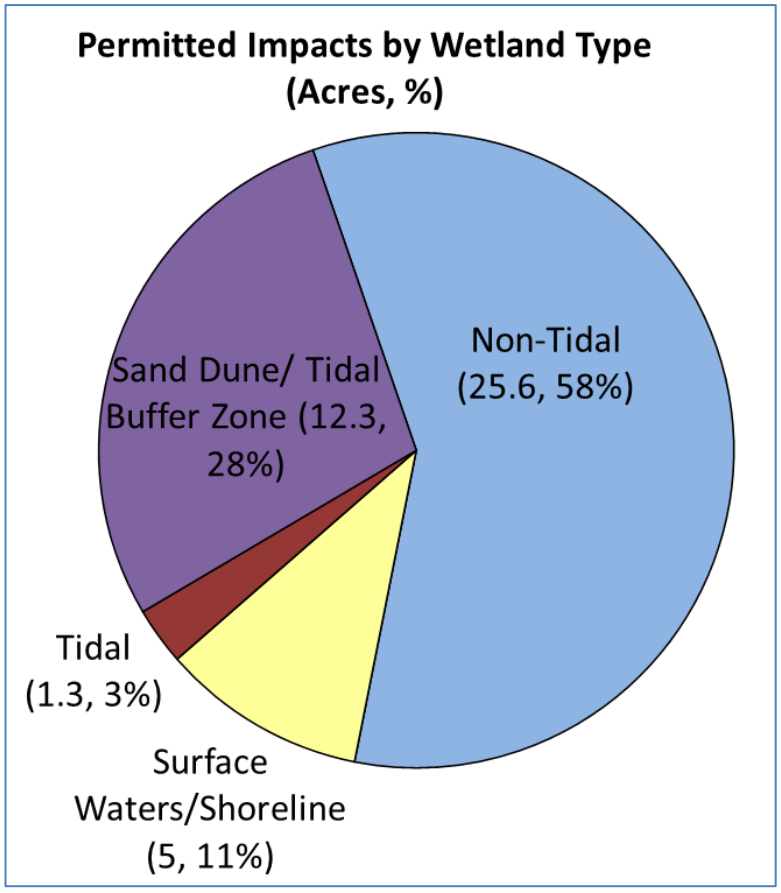
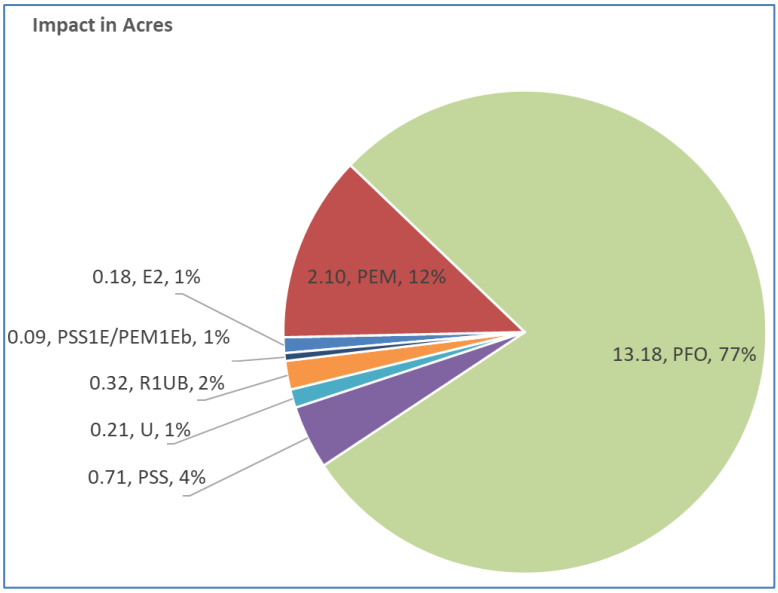


FIGURE 4: 2022 PERMITTED WETLAND IMPACTS BY WETLAND TYPE.

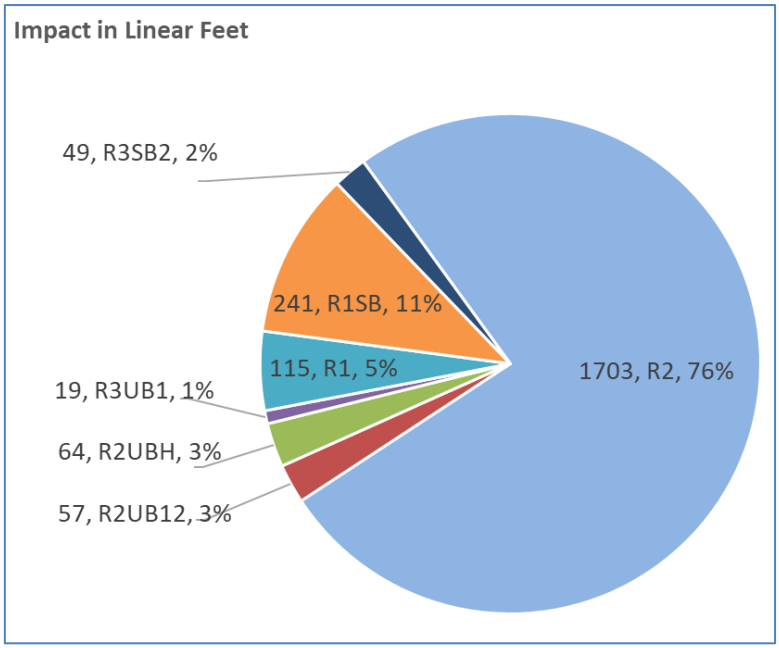
In 2022, there was a total of 17.02 acres of permanent wetland impacts and 2,248 linear feet of stream impacts (Figure 5 and Figure 6) that required compensatory mitigation, for which an in-lieu mitigation payment (ILF) was used as the form of mitigation. Most impacts were to non-tidal forested and emergent wetlands. However, one project had impacts to estuarine wetlands and used an ILF payment as mitigation. The most common wetland (79%) and stream (95%) impacts were from transportation projects (Figure 7Figure 8). The total acres of impacts differ in Table 7 and Figure 4 because some activities are not counted in Figure 4 such as activities adjacent to prime wetlands and enhancement activities.



List of Abbreviations Used
E2: Estuarine Intertidal
PEM: Palustrine Emergent
PFO: Palustrine Forested
PSS: Palustrine Scrub Shrub
PSS1E/PEM1Eb: Palustrine Scrub Shrub Broad-Leaved Deciduous Seasonally Flooded/Saturated/Palustrine Emergent Persistent Seasonally Flooded/Saturated Beaver
R1UB: Estuarine Subtidal Unconsolidated Bottom
U: Upland

FIGURE 5: TYPES OF WETLAND IMPACTS IN ACRES THAT REQUIRED PAYMENT INTO THE ARM FUND IN 2022 (BY COWARDIN CLASSIFICATION).[3]

[3] Percentages do not add to 100% due to rounding errors.



List of Abbreviations Used
R1: Riverine Tidal
R1SB: Riverine Tidal Streambed
R2: Riverine Lower Perennial
R2UB12: Riverine Lower Perennial Unconsolidated Bottom Cobble-Gravel Sand
R2UBH: Riverine Lower Perennial Unconsolidated Bottom Permanently Flooded
R3SB2: Riverine Upper Perennial Streambed Rubble
R3UB1: Riverine Upper Perennial Unconsolidated Bottom Cobble-Gravel

FIGURE 6: TYPES OF WETLAND IMPACTS IN LINEAR FEET THAT REQUIRED PAYMENT INTO THE ARM FUND IN 2022 (BY COWARDIN CLASSIFICATION).[4]

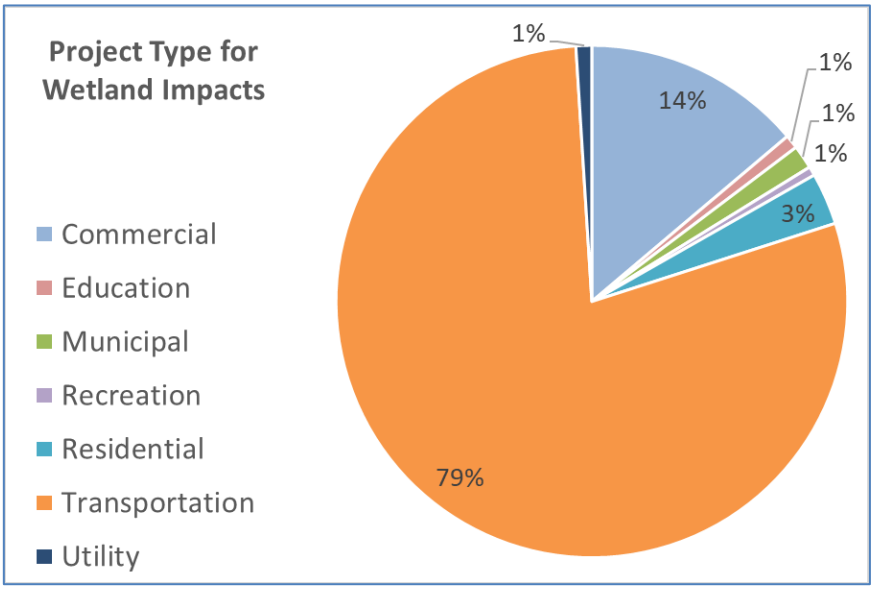


FIGURE 7: SUMMARY OF 2022 WETLAND IMPACTS REQUIRING ARM FUND PAYMENT BY PROJECT TYPE.

[4] Percentages do not add to 100% due to rounding errors.

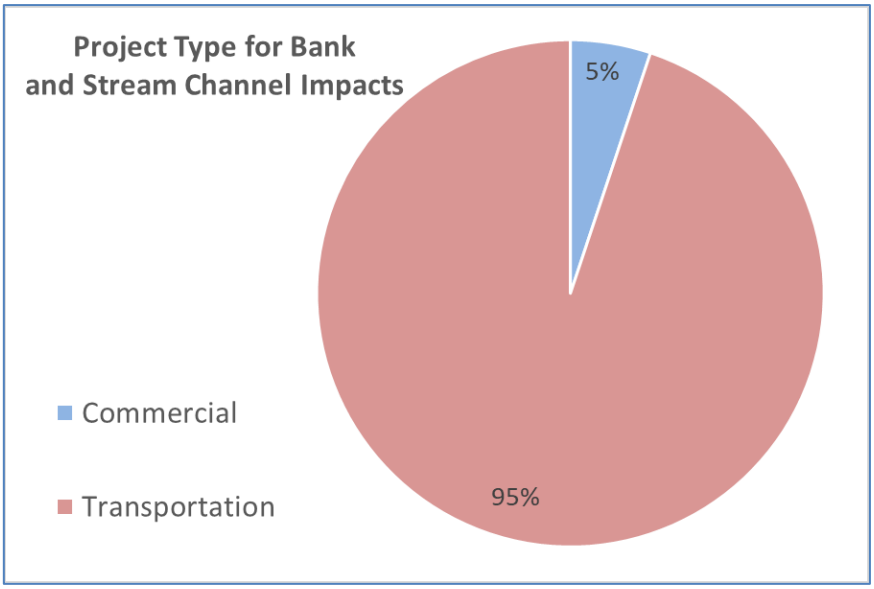


FIGURE 8: SUMMARY OF 2022 BANK AND STREAM CHANNEL IMPACTS REQUIRING ARM FUND PAYMENT BY PROJECT TYPE.

Table 8 lists the total Permittee Responsible Mitigation achieved that is separate from payments into the Aquatic Resources Mitigation Fund.

TABLE 8: APPLICANT COMPENSATORY MITIGATION FOR 2022.

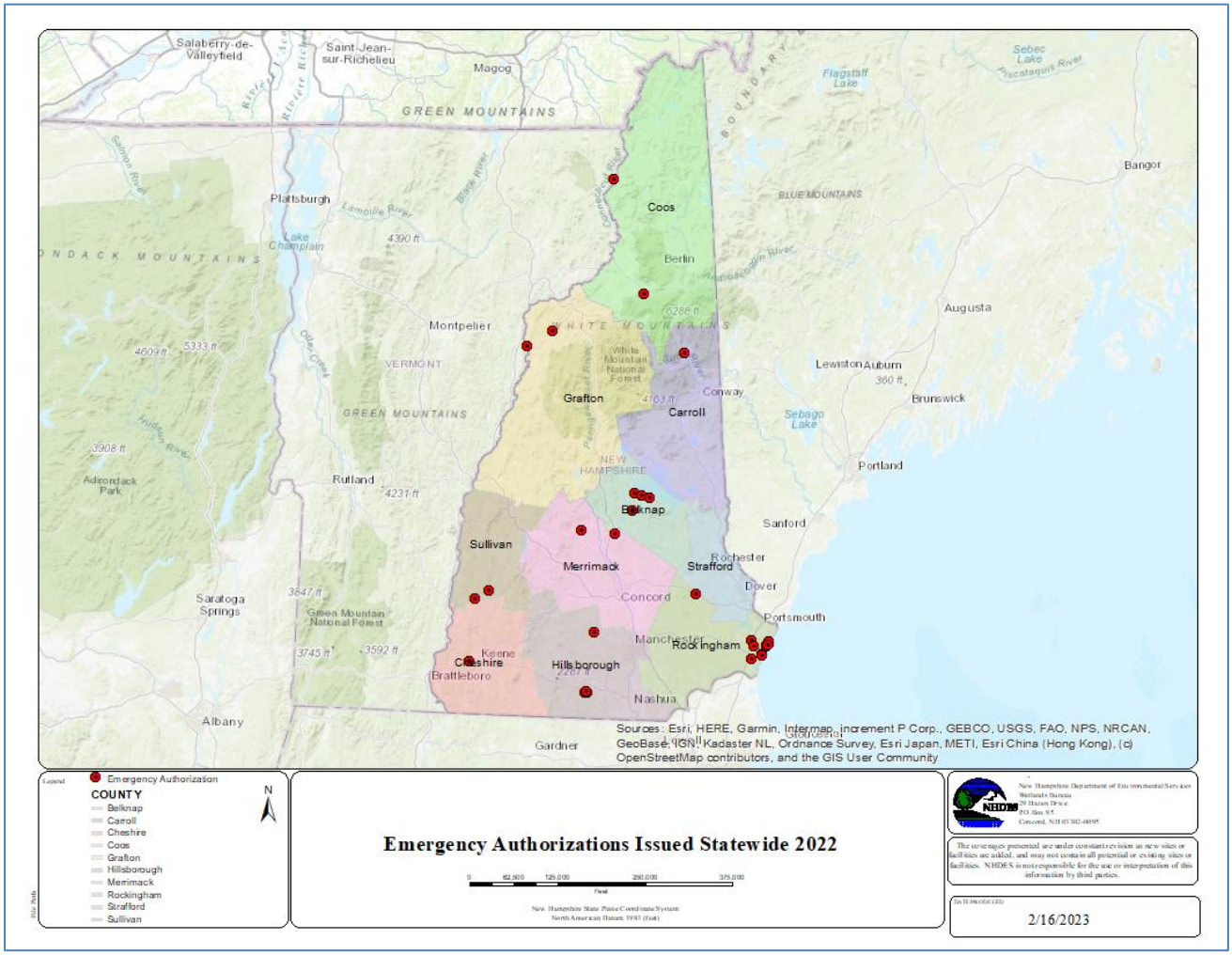
	Conservation (Acres)	Restoration (Square Feet)	Construction (Square Feet)
Permittee Compensatory Mitigation	3,018	71,384	4,270

WETLANDS PROGRAM EMERGENCY RESPONSE SUMMARY

THE WETLANDS PROGRAM ISSUED 31 EMERGENCY AUTHORIZATIONS AFFECTING NINE OUT OF THE 10 COUNTIES IN 2022 (SEE

Figure 9).

FIGURE 9: MAP OF NEW HAMPSHIRE SHOWING THE DISTRIBUTION OF THE EMERGENCY AUTHORIZATION ISSUED IN 2022.



COMPLIANCE ACTIVITIES

COMPLAINTS RECEIVED

Complaints Received by Type

In 2022, the Wetlands Bureau received 260 written complaints: 168 (64.62%) were for alleged violations of RSA 482-A, Fill and Dredge in Wetlands; 65 (25%) were for alleged violations of RSA 483-B, the Shoreland Water Quality Protection Act; 22 (8.46%) were for alleged violations of RSA 485-A:17, Terrain Alteration: and 5 (1.92%) were for alleged violations of water quality standards.

Of the 168 complaints alleging violations of RSA 482-A, 112 (43.08%) related to the dredge and/or filling of wetlands, 24 (9.23%) related to docking structures, 22 (8.46%) related to beaches, retaining walls, or bank alteration, and 10 (3.85%) related to forestry and logging operations. Table 9 and Figure 8 include a breakdown by type and percentage of complaints.

TABLE 9: NUMBER AND PERCENTAGE OF COMPLAINTS BY TYPE FOR CALENDAR YEAR 2022.

Category	Description	Number	Percentage
WET	Wetlands (Dredge and Fill)	112	43.08%
SWQPA	Shoreland Water Quality Protection Act	65	25.00%
DOCK	Dock	24	9.23%
SHORE	Shoreline: Beaches, Retaining Walls	22	8.46%
AOT	Alteration of Terrain	22	8.46%
FORESTRY	Forestry / Logging	10	3.85%
WQ	Water Quality	05	1.92%
TOTALS		**260**	**100%**

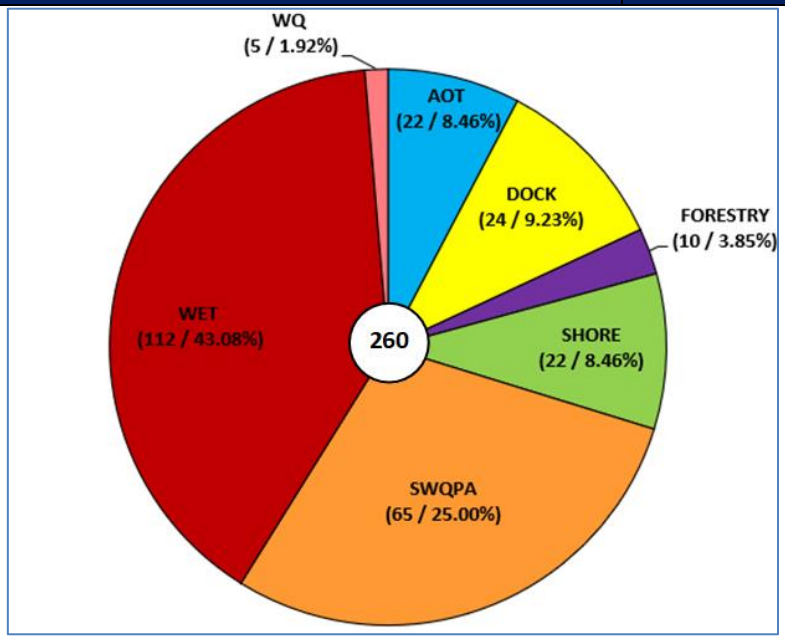


FIGURE 10: NUMBER AND PERCENT OF COMPLAINTS BY TYPE FOR CALENDAR YEAR 2022.

Complaints Received by Year

The number of written complaints received over the past 10 years has varied but ranged from 191 to 214 between 2013 to 2017 and increased significantly from 214 in 2014 to 287 in 2017. They then decreased to 265 in 2020, increased to 299 in 2021, and decreased again to 259 in 2022. Again, the value for 2022 does not include the 28 complaints that were deemed non-jurisdictional or no violation documented. The Wetlands Bureau received the most complaints in 2021 since 2010 (which was 326). The number of complaints received, per year, over the past 10 years is depicted in Figure 11.

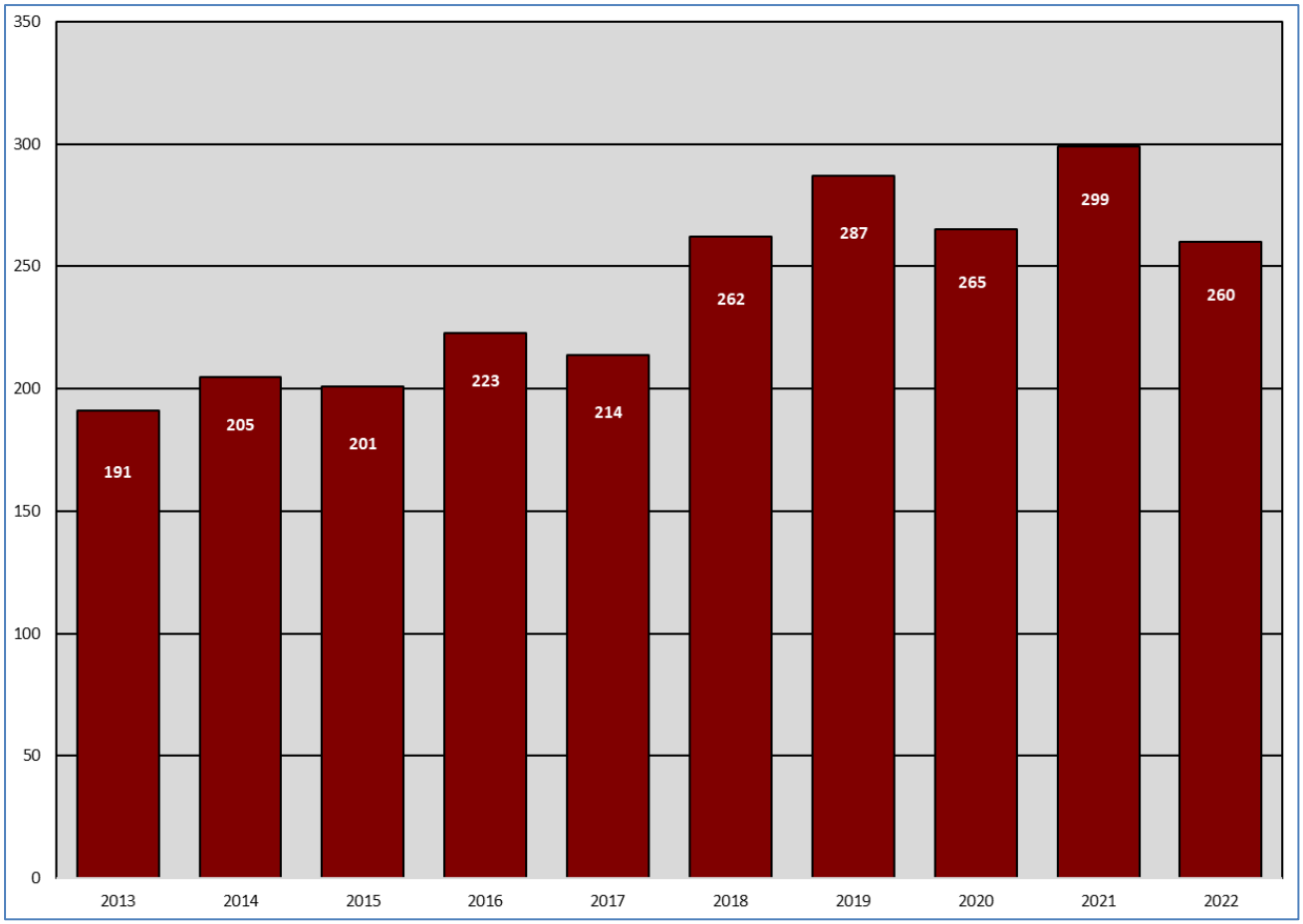


FIGURE 11: 10-YEAR TREND OF NUMBER OF COMPLAINTS RECEIVED (2013 – 2022).

Complaints Received by Month

The number of complaints received by month in 2022 tends to follow the seasons. Complaints received typically increase in spring after snowmelt when construction season begins, peak during summer, subside in autumn, and decrease over winter as depicted in Figure 12.

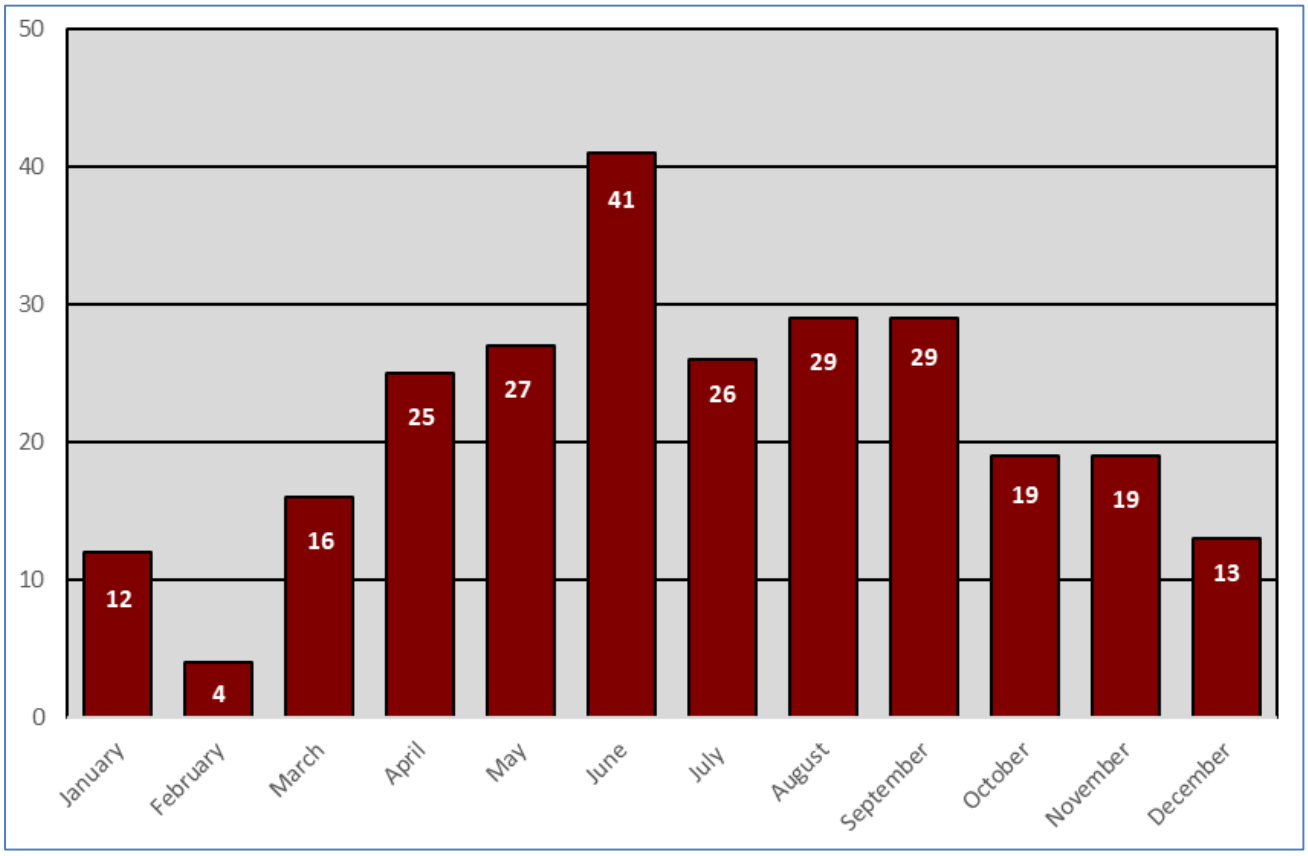


FIGURE 12: COMPLAINTS RECEIVED IN 2022 BY MONTH.

FIELD INSPECTIONS AND REPORTS

In 2022, Wetlands Bureau staff conducted 235 field inspections. The number of field inspections conducted over the past 10 years is depicted in Figure 13.

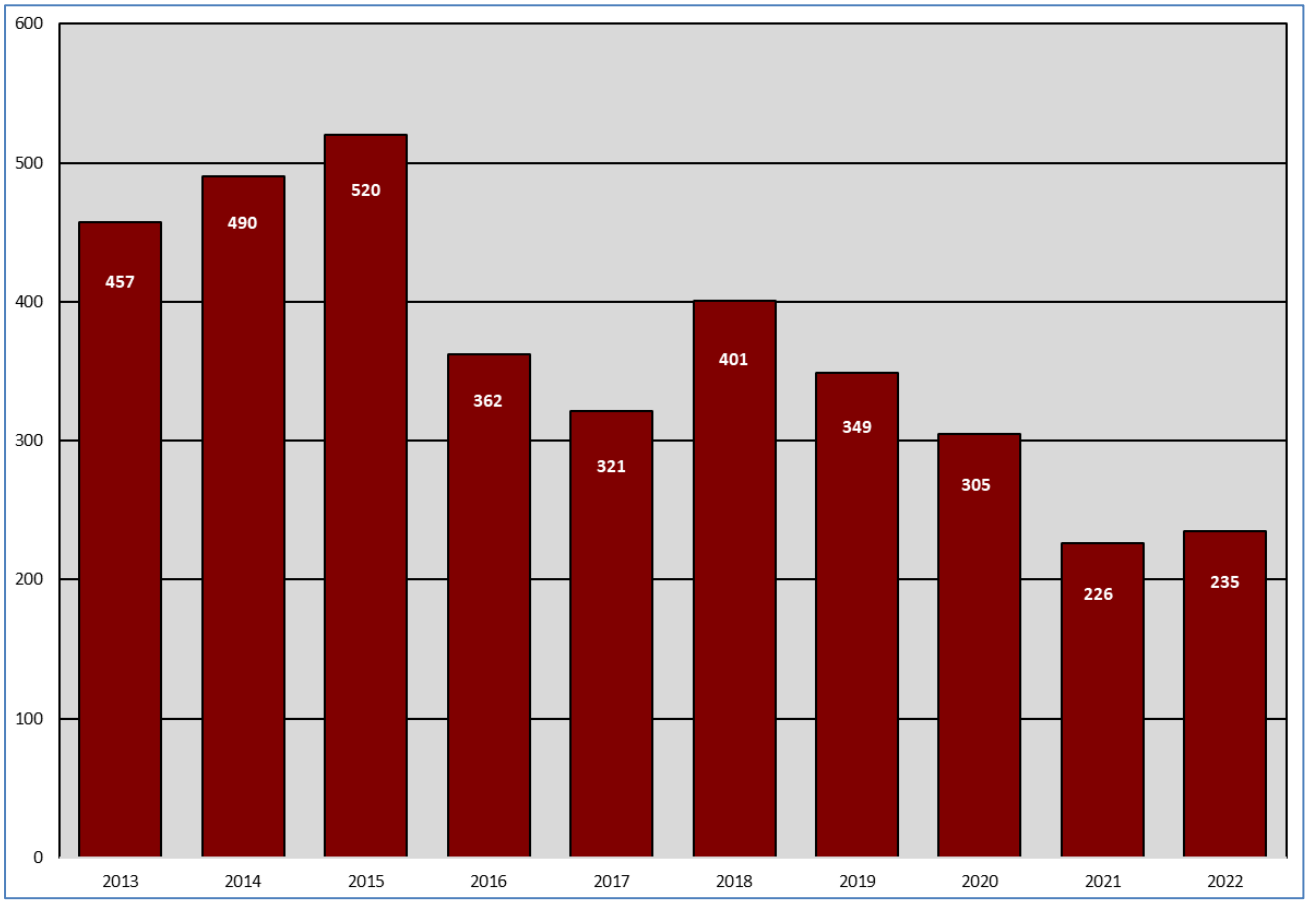


FIGURE 13: 10-YEAR TREND OF NUMBER OF FIELD INSPECTIONS CONDUCTED (2013 – 2022).

COMPLIANCE ACTIONS TAKEN

When possible, the Wetlands Bureau attempts to resolve minimal violations during or immediately following a site inspection through informal means by either issuing an on-site restoration request, or informal actions (letters) such as an Administrative Review / Follow Up Letter, Notice of Findings (akin to a Request for More Information), Notice of Past Violation, "Lower Tier" Violation Letter, or Restoration or Stabilization Plan Approval Letter. In some cases, the Wetlands Bureau will issue a Letter of No Jurisdiction / Violation if no deficiencies are found within jurisdictions that are enforced. Additionally, when closing files, the Wetlands Bureau will typically either issue a Letter of Compliance / Closure either informally or in relation to a Letter of Deficiency that was issued. These are considered informal compliance actions.

In cases where the impact is larger or more environmentally damaging, where the responsible party has a prior enforcement history, or if the responsible party is unwilling to work with the Wetlands Bureau to correct the deficiencies, the Wetlands Bureau may issue more formal actions including a Letter of Deficiency, Administrative Order, referral to the Department of Justice, or imposition of administrative or civil penalties.

In 2022, the Wetlands Bureau issued 358 compliance actions. Of these 316 (88.27%) were informal enforcement actions (listed as informal actions / requests and Notice of Past Violation, separately), and 42 (11.73%) were formal enforcement actions. Of the 42 formal enforcement actions, 37 (88.10%) were Letter of Deficiency letters, two (4.76%) were Administrative Orders, and three 7.14%) were referrals to the

Department of Justice. A 10-year trend of complaints received and compliance action by type is illustrated in Table 10 below.

The Wetlands Bureau uses multi-disciplinary Compliance Case Review Team (CRT) to hear and decide compliance decisions and general compliance program processes. The purpose of CRT is to enhance communication within the Alteration of Terrain Bureau, Wetlands Bureau, Shoreland Program, and Subsurface Bureau, assist staff in selecting appropriate compliance responses, ensure consistency in enforcement actions, and provide management support in compliance decision making. CRT is comprised of the Alteration of Terrain and Wetlands Bureau Administrators and Assistant Administrators, the Shoreland Program Supervisor and Subsurface Compliance Supervisor or their designees to approve requested enforcement actions.

TABLE 10: 10-YEAR TREND OF WETLAND COMPLIANCE ACTIONS BY TYPE (2013 – 2022).

Compliance Action Type	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Complaints Received*	191	205	201	223	214	262	287	265	299	259
Informal Actions / Requests	22	265	337	276	273	284	308	222	297	303
Notice of Past Violation	58	49	20	07	07	13	11	17	11	13
Total Informal Enforcement Actions	80	314	357	283	280	297	319	239	308	316
Letter of Deficiency**	25	45	43	41	46	49	34	35	31	37
Administrative Fine (Proposed)	01	03	03	05	00	01	03	00	00	00
Administrative Order	03	17	06	03	07	09	05	04	01	02
Referral to the Department of Justice***	02	05	05	02	04	05	12	01	01	03
Total Formal Enforcement Actions	31	70	57	51	57	64	54	40	33	42
Total Enforcement Actions	111	384	414	334	337	361	373	279	341	358

Table notes:

* “Complaints Received” include those alleging violations of RSA 482-A, RSA 483-B, and RSA 485-A:17 and applicable rules. Alteration of Terrain complaints are included since many times they are associated with wetland allegations 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-, RSA 483-B, and RSA 485-A:17 and applicable rules. Letters of Deficiency for Alteration of Terrain are included since many times wetland and /or Shoreland violations are also involved. Letters of Deficiency do not include those alleging violations of RSA 485-A relative to septic systems and waste disposal.

*** “Referrals to the Department of Justice” include Requests for Representation for an appeal of an Administrative Order and Requests for Enforcement. These do not include Requests for Representation for an appeal of a permit decision.

ADMINISTRATIVE FINES AND CIVIL PENALTIES

In 2022, the Wetlands Bureau collected approximately $175,100 in administrative fines and civil penalties. A 10-year trend of civil penalties and administrative fines collected for violations of RSA 482-A are illustrated in Figure 14.

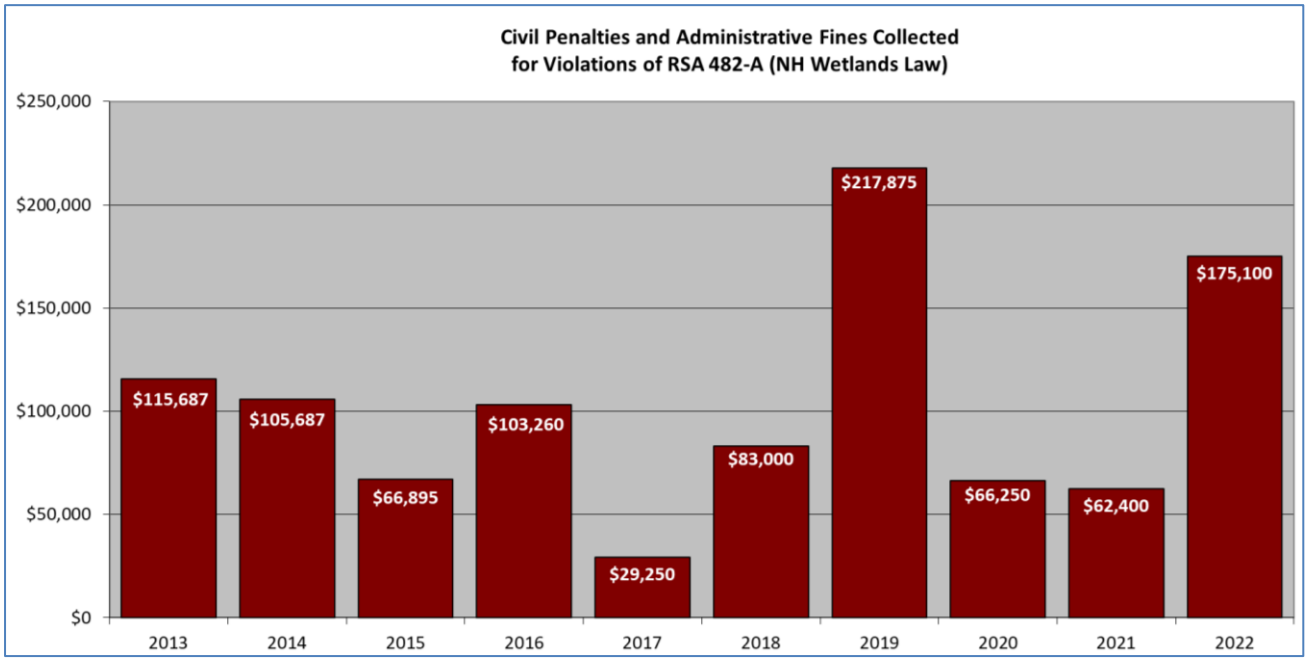


FIGURE 14: 10-YEAR TREND OF CIVIL PENALTIES AND ADMINISTRATIVE FINES COLLECTED FOR VIOLATIONS OF RSA 482-A.

AQUATIC RESOURCE MITIGATION FUND PROGRAM

SUMMARY

Payment to the Aquatic Resource Mitigation (ARM) Fund is a compensatory mitigation option available for applicants when suitable, local permittee-responsible mitigation is unavailable. Since the ARM Fund was established in 2006, 289 NHDES Standard Dredge and Fill Wetlands Applicants have used this form of compensatory mitigation. These funds have been used to support projects that restore, enhance, and preserve aquatic resources and associated upland buffers. A total of $5,137,383 has been collected by the ARM Fund since 2006. Since 2007, ARM has awarded $25,073,684 to support 141 mitigation projects state-wide. Most projects funded to date (75%) are protection of high-value aquatic resources and their upland buffer, totalling 28,078 acres of land conservation, which includes 4,047 acres of wetland, 117 miles of stream, and 422 vernal pools. The ARM Fund has supported 59 restoration and/or enhancement projects, with 23 projects enhancing 54 miles of aquatic habitat for fish passage through dam removals and culvert upgrades. Several projects (22) have included both land preservation and restoration or enhancement.

FY 2022 PERMITS ISSUED WITH ARM FUND AS COMPENSATORY MITIGATION COMPONENT

In State Fiscal Year (FY) 2022 (July 1, 2021, through June 30, 2022), ARM Fund payments were received for 44 permits. These resulted in 15.77 acres of wetland loss and 5,701 linear feet of stream loss. The ARM Fund received approximately $6,854,025.18 in the payments collected. Table 11 lists the projects permitted in FY 2022 for which the wetland permit holders selected payment to the ARM Fund to satisfy mitigation requirements.

TABLE 11: WETLAND PERMITS ISSUED IN FY 2022 USING ARM FUNDS (JULY 1, 2021 – JUNE 30, 2022).

NHDES Permit #	Service Area	Wetland Loss (Square Feet)	Wetland Loss (Acres)	Stream Loss (Linear Feet)	ARM Fund Permit Fee ($)	ARM Fund Administrative Fee ($)	ARM Fund Total Payment ($)
2021-298	Merrimack	3,650	0.08	0	17,218.50	3,443.70	20,662.20
2020-3157	Merrimack	14,099	0.32	0	66,510.57	13,302.12	79,812.69
2019-3774	Lower Connecticut	5,701	0.13	490	126,884.07	25,376.81	152,260.88
2020-855	Merrimack	0	0	31	7,079.16	1,415.83	8,494.99
2019-3910	Merrimack	5,275	0.12	0	24,251.96	4,850.39	29,102.35
2021-299	Upper Connecticut	0	0	395	90,202.20	18,040.44	108,242.64
2020-3250	Merrimack	3,749	0.09	0	16,279.97	3,256.00	19,535.97
2020-956	Merrimack	97,621	2.24	270	522,174.18	104,434.84	626,609.02
2021-2151	Salmon Falls-Piscataqua Rivers	304	0.01	0	1,498.27	299.66	1,797.93
2020-02597	Saco	400	0.01	0	1,370.35	274.07	1,644.42
2021-1839	Salmon Falls-Piscataqua Rivers	237	0.01	0	1,073.49	214.70	1,288.19

NHDES Permit #	Service Area	Wetland Loss (Square Feet)	Wetland Loss (Acres)	Stream Loss (Linear Feet)	ARM Fund Permit Fee ($)	ARM Fund Administrative Fee ($)	ARM Fund Total Payment ($)
2021-1499	Upper Connecticut	2,850	0.07	0	10,059.97	2,011.99	12,071.96
2021-1235	Merrimack	0	0	13	3,235.83	647.17	3,883.00
2021-728	Salmon Falls-Piscataqua Rivers	37,405	0.86	0	149,645.39	29,929.08	179,574.47
2021-442	Salmon Falls-Piscataqua Rivers	40,400	0.93	0	149,355.14	29,871.03	179,226.17
2021-1116	Merrimack	316	0.01	0	1,566.70	313.34	1,880.04
2021-2440	Salmon Falls-Piscataqua Rivers	71	0	0	285.18	57.04	342.22
2021-643	Salmon Falls-Piscataqua Rivers	71,298	1.64	369	374,956.11	74,991.28	449,947.39
2020-3261	Upper Connecticut	65.00	0	0	227.78	45.56	273.34
2021-1718	Salmon Falls-Piscataqua Rivers	406	0.01	0	2,012.91	402.58	2,415.49
2021-02838	Lower Connecticut	2,877	0.07	0	10,216.39	2,043.28	12,259.67
2021-00596	Pemigewasset - Winnipesauke Rivers	13,000	0.30	0	55,832.42	11,166.48	66,998.90
2019-3832	Contoocook	22,686	0.52	0	74,007.78	14,801.55	88,809.33
2021-01500	Contoocook	54	0	79	18,228.13	3,645.63	21,873.76
2020-2075	Pemigewasset - Winnipesauke Rivers	9,575	0.22	0	41,610.56	8,322.09	49,932.65
2020-2767	Pemigewasset - Winnipesauke Rivers	158	0	0	576.69	115.34	692.03
2021-2209	Contoocook	26,610	0.61	0	97,178.88	19,435.78	116,614.66
2021-2208	Contoocook	10,402	0.24	0	37,987.77	7,597.56	45,585.33
2021-2532	Salmon Falls-Piscataqua Rivers	900	0.02	0	4,462.12	892.42	5,354.54
2021-2173	Merrimack	0	0.00	0	27,733.28	5,546.72	33,280.00
2017-897	Merrimack	9,000	0.21	0	30,000.00	0.00	30,000.00
2021-2683	Merrimack	384	0.01	0	1,903.84	380.77	2,284.61

NHDES Permit #	Service Area	Wetland Loss (Square Feet)	Wetland Loss (Acres)	Stream Loss (Linear Feet)	ARM Fund Permit Fee ($)	ARM Fund Administrative Fee ($)	ARM Fund Total Payment ($)
2021-3738	Salmon Falls-Piscataqua Rivers	50.00	0.00	0	247.89	49.58	297.47
2021-3463	Salmon Falls-Piscataqua Rivers	2,820	0.06	0	13,898.45	2,779.70	16,678.15
2021-2369	Lower Connecticut	13,094	0.30	0	56,632.49	11,326.50	67,958.99
2019-3500	Salmon Falls-Piscataqua Rivers	32,006	0.73	0	158,682.68	31,736.53	190,419.21
2021-3595	Contoocook	0	0	57	14,187.87	2,837.57	17,025.44
2021-2109	Merrimack	0	0	0	51,413.47	10,282.69	61,696.16
2020-3249	Salmon Falls-Piscataqua Rivers	0	0	0	15,270.34	3,054.07	18,324.41
2021-1650	Merrimack	311	0.01	0	1,541.91	308.38	1,850.29
2021-2950	Salmon Falls-Piscataqua Rivers	14,000	0.32	241	198,808.62	39,761.72	238,570.34
2021-2925	Pemigewasset - Winnipesauke Rivers	10,508	0.24	0	52,100.63	10,419.53	62,520.16
2018-3134	Merrimack	234,853	5.39	3,756	3,017,690.51	751,395.88	3,769,086.39
Total		**687,135**	**15.77**	**5,701**	**$5,593,473.23**	**1,260,551.95**	**$6,854,025.18**

ARM FUND DISBURSEMENTS IN FY 2022

The ARM Fund program grants funds to projects involving wetland or stream restoration, wetland enhancement, and preservation of upland buffers associated with high quality aquatic resources. Table 12 lists the projects that were granted funds during FY 2022.

TABLE 12: ARM FUND DISBURSEMENTS FOR PROJECTS IN FY 2022 AND ACTIVE PROJECTS.

Project Name	Applicant	Award Year	Award Amount ($)	Funds Previously Disbursed ($)	FY 2022 Disbursements ($)	Remaining Award ($)
PEMIGEWASSET-WINNIPESAUKEE SERVICE AREA						
Beebe River Restoration	Grafton County Conservation District	2020	150,000	0	116,500.00	33,500.00

Project Name	Applicant	Award Year	Award Amount ($)	Funds Previously Disbursed ($)	FY 2022 Disbursements ($)	Remaining Award ($)
SALMON FALLS-PISCATAQUA SERVICE AREA						
Birch Ridge Community Forest	Southeast Land Trust of NH	2018	207,870.00	202,420.00	5,450.00	0.00
ARM Oyster Reef & Great Bay	The Nature Conservancy	2015	190,500.00	170,758.78	742.34	19,048.88
Barnes Conservation Easement	Bear-Paw Regional Greenways	2020	74,000.00	0.00	74,000.00	0.00
Lubberland Creek Restoration	Town of New Market	2018	200,000.00	178,608.00	10,696.00	10,696.00
MERRIMACK SERVICE AREA						
Stillhouse forest	Society for the Protection of New Hampshire Forests	2020	125,000.00	0.00	125,000.00	0.00
McQuesten Brook	NH Rivers Council	2015	34,500.00	321,870.00	9,130.00	0.00
CONTOOCOOK SERVICE AREA						
Warner Headwaters	Ausborn Sargent Land Preservation Trust	2020	175,000.00	0.00	175,000.00	0.00

ARM FUND AWARDS ANNOUNCED IN JANUARY 2022

NHDES announced the availability of funds in the Salmon Falls – Piscataqua River service area in February 2021 as noted in Table 13. These awards were made in FY 2022. NHDES will report on these grants in next year's annual report. Ten pre-proposals were submitted and reviewed by NHDES, the Site Selection Committee, and the Army Corps of Engineers (USACE), and feedback was provided to the applicants. The funding request for the ten projects totalled $2,451,000. Seven full application submittals were received by August 31, 2021, for a total request of $1,866,306. The members of the Site Selection Committee, representatives from the USACE, EPA, and NHDES staff visited the full application sites on October 5 and 7, 2021. On October 21, 2021, the Committee and federal agency representatives convened to evaluate and rank the applications and recommended fully funding all seven projects. The summaries in Appendix I provide details of the awards announced by the Site Selection Committee. These summaries include a brief description of the gain in resources from each project awarded funds according to the service areas.

TABLE 13: ARM FUNDS AVAILABLE FOR 2022 GRANT ROUND.

Service Area	Functions and Values to be Replaced	Wetland Loss (acres)	Stream Loss (linear feet)	Total Funds Available ($)
Androscoggin River	None	-	-	0
Contoocook River	Shoreline Anchoring; Fisheries Habitat; Flood Storage; Sediment and Nutrient Retention; Water Quality	1.37	93	258,285

Service Area	Functions and Values to be Replaced	Wetland Loss (acres)	Stream Loss (linear feet)	Total Funds Available ($)
	PFO, PSS, PEM			
Lower Connecticut River	Floodplain Storage; Wildlife Habitat; Shoreline Anchoring; Fisheries Habitat; Sediment and Nutrient Retention PFO; PSS; PEM; PEM1Ex; R2UB	1.19	2,048	733,405
Merrimack River	Wildlife Habitat; Ecological Integrity; Storage; Fisheries Habitat; Shoreline Anchoring; Water Quality; Groundwater Recharge PEM; PFO; PSS; R2; R3; R2UB2; R4	4.98	2,099	1,575,120
Middle Connecticut River	Water Quality; Wildlife Habitat PFO; PSS	0.55	0	130,430
Pemigewasset-Winnipesaukee	Water Quality; Sediment and Nutrient Retention; Shoreline Anchoring; Fisheries Habitat; Wildlife Habitat (vernal pool degradation); Flood Storage PFO; PEM; L2UB	0.33	0	151,380
Saco River	None	-	-	0
Salmon Falls-Piscataqua	Ecological Integrity; Water Quality; Wildlife Habitat; Flood Storage; Sediment and Nutrient Retention; Fisheries Habitat TBZ; PSS; PEM; PFO	3.83	369	746,890
Upper Connecticut	Ecological Integrity; Flood Storage; Groundwater Recharge; Wildlife Habitat; Shoreline Anchoring; Fisheries Habitat PSS; PEM; R2UB2	.07	395	137,490

STATUS OF THE ARM FUND ACCOUNT

State FY 2022 ended with a positive balance for all nine ARM Fund service areas. Table 14 describes revenues, expenses, encumbered funds, and interest earned for each service area, as well as a beginning and end balance.

TABLE 14: STATUS OF ARM FUND ACCOUNTS ACCORDING TO SERVICE AREA.

Services Areas	Beginning Balance (7/1/2021) ($)	Revenues ($)	Expenses ($)	Encumbered ($)	Interest earned ($)	Ending Balance (6/30/2022) ($)
Androscoggin River	133,148.37	2,094.91	-	-	94.91	135,338.19
Saco River	81,667.55	1,370.35	-	71,631.00	-	11,406.90

Services Areas	Beginning Balance (7/1/2021) ($)	Revenues ($)	Expenses ($)	Encumbered ($)	Interest earned ($)	Ending Balance (6/30/2022) ($)
Pemigewasset to Winnipesaukee Rivers	218,654.72	151,826.70	116,500.00	33,500.00	1,706.40	222,187.82
Salmon Falls to Piscataqua Rivers	2,732,019.02	1,075,813.71	90,888.34	2,471,195.34	5,617.12	1,251,366.17
Merrimack River	2,087,372.15	3,857,327.83	134,130.00	439,678.00	21,355.17	5,392,247.15
Lower Connecticut River	959,448.14	208,758.69	-	273,183.00	14,917.74	909,941.57
Contoocook River	384,936.01	241,687.78	175,000.00	165,000.00	97.35	286,721.14
Middle Connecticut River	268,281.55	2,529.23	-	117,525.00	2,529.23	155,815.01
Upper Connecticut River	48,295.19	100,511.03	-	18,609.71	21.08	130,217.59
TOTAL ($)	**6,913,822.70**	**5,641,920.23**	**516,518.34**	**3,590,322.05**	**46,339.00**	**8,495,241.54**

STATUS OF ADMINISTRATIVE ASSESSMENT ACCOUNT

One component of an ARM Fund payment is an administrative assessment established by RSA 482-A:30, III and RSA 482-A:30-1, II. The status of the account is noted in Table 15.

TABLE 15: STATUS OF ADMINISTRATIVE ASSESSMENT ACCOUNT.

Beginning Balance July 1, 2021 ($)	Revenues ($)	Expenses ($)	Ending Balance June 30, 2022 ($)
928,101.24	1,251,831.95	312,031.57	1,867,901.62

LEGISLATION AND RULEMAKING

LEGISLATION

The 2022 Legislative session was exceptionally quiet. Only one bill affecting wetland or shoreland permitting was filed. This bill would have eliminated wetlands permitting of a wide range of projects currently meeting the New Hampshire minimum impact classification which generally correlated to the Self Verification category under New Hampshire's General Permit issued by the US Army Corps of Engineers. This bill failed to proceed past the House committee in which it was first heard. The 2022 wetlands and shoreland legislation is listed below in Table 16.

TABLE 16: NEW HAMPSHIRE WETLANDS LEGISLATION CY 2022.

Bill Number	Topic	Status	Last Session
HB 1418	Wetland Minimum Impact Permitting	Inexpedient to Legislate	2/16/2022

RULEMAKING

There were no new rulemaking efforts that occurred during 2022. NHDES staff did continue a comprehensive review of the current rules identifying potential improvements for future rulemaking efforts.

COMMUNICATIONS AND OUTREACH/EDUCATION

NHDES Wetlands Bureau staff participated in 15 outreach events (several of these extended beyond one day) and 17 internal trainings. The Wetlands Bureau continued to receive requests for outreach that could not be met. The public see these events in a very positive way, and NHDES is excited to establish resources through a new Outreach Team that will be able to accommodate these requests in 2023.

TABLE 17: WETLANDS OUTREACH PRESENTATIONS FOR CALENDAR YEAR 2022.

Event	NHDES Wetlands Presenter (s)	Date	Topic(s)	Location	Attendees
NHANRS Annual Conference	Phil Trowbridge, Darlene Forst, Lori Sommer	1/28, 2/4	LRM Updates & ARM Fund Program Overview	Remote Live conference	Wetland and Soil Scientists
NH Legislative Trails Trail Committee meeting	Mary Ann Tilton	2/14	Wetlands Trails rule & BMPs	Concord, NH	Rail Trails Committee
In Lieu Fee National Workgroup	ILF Group	4/7	ARM Fund ILF Program	Webinar	National ILF Program Representatives
NH Timberland Owners Association	Eileen Bilodeau	4/12	NHDES Forestry BMPs	Conway	Fire Department
Wetlands Council meeting	Mary Ann Tilton	4/12	Prime Wetlands	Concord, NH	Wetlands Council
NH River Restoration Task Force Meeting	Cheryl Bondi	4/13	ARM Fund Program Overview	Webinar	NH River Restoration Task Force Members
NH River Council	Cheryl Bondi	4/14	ARM involvement in stream crossing restoration initiatives	Webinar	NH Rivers Council Members
NH Timberland Owners Association	Eileen Bilodeau	4/19	NHDES Forestry BMPs	Peterborough	Foresters/Loggers
Joint Mid-Atlantic & NEBAWWG meeting	Various on Wetland state updates and Assessment (& Mary Ann Tilton)	5/10-5/12	Climate Change & Wetland & Stream assessment in NH	Baltimore, MD	Mid-Atlantic & New England states
WOTUS Regional Roundtable sessions	EPA	6/21	Federal WOTUS Comment session	Remote meeting	Northeast and mid-Atlantic states
NAWM Annual meeting	Various presenters	8/15-8/19	State & Federal regulatory &	Shepherdstown, W. VA	Wetland Scientists/regulators

Event	NHDES Wetlands Presenter (s)	Date	Topic(s)	Location	Attendees
	(NHDES attendee – Mary Ann Tilton)		wetland science updates		
Water Quality Training	NHDES staff; Phil Trowbridge, Karl Benedict, Ridge Mauck, Dale Keirstead; NHDES, Darlene Forst, UNHSC Jamie Houle, Randy Shuey	9/16-9/23	LRM water quality training and Stormwater BMPs	Online live Remote trainings	NHDOT & Wetlands Scientists & NHDES staff
NH Timberland Owners Association	Eileen Bilodeau	10/27		Campton-White Mountain National Forest	Foresters/Loggers
NHACC Annual meeting	Mary Ann Tilton	11/4	National Wetland Inventory mapping (NWI)	Concord, NH	NH Conservation Commissioners
NHACC Annual meeting	Mary Ann Tilton	11/4	Wetland permit planning tool	Concord, NH	NH Conservation Commissioners

Table 18 shows internal trainings given to LRM staff. The Wetlands Bureau staff received valuable training in the field on the topics of winter tree identification, vernal pools, hydric soil identification, and wetland delineation using the three-parameter approach. Additionally, training was provided on preventing Governor and Council errors and writing more appropriate findings. More trainings are planned next year with a focused priority of understanding standard operating procedures (changes and new), field safety, plan review and interpretation, conducting field inspections and writing an effective field report, as well as writing legal decisions, sharpening professional writing skills and clearing up rule confusion. Our new Communications Team will be focusing on how to submit complete applications/how to avoid common mistakes as well as how to ensure a smoother application process. A Communications and Training Plan outlines these annual training targets.

TABLE 18: WETLANDS BUREAU INTERNAL TRAININGS FOR CALENDAR YEAR 2022.

Training	Attendees	Date	Training by
NH Wildlife Corridors	Wetlands permitting staff	2/8/22	NH Fish & Game -Katie Callahan
Winter tree ID/Soils	Wetlands permitting	3/1/22	Mary Ann Tilton/Karen Dudley
Vernal Pools (remote)	Permitting staff	3/22/22	Sandy Crystall
Vernal Pools field session	Permitting staff	4/12/22	Sandy Crystall
Preventing Governor & Council errors	Permit Supervisors	5/17/22	Phil Trowbridge
NHSCI Stream protocol	Towns, general public, NHDES Interns	5/20/22	Shane C, Cheryl Bondi, John Magee (NH Fish & Game)
Hydric soils Field training	Permitting Staff	5/24/22	Mary Ann Tilton & NRCS scientists
UNH ARRPA Stream crossing training	Summer Interns	6/6/22	NHSCI – Cheryl Bondi, Geology
Wetland Crossing training	UNH, NH Fish & Game, NHDES	6/13/22	UNH, NHDES, NH Fish and Game

Training	Attendees	Date	Training by
Hydric Soils field training	Wetlands Bureau staff	6/30/22	Mary Ann Tilton & NRCS soil scientists
Groundwater mapping tools	Wetlands permit staff	7/26/22	Andrew Koff, PG, Groundwater Bureau
Wetland Delineation Training	Wetlands Bureau Staff	8/11, 8/12, 8/25, 8/26	Joe Homer & Sandy Crystall

PROGRAM HIGHLIGHTS

PERMITTING AND ENFORCEMENT LETTER TEMPLATE UPDATES

In 2022, 42 permitting and enforcement letter templates for wetlands and shorelands were revised. These letters were revised to ensure compliance with rules and statutes, for ease of use by staff and readability by the public, for compliance with NHDES publishing guidelines, and for consistency.

MITIGATION PROGRAM UPDATES

The Aquatic Resource Mitigation (ARM) Fund Program is working with the Army Corps and members of the Interagency Review Team to update and finalize New Hampshire's In-Lieu Fee Program Instrument. The purpose of this instrument is to document the guidelines, responsibilities and standards for the use, operation, and maintenance of the ARM Fund in compliance with the Federal Mitigation Rule. NHDES will work with the Corps to ensure that the updated instrument meets requirements of aquatic resource compensation and reflects the sole responsibility of NHDES for providing compensatory mitigation for projects that have paid into the ARM Fund. This Instrument, once finalized, will supersede the previous Instrument governing NHDES operations once finalized and will support the shift to promote the restoration, enhancement, and establishment of aquatic resources. Despite the success of the ARM Fund, New Hampshire is not meeting the goal of no net loss of wetland functions. Historically, ARM Fund awards have focused on land preservation to protect aquatic resources and their buffers. Preservation reduces the threat of future impacts to our limited aquatic resources, but preservation alone does not replace the lost functions, values, or acreage. To address this discrepancy, the ARM Fund will target projects with a high likelihood of success to support significant restoration, enhancement, establishment, and, in some circumstances, preservation, at the larger landscape scale in watersheds that have sustained significant loss through wetland or stream permit decisions.

The ARM Fund Program continues to work with the Site Selection Committee, Army Corps, and members of the Interagency Review Team to encourage efforts to restore, enhance and establish resources to achieve greater outcomes from funded projects. Previous efforts to promote restoration projects resulted in an increase in grant proposals incorporating restoration in 2022. Of the 14 projects awarded funding in 2022, six projects focus on aquatic resource restoration and enhancement with or without a preservation component. In preparation for the 2023 grant round, program staff will continue targeted outreach to identify restoration projects in the Merrimack, Salmon Falls-Piscataqua Service Area, Lower Connecticut, Upper Connecticut, and Pemigewasset-Winnipesaukee service areas. This continued effort is intended to support an overall gain in resource functions and values, and focus funding on the highest-value projects that generate optimal federal credits.

In concert with the database improvements, the mitigation program has focused on tracking projects that are approved as self-mitigating. Per Administrative Rule Env-Wt 902.27, the term "self-mitigating" means that the design of a stream crossing incorporates measures or features to offset the loss of the affected resource's function and values. Examples of self-mitigating measures or features include eliminating a barrier to aquatic organism passage, improving the hydraulic capacity of an under-sized crossing, and improving geomorphic compatibility. These on-site enhancements, when implemented, will offset losses in function of the impacted resource due to the existing crossing, will be sustainable over the long term, and will serve as an alternative to mitigation when otherwise required. The ARM Fund Program developed procedures to track these self-mitigating measures and a geo-database for post-construction monitoring. Since 2016, a total of 75 stream crossing replacements have been permitted by NHDES as self-mitigating. In 2022, 47 of these sites were assessed for overall condition and quality of self-mitigating features. Streambed simulation was incorporated as a self-mitigating feature for 42% of surveyed crossings. Wildlife shelves were installed at 20% of surveyed crossings, and grade controls were present at 14%. Most of the streambed simulation (82%) and grade control (100%) features assessed were in good condition and performing as designed. The assessment of wildlife shelves indicated that variations in design and materials strongly influence longevity and performance under different hydraulic conditions. Efforts to monitor the remaining self-mitigating crossing sites not assessed in 2022 will resume in the summer of 2023. The results of these surveys will be used to provide analysis on the performance and design of self-mitigating features, which may be used to inform future permit decisions and considerations.

DATABASE CHANGES

Major enhancements to the LRM database were deployed in 2022, across the following focus areas:

- The ability to track pre-application meetings.
- The ability to "relate" enforcement files to permitting files in the database.
- The ability to flag an action with non-mitigation conditions that should be followed-up by the reviewer for compliance with permit.
- The enhanced ability to track amendment requests and review timelines.
- The addition of increased functionality to the Shoreland tab.
- The addition of increased automation within the database, to improve data entry efficiency and accuracy.

Some of these enhancements were deployed as part of an EPA grant. Please refer to the EPA Grant Updates section for more information.

All changes described above necessitated requirements elicitation and analysis, the writing of directions to an external developer, user-acceptance testing of changes in a "draft" database, trainings, database enhancement deployment, and associated technical guidance documentation for database users.

NEW REPORTS

Internal reports were created to investigate and improve data entry consistency. These reports are now an integral part of day-to-day operations in the bureau. Several reports were also created to facilitate the automated generation of analytical charts and tables to satisfy the needs of various annual reports. Other automated recurring reports were also created to share data more easily with stakeholders, such as partner federal agencies.

ELECTRONIC APPLICATIONS

In summer 2022, an electronic payment option was added to the online Non-Tidal Docking Structures Registration process. In December 2022, the Wetlands Bureau deployed an interactive map of registered docks for the public. Voluntary registration is an alternative to getting a permit for every repair or replacement of existing non-tidal permanent docking structures. In addition, it offers an easier way to prove

compliance with certain state statutes and rules whenever you buy or sell properties that include these structures. It is easier and less expensive than other existing wetlands permit options.

Land Resources Management LRM is actively working on establishing electronic permitting for its programs. In 2022, NHDES requested and paid for enhancement to the online submission platform used by the Wetlands Bureau and other NHDES bureaus. Some of these enhancements were necessary to meet statutory requirements, such as allowing multiple entities (e.g., agents, applicants, and owners) to sign an application before e-submission. These enhancements are paving the way to allow more forms to be offered as electronic options for the Wetlands Bureau.

AWARDS

This past year Wetlands Bureau and Land Resources Management Program staff were recipients of the following 2022 NHDES annual awards: Lori Sommer, former ARM Fund Program Supervisor, was awarded the David S. Chase Memorial Award for Extraordinary Achievement in Science; Jeff Blecharczyk, LRM Compliance Supervisor, was awarded the Outstanding Compliance Assurance & Field Services Award; and alongside other NHDES staff, Melanie Cofrin and Marie-Eve Jacques were awarded the Internal Team Excellence Award.

David S. Chase Memorial Award for Extraordinary Achievement in Science

Lori Sommer has been a leader in Wetlands Compensatory Mitigation science since the late 1990s and created the first New England In-Lieu Fee Mitigation Program, the Aquatic Resource Mitigation Fund in 2007. As the Mitigation Coordinator at NHDES, Lori has successfully used the current science on ecological integrity, wildlife habitat, wetlands science, and landscape ecology to strategically guide permitting decisions on wetlands loss and steer compensation in areas of high-ecological significance. Lori successfully partnered with leading conservation scientists in New Hampshire to include data on wildlife habitat, rare, threatened, and endangered plants, exemplary communities, and vernal pools in wetlands decision-making.

Her work with NH Fish and Game, the University of New Hampshire (UNH), and The Nature Conservancy on wildlife corridors and landscape connectivity issues has brought new GIS-science tools to the regulatory community. Most recently, she has worked with UNH to develop a science model to predict Blanding's turtle mortality-risk at wetland road crossings to target restoration projects that will support turtle passage.

As the Stream Crossing Initiative Steering Team Co-Chair, Lori has integrated the current scientific methods and analyses on stream connectivity to advance New Hampshire's stream crossing program and enable scientists and water resource managers to make data-driven decisions on culvert upgrades to support aquatic organism passage and flood resiliency. Over the years she has sat on numerous grant review boards, advisory committees, and steering teams as a leading expert in land conservation and wetlands mitigation in New Hampshire.

Since 2007, the Aquatic Resource Mitigation Program has funded 141 land protection, and wetland and stream restoration projects across the state under Lori's leadership. Under Lori's direction and collaboration with a team of science and regulatory experts, the ARM Fund has achieved significant results in wetlands and stream mitigation, including protection of 28,000 acres of land, 4,000 acres of high-value wetlands, 120 miles of stream, and over 400 vernal pools. Lori is leaving a legacy of landscape resiliency and sustainability in New Hampshire and a model for effective compensatory mitigation to guide other New England states.

Outstanding Compliance Assurance & Field Services Award

Jeff Blecharczyk works tirelessly, along with his team of dedicated specialists, at assuring that Wetlands and Alteration of Terrain rules and laws are met. Although the tremendous workload and day-to-day fire drills seem insurmountable, Jeff is always willing to stop what he is doing and answer any questions that come his

way. His positive attitude and targeted compliance solutions have trickled down to his staff, who do a great job at communicating with the public at large. Fairness, consistency, and teamwork allow for Jeff's compliance group to take on some the toughest enforcement cases that the Water Division is presented with. There is no doubt that Jeff and his team have a true impact on preserving the beauty, sustainability and critical functions of wetlands and the complex and fragile ecosystems they support. When violations are identified, Jeff and his team do a wonderful job at working in concert with industry professionals and property owners.

Internal Team Excellence Award

Through extensive teamwork and collaboration, the NHDES M365 Teams Champions have collectively led a grassroots effort to educate and train NHDES staff on how to navigate the robust suite of Microsoft M365 tools and features. This 100% volunteer army effectively collaborated to determine how best to educate senior leadership and staff on the rollout of various M365 tools, including the creation of a Teams-team to support the work of the Champions. In October 2021, the Champions began to conduct weekly study halls on Microsoft Teams and started offering weekly tips known as "Tuesday Teams Technical Tips" in Newsclips. In addition to study halls and technical tips, the Champions developed competency proficiencies in various M365 resources and created an Intranet page as a resource. The Champions, without hesitation, take time out of their day to volunteer to lead the study halls, answer questions and support their leadership and staff. For many, coping with change can be challenging and stressful. The Teams Champions, in addition to their technical knowledge, have demonstrated infinite patience and a positive attitude with each new rollout of a new M365 feature. NHDES is fortunate to have so many Champions dedicated to agency excellence.

EPA GRANT UPDATES

FY 2017 – FY 2018 REGION 1 WETLAND PROGRAM DEVELOPMENT GRANT

Enhancing Wetland Mapping and Assessment Tools for Wetlands Protection in New Hampshire

The National Wetland Inventory (NWI) has provided wetland maps and geospatial wetland data for the United States since the mid-1970s. Most of New Hampshire NWI maps were produced in the 1980s and require revision to improve their spatial and temporal accuracy. Accurate maps of the location and distribution of water resources are essential to sound decision-making by both government and developers when rebuilding infrastructure and conserving water for a wide variety of users including business and industry. NHDES was awarded an EPA grant in 2018 to update and enhance wetland resource data and tools, including NWI maps.

The major components of this grant are:

- **Component 1** - Update and enhance NWI Maps and publish through the US Fish and Wildlife Service (USFWS) and NH GRANIT (extended until 6/30/2021).
- **Component 2** - Develop high value wetlands criteria, map high value wetlands, and scope update of water quality/wetland assessment base layer (extended until 12/15/2022).
- **Component 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).
- **Component 3b** - NHB - Develop floristic quality assessment (FQA) thresholds for wetland systems of high ecological value using vegetation data (10/1/18 - 9/30/2020).
- **Component 4** - Grant administration, quality assurance, outreach, and reporting (ongoing).

Background: NHDES entered a contract with Ducks Unlimited, Inc. (DU) to update New Hampshire's outdated NWI maps. Under the terms of the grant, NHDES is required to provide matching funds and to ensure proper accuracy assessment and field validation verification of the NWI maps and products. On April 21, 2020, NHDES entered into a separate and concurrent contract with St. Mary's University of Minnesota (SMUMN), Geospatial Services (GSS) to complete this Verification Project for $49,910. On May 6, 2020, the Governor and Executive Council approved the contract with SMUMN.

- **Component 1 -** Update and enhance NWI Maps and publish through USFWS and NH GRANIT.
    - **Task (1) -** The National wetland inventory maps were published on the US Fish and Wildlife Service website and the UNH Website in November of 2021.;
    - **Task (2) –** Identify high-value wetlands criteria, map high-value wetlands, and scope update of Water Quality/Wetland Assessment Base Layer.

  In terms of the high value wetlands mapping, NHDES formed a Wetland Science Mapping Team composed of wetland scientists, Rick Van de Poll and Mark West; the State Geologist, Shane Csiki; NH Fish and Game GIS Coordinator, Katie Callahan; NHB administrator Sabrina Stanwood; LRM GIS Analyst Ram Chhetri; LRM Data Analyst, Brian Young; and past NHDES employee and professional wetland scientist Sandra Crystall; and NHDES Wetlands Bureau assistant administrator and wetland scientist, Mary Ann Tilton.

  The team met on October 4, October 10 and October 13. The team reviewed the existing maps displayed on the NHDES Wetlands permit planning tool (WPPT) and ways the new NWI, computer generated associated functional rankings, and any related online mapping could be displayed. On October 4, 2022, the team reviewed existing NH Fish and Game wildlife maps, TNC Northeast Aquatic habitat mapper, TNC Terrestrial habitat map, and the NH Wildlife Corridor maps. The NWI LLWW functional maps were reviewed as well. The computer-generated map of surface water detention map LLWW was reviewed. On October 10, 2022, the team reviewed site specific NWI LLWW functional assessments. Mark West provided on-site field photographs from Pawtuckaway State Park used in a Wetlands Bureau assessment training. The site field photos were compared to the LLWW functional assessment maps for this same area. The team identified some discrepancies between the site assessment and the mapped functional values.

  NHDES LRM data analysts carried out follow-up research and analysis on the source and scope of the LLWW mapping. Based on this analysis, Assistant Administrator Mary Ann Tilton and LRM Data Analyst Brian Young met the federal mapping contractors retained under this grant. The questions raised by the team were reviewed with Mat Halliday from Ducks Unlimited and Kevin Stark from SMUMN. The NHDES analysis and the limits of the LLWW model made it clear that a future study is needed before including this layer in a high value map for New Hampshire. In December, following this review, the NHDES Wetlands Bureau Assistant Administrator met with the EPA grant officer to explain our review process for publication of final products for this grant.

  In terms of updating water quality base maps, the NHDES Watershed Management Bureau scoping analysis is as follows:

  For the 2012 305(b)/303(d) assessment cycle the NHDES Watershed Management Bureau built wetland complexes to correspond to the wetland complex methodology of the New Hampshire Method. In all, 52,313 wetland assessment units covering 286,696 acres were created. This did not include wetlands in open water to avoid overlap with existing assessment units in other waterbody types drawn from the national hydrography dataset. NHDES developed GIS-based assessment methods from the New Hampshire Method using the characteristics of adjacent land uses. This information was used to conduct a preliminary or Level 1 assessments of wetlands. Due to the

inherent roughness of a landscape level analysis and that no in-wetland measurements were conducted, no definitive support categorizations (e.g., fully supporting or not supporting) were made as part of the 2012 assessment cycle.

In March of 2020, NHDES released an Investigation into the Development of Bio criteria to Assess Wetland Condition in New Hampshire. This project began in 2014 and was conducted to advance New Hampshire's wetland monitoring and assessment work by investigating potential biological criteria (biocriteria) to assess the condition of fringing and emergent open-water freshwater wetlands. Ultimately, it was determined that additional time and resources were needed to fully develop numerical or quantitative biological criteria. NHDES concluded that additional data are needed to validate and calibrate any floristic metrics to assess wetlands under Section 303(d) and 305(b) of the CWA.

The wetland complexes built for use in the 2012 assessment cycle took substantial resources and capacity to create. To our knowledge, those wetland complexes have seen no use beyond the Level 1 assessments of wetlands completed in 2013 which in and of itself was of limited utility. The creation of new NWI maps requires that process to be repeated. Without the necessary numerical or quantitative biological criteria to make definitive support categorizations it is NHDES' judgement that our limited resources could be better utilized in other assessment related capacities. The Watershed Management Bureau is committed to furthering our knowledge of the wide variation in wetland habitats and will work with other bureaus within NHDES should they decide to embark in this endeavor.

Status of Expenditures:

All federal funds have been spent on this grant.

All tasks in this grant are anticipated to be complete and NHDES will be provided a final NHDES report to EPA this winter.

FY 2019 AND FY 2020 REGION 1 WETLAND PROGRAM DEVELOPMENT GRANTS (EPA-REG1-WPDG-19-01-2019-TRACK 1)

Advancing Education, Wetland Functional Assessments, and Data Systems - CD 00A00292

- **Task 1 – NHDES anticipates completing this grant next spring.**

"DEVELOP TRAINING CURRICULUM AND EDUCATION MATERIALS TO ENHANCE THE MATERIALS TO ENHANCE THE KNOWLEDGE OF PERMIT APPLICANTS, NHDES PERMITTING STAFF, AND THE PUBLIC ON THE MOST CURRENT WETLANDS AND STREAM ASSESSMENT METHODOLOGIES TO ENSURE ACCURATE AND STANDARDIZED QUANTIFICATION OF AQUATIC RESOURCE IMPACTS."

- *Wetland Functional Assessment*

  EPA and ACE hosted preliminary functional assessment training in 2020 on the draft New England Functional Assessment method. NHDES has sought a time extension to complete this training and follow up EPA work products. The training dates are planned for March of 2023.

- Water Quality Training

  The focus of the training over this reporting period was to develop a Water Quality Training curriculum.

The **Water Quality Training Planning Team** included:

LRM Manager, Philip Trowbridge; NHDOT Bureau of Environment Administrator, Kevin Nyhan; Alteration of Terrain Bureau Administrator, Ridgely Mauck; Wetlands Bureau Administrator, Darlene Forst; Public Works Subsection Supervisor, Karl Benedict; Highway Specialist, Dale Keirstead; UNH Stormwater Center Director, Jamie Houle; private consultant, Randy Shuey; and Assistant Wetlands Bureau Administrator, Mary Ann Tilton.

The Planning team met on June 15, 2022, July 20, 2022, July 28, 2022, August 5, 2022, and August 31, 2022. Additional slide review, practice sessions and logistic sessions were held to ensure consistency and technological testing were in order.

Two water quality training sessions were held remotely on Teams Webinar on September 16 and 23. The training was entitled: "Protecting Surface Water Quality on Large Construction Sites."

The Agenda for **Session 1** (9/16/22) included the following:

1) Opening Remarks from LRM Manager (Philip Trowbridge, PE) and NHDOT Bureau of Environment (Kevin Nyhan).
2) Overview of State and Federal Wetland and Water Quality Requirements (Karl Benedict, NHDES).
3) Overview of the Alteration of Terrain & Best Management Practices (Ridgely Mauck, PE, NHDES).
4) Review of in-Stream Water Quality Diversion Plans (Dale Keirstead, NHDES).

On 9/16/23, 165 individuals attended the training session and included fifty-two (52) NHDOT employees, nine (9) NHDES LRM employees, two (2) NHDNCR Trails employees, two (2) EPA employees, and several engineering and wetland consulting firms.

NHDES did circulate an evaluation survey to all registered attendees. For session 1, attendees were 63% satisfied with the training content; 73% were satisfied with the presenters. Attendees extended appreciation and suggested information could be made "less dry, (no pun intended)."

The Agenda for **Session 2** (9/23/22) included the following:

1) Introduction (Darlene Forst, Wetlands Bureau Administrator, NHDES).
2) UNH Studies on BMP Designs and Effectiveness (James Houle, PE, UNH).
3) Temporary and Permanent Construction BMPs (Randall Shuey, Private consultant).
4) Wrap up (Ridgely Mauck, PE, NHDES).

On 9/23/23, 137 individuals attended the training session and included fifty-two (52) NHDOT employees, nine (9) NHDES LRM employees, two (2) NHDNCR Trails employees, two (2) EPA employees, and several engineering and wetland consulting firms.

NHDES did circulate an evaluation survey to all registered attendees. For session 1, attendees 48% were very satisfied with the training content; 57% were very satisfied (39% were satisfied) with the presenters. NHDES received very positive training feedback. Responses stated: "The 2nd session was much more interesting to me personally and I think I learned a lot more. The presenters were engaging and kept my attention the whole time. Great job." Attendees had commented on graphics, practical applications and real issues seen in the field.

The training did trigger many detailed discussions between NHDOT and NHDES regarding water quality for ongoing construction sites. NHDES has developed a draft Water Quality checklist updated from the training for NHDOT use in application and onsite reviews.

Products for Task 1

- Agenda, Attendee lists, PowerPoints.

- Recording of the delivered trainings:

NHDES YouTube Channel:

- September 16, 2022
- September 23, 2022

- *Stream Assessment*

  ACE hosted a training on the NRCS Stream Visual assessment method on May 13 and 14, 2020.

- **Task 2 – Ongoing.**

"COORDINATE AND PERFORM A SERIES OF TRAINING SESSIONS AND WORKSHOPS TARGETED AT NHDOT AND NHDES STAFF, WETLAND SCIENTISTS, CONSULTANTS, AND THE FORESTRY INDUSTRY TO ENHANCE UNDERSTANDING OF THE NEW WETLANDS RULES AND PRACTICES TO REDUCE IMPACTS TO AQUATIC RESOURCES."

The trainings will be scheduled throughout 2023 based on the items set out in Task 1, above. With new communication staff, workshops for the NHTOA and wetland scientists are planned.

- **Task 3 – NHDES seeking an extension until March 2024.**

"**DEVELOP NEW INTERNAL PROTOCOLS FOR PERMIT REVIEWERS FOR TRACKING AND REPORTING WETLAND AND STREAM IMPACTS, RESTORATION, AND MITIGATION, THEREBY STANDARDIZING THE TRACKING AND QUANTIFYING OF BOTH LOSSES AND GAINS TO AQUATIC RESOURCE FUNCTIONS AND VALUES."**

GRANT PRODUCTS FOR TASK 3

1) Perform a requirements analysis and develop a business plan in consultation with lead permit reviewers to drive database changes.
2) Develop standard operating procedures to capture technical review steps to avoid, minimize, and mitigate for wetland and stream impacts.
3) Develop technical review checklists to integrate habitat assessment, aquatic connectivity, water quality assessment, landscape connectivity, and flood hazard mitigation.
4) Internal and external forms and checklists to include fields for tracking impact activity, resource type, and functions and values for a new database.

OUTCOME FOR TASK 3

Standardized impact tracking that accurately and consistently quantifies the losses and gains to functions and values of aquatic resources from permitted projects to measure environmental outcomes of Wetlands Bureau permitting processes.

Context

Grant Product 1 was completed in October 2021. Grant Product 1 led to the development of database mock-ups that were approved by key staff, as well as Wetlands Bureau leadership in November 2021. The same month, these mock-ups were translated into work instructions for the external LRM database developer, covering the following topics:

1) Tracking shoreland impacts.
2) Tracking pre-application meetings.
3) Tracking overall impact changes and Priority Resource Areas.
4) Tracking compensatory mitigation-related data.
5) Tracking permit conditions needing follow-up.
6) Tracking impacts by jurisdictional area/resource type/activity type.

7) Tracking Stream/wetlands crossings data and self-mitigation requirements.

In May 2022, Grant Products 2-4 were completed for the topic "tracking permit conditions needing follow-up." This was done through the deployment of a new database feature on May 18, 2022, followed by training for reviewers on May 19, 2022 (recorded training and written work instructions). This new feature allows the tracking of permit actions with non-mitigation condition(s) that should be followed-up by reviewers for permit compliance. It will allow better tracking of permit conditions to avoid, minimize, and mitigate wetland and stream impacts.

In summer 2022, the enhancements allowing the following tracking was deployed in our development (draft) database and in February of 2023, deployment in our production (real) database occurred.

- Tracking overall impact changes and Priority Resource Areas.
- Tracking compensatory mitigation-related data.
- Tracking impacts by jurisdictional area/resource type/activity type.
- Tracking Stream/wetlands crossings data and self-mitigation requirements.

- **Task 4 – Completed.**

"DEVELOP A DATA MANAGEMENT SYSTEM AND PERFORM A COMPREHENSIVE ANALYSIS TO EVALUATE THE ECOLOGICAL PERFORMANCE OF THE IN-LIEU FEE PROGRAM'S MITIGATION SITES TO GUIDE DATA-DRIVEN DECISIONS ON FUTURE MITIGATION PRIORITIZATION AND CREDIT DETERMINATION."

NHB has completed this task.

- **Task 5 – Completed.**

"RESURVEY EXEMPLARY WETLANDS WITH OUTDATED RECORDS AND ASSESS THE CONDITION OF THESE PRIORITY WETLANDS USING THE ECOLOGICAL INTEGRITY ASSESSMENT (EIA) AND FLORISTIC QUALITY ASSESSMENT (FQA) METHODS."

NHB has completed this task.

FY 2021 AND FY 2022 REGION 1 WETLAND PROGRAM DEVELOPMENT GRANTS

Assessment and Priortization of Wetland Road Crossings to Advance Restoration for Connectivity in New Hampshire - CD 00A01007 0

"ASSESSMENTS AND PRIORITIZATION OF ROAD CROSSINGS IN CRITICAL WILDLIFE CORRIDORS TO ADVANCE RESTORATION FOR WETLAND CONNECTIVITY IN NEW HAMPSHIRE."

NHDES was awarded an EPA grant in 2021 to assess and prioritize of wetland road crossings to advance restoration for connectivity with focus on semi-aquatic freshwater turtles that are especially vulnerable to habitat fragmentation and wetland loss.

On March 9, 2022, NHDES entered a contract with University of New Hampshire (UNH) to provide expertise on all major grant components to assist in the assessment of road crossings that disrupt wetland connectivity for aquatic and semi-aquatic wildlife. The work includes assisting in the development of the framework for prioritizing road crossings for restoration efforts, developing conceptual engineering designs and restoration plans, and assisting in development of outreach materials and design guidance to educate regulatory and restoration practitioners to support future projects that will enhance wetland connectivity.

On March 23, 2022, NHDES entered into a contract with New Hampshire Fish & Game (NHFG) to provide technical expertise to guide the development of methods to assess road crossings that disrupt wetland connectivity for aquatic and semi-aquatic wildlife. NHFG will provide input on design guidance to educate regulatory and restoration practitioners to support future projects that will enhance wetland connectivity.

The major components of this grant are:

- **Task 1**– Open**:** Develop methods to assess road crossings that disrupt wetland connectivity for aquatic and semi-aquatic wildlife, with focus on semi-aquatic freshwater turtles that are especially vulnerable to habitat fragmentation and wetland loss.

  A Technical Advisory Committee (TAC) was formed and includes key staff from the NHDES, UNH, NHFG and partners from the NH Department of Transportation and the Nature Conservancy providing the full breadth of expertise needed to complete this project. The TAC met in January to introduce the grant objectives, and in March and May to review the field survey methodology and site selection.

  The parameters needed to assess a road crossing for turtle passage and wetland connectivity were researched and reviewed. Field survey methods and an associated field manual for data collection were developed: *The Wetland Crossing Assessment Handout: A Supplement to the NHSCI SADES Protocol* (Published June 2022).

  A Geographic Information Systems (GIS) intersection analysis was be performed to identify the potential road crossings for surveys. For the field survey, 311 wetland crossings that lie within or near Blanding's turtle focal areas were selected; Blanding's turtle focal areas are conservation priorities identified through intensive surveys and research by NHFG.

  A Quality Assurance Project Plan (QAPP) was submitted to EPA June 2022 and approved June 7, 2022.

  UNH and NHFG reviewed current literature on turtle passage and wetland connectivity issues at road crossings. UNH submitted a literature review synthesizing information on Blanding's turtle status, life history, habitats, movements, threats associated with road crossings and design recommendations.

- **Task 2 – Complete**: Assess 300-350 road crossings in Blanding's turtle focal areas and identified as critical wildlife corridors.
  - Seasonal technicians and ARM Fund Program interns were hired and trained on Wetland Crossing Field protocol. The technicians completed field surveys of 271 high-priority road crossings. The field data was checked following quality assurance/quality control protocol.
  - A new model to classify road crossing on their passability for semi-aquatic turtles and wetland connectedness was drafted and expected to be completed on schedule.

- **Task 3** – **Open:** Develop the framework for prioritizing road crossings for restoration efforts to improve wetland connectivity for critical turtle habitats.
- **Task 4**– **Open:** Select three to five high-priority road crossing locations to develop conceptual engineering designs and restoration plans.

- **Task 5** – **Open**: Develop outreach materials and design guidance to educate regulatory and restoration practitioners to support future projects that will enhance wetland connectivity.

All tasks have been completed on schedule. The expenditures associated with this grant are on track.

Status of Key Personnel Changes:

- Cheryl Bondi, formerly with the NHDES Wetlands Bureau has moved on to take a new position outside of our bureau. Her project role as Field Team Leader and Data Quality Manager was completed prior to her departure; leadership of the Technical Advisory Committee will be by Thomas Ballestero, UNH Professor, Sandra Houghton (NHFG; for continuity), Mary Ann Tilton, and Emily Nichols (NHDES Wetlands Bureau).

- Lori Sommer, NHDES Wetlands Bureau, retired in November 2022. Emily Nichols subsequently joined NHDES as the ARM Fund Manager in April if 2023.

CONCLUSION

NHDES Wetlands Bureau is faced with a broad and challenging mandate. Staff need to address often competing demands for permit reviews, enforcement, mitigation, outreach, and progress on grant projects. In 2022, the Bureau made progress on all fronts. It conducted timely and robust application reviews, followed up on hundreds of complaints, conducted outreach events and pre-application meetings, and made program improvements through grant-funded projects or internal initiatives. The benefits of progress made in technological improvements during the past year should begin to positively impact the quality of data and ability to represent productivity and outcomes in future annual reporting. We thank the Bureau staff and our partner organizations for their hard work and assistance this past year.

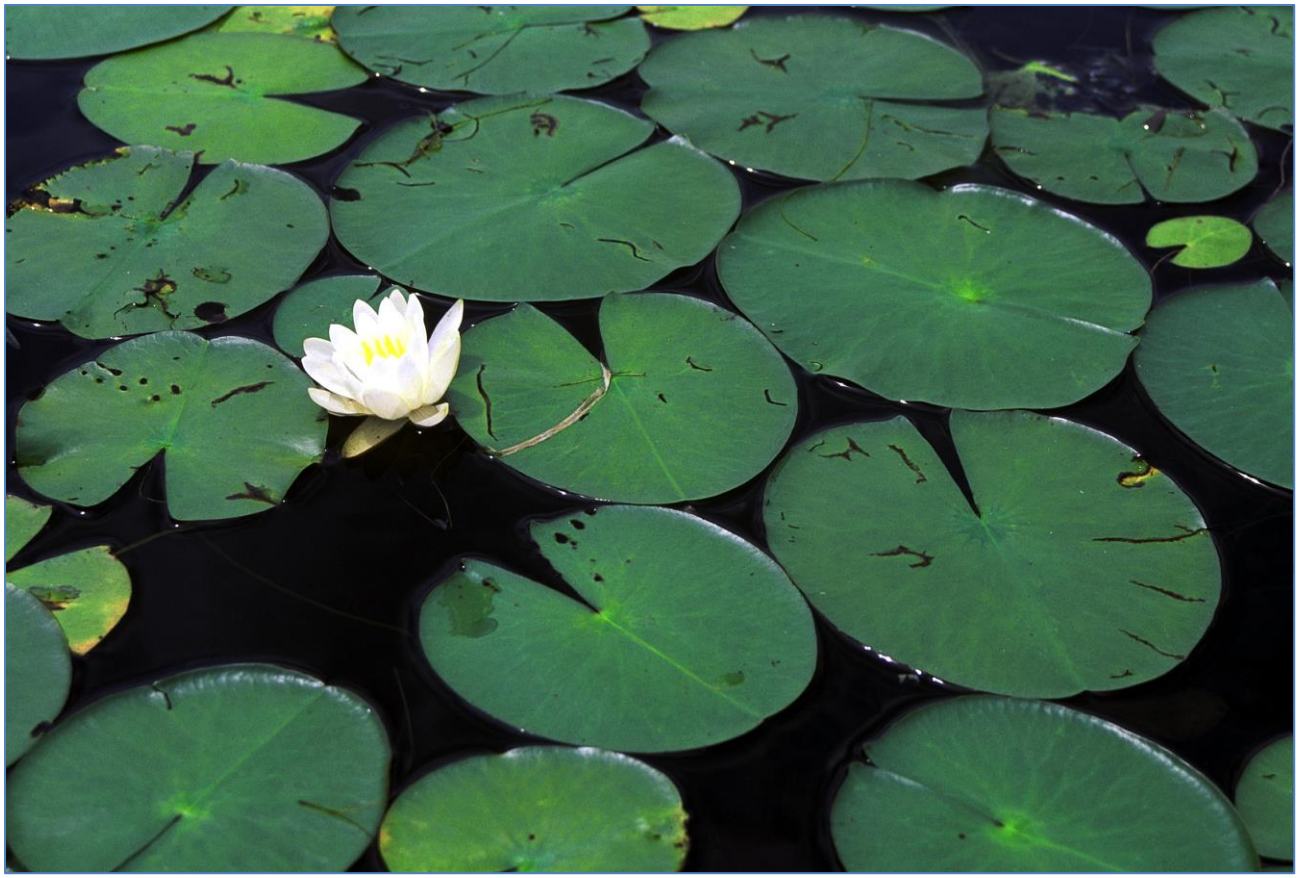


FIGURE 15: PHOTOGRAPH OF A POND.

APPENDIX I - ARM FUND GRANT AWARD SUMMARY FROM 2022 ADVERTISED FUNDS

TABLE 19: ARM FUND GRANT AWARD SUMMARY.

Project Name Applicant *Town*	ARM Award Amount ($)	Project Summary
		PEMIGEWASSET-WINNIPESAUKEE RIVER SERVICE AREA
Bean Property Town of Tuftonboro Conservation Commission *Tuftonboro*	$48,300	The Town of Tuftonboro will use ARM funds to permanently protect a 34.5-acre portion of Linda and Edward Bean's 52.2-acre lot through a conservation easement. The property, which consists of 16.1 acres of wetland and one potential vernal pool, lies at the western part of the Tuftonboro's 512.8-are Great Meadow, a large and valuable wetland resource that has been the subject of development pressure for the past 20 years. The parcel abuts over 300 acres of protected lands and will build upon existing landscape connectivity efforts in the watershed and region. The project will protect an intact aquatic resource buffer of over 6,500 linear feet of undeveloped wetland edge.
Lyon Property Moose Mountain Regional Greenway *Tuftonboro*	$35,000	Moose Mountain Regional Greenways will use ARM funds to protect the 22.8-acre Lyon property in Tuftonboro through a conservation easement. The parcel comprises the southerly outflow lot of the Great Meadow along the Melvin River. One quarter of the property includes pristine emergent marsh and seepage swamps that are part of the 456-acre Great Meadow wetland complex. The parcel offers over 500 feet of high value, undeveloped aquatic resource buffer land that connect the flowing Melvin River to the flatwater Great Meadow. The Lyon property wetlands comprise roughly 1.2% of the Great Meadow wetland and include half of the riparian zone along the lower Melvin River. The parcel will build upon existing landscape connectivity efforts in the watershed and region.
		SALMON FALLS-PISCATAQUA RIVER SERVICE AREA
Landry-Nippo Lake Conservation Easement Southeast Land Trust of NH *Barrington*	$375,000	Southeast Land Trust of NH will use ARM funds to permanently protect the 163-acre Landry property in Barrington, NH through a conservation easement. The property consists of 2,265 feet of frontage on Lake Nippo, a 16.5-acre Prime Wetland, 3 vernal pools, and two rare peatland communities. The Landry property has remarkable ecological and water resource diversity that is a critical linkage between existing conservation lands; the 405-acre SELT Leighton Forest and the 1,700-acre SELT Stonehouse Forest. At the headwaters of Nippo Brook, the Landry property is part of the Isinglass River watershed, a designated River under the NH Rivers Management and Protection Program. The Landry property is 25% of Nippo Lake's watershed and 80.5 acres of the property are part of an NHDES designated Outstanding Resource Watershed. The property includes 148 acres of highest-ranked habitat by ecological condition in the state (WAP) and has a threatened forest system that likely qualifies for Exemplary status. Conservation of the Landry property will protect upland connections between these wetland systems and 270 feet of perennial stream outflow from Hale Pond and 1,700 feet of perennial streams including a spring fed cobble bottom stream system that flows into Nippo Lake.

Project Name Applicant *Town*	ARM Award Amount ($)	Project Summary
		MERRIMACK RIVER SERVICE AREA
Brennan Brook Dam Removal Trout Unlimited *Francestown*	$202,730	Trout Unlimited will use ARM Funds to remove a dam on Brennan Brook, and to restore the surrounding stream and wetland system. The Brennan Brook dam is structurally deficient and serves as the most upstream barrier on Brennan Brook, segregating populations of aquatic organisms, and creating inconsistent temperatures that are detrimental to cold water species historically found within the brook. The controlled removal of the dam will restore aquatic organism passage to 4.3 miles of cold-water headwater habitat upstream of the project site, and 8 miles of downstream habitat. Wild brook trout in the South Branch Piscataquog River watershed are a high priority for instream habitat restoration efforts and re-connection of populations within the watershed is vital to ensuring long-term population health. The Brennan Brook flows through the highest ranked wildlife habitat for NH and the region based on the NHFG WAP.
Lithia Spring Town of Londonderry *Londonderry*	$500,000	The Town of Londonderry will use ARM funds for the acquisition of 54 acres of diverse wetland habitats and upland buffer on Nesenkeag Brook in southwest Londonderry, and to grant a conservation easement over the property to the Society for the Protection of NH Forests. Lithia Spring includes a large section of the highest ranked habitat for the state of NH, and the wildlife and aquatic corridor that depends on the Nesenkeag Brook. The parcel and surrounding area are known to have crucial plant, animal, amphibian, and reptile species for the state. ARM funds will also support 0.2 acres of wetland restoration in the southwest corner of the property, which involves removal of an old causeway that extends 390 feet into the property and fragments a valuable Tier 1 wetland habitat. The aquatic resources to be protected within the conservation easement include 2,209 feet of stream frontage on Nesenkeag Brook as well as 3 vernal pools, 4 distinct wetlands of varying types totalling 18.2 acres, and a low transmissivity aquifer. Lithia Spring lies within the Pennichuck waterworks, which serves 87,923 people. The wetlands act as sediment and contaminant filters, as well as stormwater storage. The property is currently at risk of being developed.
West Sawmill Town Forest Expansion The Conservation Fund *Atkinson*	$150,000	The Conservation Fund will use ARM funds for the acquisition of a 15.4-acre parcel and provide a conservation easement on the property to Southeast Land Trust of NH. The property is adjacent to the West Sawmill Town Forest, consists almost entirely of NHFG WAP Tier 1 ranked habitat, and contains high functioning vernal pools and upland buffers providing habitat for spotted salamanders, wood frogs, and Blanding's turtles. Adjacent to both the 223-acre Sawmill Swamp Town Forest to the east and Cluster Open Space to the west and north, the property is a missing piece of conservation land surrounding the Sawmill Swamp high priority ecosystem. The parcel will build upon existing landscape connectivity efforts in the region.
Whitcomb – Powwow River The Nature Conservancy *Kingston*	$200,000	The Nature Conservancy will use ARM funds to protect the 61-acre Whitcomb property through a conservation easement. The conservation of this property will protect over 1,500 linear feet of frontage along the Powwow River, 6.3 acres of emergent wetland including a vernal pool, 20 acres of forested wetland, 1.4 acres of shrub scrub wetland, and associated upland buffers. Among the nearly 28 acres of wetlands and Powwow River frontage on this parcel are NH Natural Heritage Bureau recognized Atlantic White Cedar-Yellow Birch, Pepperbush Swamp communities and a Medium Level Fen System community. The entire property is

Project Name Applicant *Town*	ARM Award Amount ($)	Project Summary
		either NHFG WAP Tier 1 or 2 areas. The property also includes 39.36 acres of wellhead protection area for the Rowell Estates community well. Furthermore, the Whitcomb property is entirely within a high transmissivity aquifer and identified by the Town of Kingston as a special aquifer protection zoning district. The parcel will build upon existing landscape connectivity efforts in the region.
Wyatt Birch Farm Francestown Land Trust *Francestown*	$102,150	The Francestown Land Trust will use ARM funding to protect Wyatt Birch Farm, a 17.9-acre property along the south branch of the Piscataquog River, through a conservation easement. This project will permanently protect both sides of nearly 1,400 linear feet of river and 7.8 acres of wetlands consisting of extensive riparian wetlands and five large, diverse, high value wetlands. About 87% of this project area is classified as NHFG WAP Tier 1 habitat and the property lies within a high-yield aquifer and wellhead protection area. Beyond the protection of the area, the project will enhance an aquatic resource buffer of 100 feet through the planting of native species, relocate an existing wetland crossing, and restore a peat area. The project will connect two conservation easements and contribute to a total of five conservation plots in the general area, adding to the support system of the Piscataquog River.
Clarkridge Farm Piscataqua Land Conservation *Goffstown*	$300,000	The Piscataqua Land Conservancy is requesting $300,000 to purchase a 41.9-acre conservation easement of a portion of the historic Clarkridge Farm. The easement will protect prime wetlands, wildlife habitat, and add to an extensive mosaic of conservation land. Clarkridge Farm contains three wetland systems for a total of 20.6 acres of wetlands on-site, including 16.6 acres of prime wetlands, which eventually drain into Harry Brook via an intermittent stream. These wetlands support six of the seven recently lost functions in the Merrimack River Watershed – ecological integrity, wildlife habitat, water quality, floodplain storage, shoreland stabilization and groundwater recharge. This project is also part of a 1,200+ acre unfragmented habitat block and the NH Fish and Game connectivity modelling indicates that this land is part of a priority corridor for wildlife movement.
		LOWER CONNECTICUT RIVER SERVICE AREA
Fiske Mill Dam Removal The Nature Conservancy *Hinsdale*	$475,000	The Nature Conservancy will use ARM Funds to purchase and remove the Fiske Mill Dam to restore aquatic organism passage and reconnect 7.44 miles of upstream river and streams in the Ashuelot River System to the Connecticut River and Atlantic Ocean. The Fiske Mill Dam is a complete barrier to aquatic organism passage. Removal of the dam will ensure critical restoration of approximately 154 river and stream miles for anadromous fish, mitigate flood risks for Hinsdale and surrounding community areas, create a permanent Ashuelot River access point, and provide conservation with improved water quality for ecosystem health.
Stone Pond Dam Removal Connecticut River Conservancy *Fitzwilliam*	$258,405	The Connecticut River Conservancy will use ARM funds to remove the defunct Stone Pond Dam and restore the natural functions of Scott Brook, a tributary to the Millers River. The project will include the removal of the dam infrastructure, removal of approximately 12,000 cubic yards of nitrogen-laden sediment trapped upstream, removal/replacement of two undersized culverts under Templeton Turnpike and one undersized culvert with 100-year flood-accommodating stream crossings that allow for organism passage, and restoration of wildlife habitat in the disturbed areas. Stone Pond Dam has been rated as a severe barrier in the Aquatic Barrier Prioritization Tool and experiences regular flooding, which damages local

Project Name Applicant *Town*	ARM Award Amount ($)	Project Summary
		roads and flushes pollutants like sediment and nutrients into the waterway. The primary focus of the project's design will be re-establishing fish passage and other aquatic organism passage. Additionally, the restoration area and a 62-acre upstream parcel with frontage on Scott Brook will be protected through a conservation easement to protect the significant aquatic resources and their upland buffers.
		CONTOOCOOK RIVER SERVICE AREA
Woods Woolen Mill Town of Hillsborough *Hillsborough*	$258,285	The Town of Hillsborough will use ARM funds to restore the former Woods Woolen Mill, a 2.6-acre site located on the Contoocook River. This project restores up to 450 linear feet of riverbank to re-connect the floodplain, create riverbank and upland habitat, and improve water quality at the former mill site. Restoration efforts will include the removal of hardened bank materials and associated foundation remnants and stabilization of 325 linear feet of riverbank. Regrading and restoration of upland area below the former railroad corridor with topsoil and native plantings will enhance habitat, improve floodplain connectivity, and improve stormwater infiltration and treatment prior to discharge into the Contoocook River. This project will reconnect two areas of state priority habitat identified on NH Fish & Game's (NHFG) Wildlife Action Plan (WAP). Upon restoration completion, the property will be permanently protected through a conservation easement.
		MIDDLE CONNECTICUT RIVER SERVICE AREA
Childs Brook Culvert Replacement Trout Unlimited *Bath*	$130,430	Trout Unlimited will use ARM funds to replace an existing culvert on West Bath Road in Bath, NH. The project was allocated funds in 2020 and additional funds are needed due to increased construction costs. The culvert is in poor condition, hydraulically vulnerable and impeding aquatic organism passage. All work will occur in accordance with Wetlands and Non-Site-Specific Permit #2021-02103. The project will open access to approximately 2.65 miles of upstream, barrier-free aquatic habitat and connect 1.7 miles of downstream habitat. The targeted crossing replacement will enable full access to 2.65 miles of critical spawning and forage habitat and Coldwater refugia, from headwaters to confluence, for wild brook trout (a species of concern in NH) and other aquatic organisms. This effort will also restore bank stability, increase flood resiliency, and enhance the overall ecological health of Childs Brook.