TOWN OF HUDSON

Conservation Commission

William Collins, Chairman David Morin, Selectmen Liaison

12 School Street • Hudson, New Hampshire 03051 • Tel: 603-886-6008 • Fax: 603-594-1142

CONSERVATION COMMISSION MEETING AGENDA
July 25, 2024

The Town of Hudson Conservation Commission will hold its next meeting on July 25, 2024 at 7:00 p.m. in the Board of Selectman Meeting Room, located in Town Hall 12 School Street, Hudson, NH.

- ✓ Call to Order
- ✓ Pledge of Allegiance
- ✓ Roll Call
- ✓ Alternates
- ✓ Public Input Related to Non-Agenda Items

I. **New Business:**

II. **Old Business:**

a. NHDES Dredge and Fill Application Intervention

b. Brain Storm Projects that could qualify for ARM funding and Wetland Mitigation

III. **Other Business:**

a. New trail map print and purchase

IV. **Financial Status:**

V. **Correspondence**

a.

VI. **Approval of Minutes:**

a.

VII. **Commissioner's Comments:**

Next Regular Meeting: Monday August 12, 2024 at 7:00 p.m.

William Collins

William Collins, Chairman

Motions for July 25, 2024 meeting

Motion to pre approve

_____move to allow the conservation chairperson or in the event of his/her absence the vice chairperson to file an intervention notice ahead of a scheduled commission meeting, as needed. • Based on certain criteria (or not) • Such as, impact category, resources in your community, etc. Motion Second_____

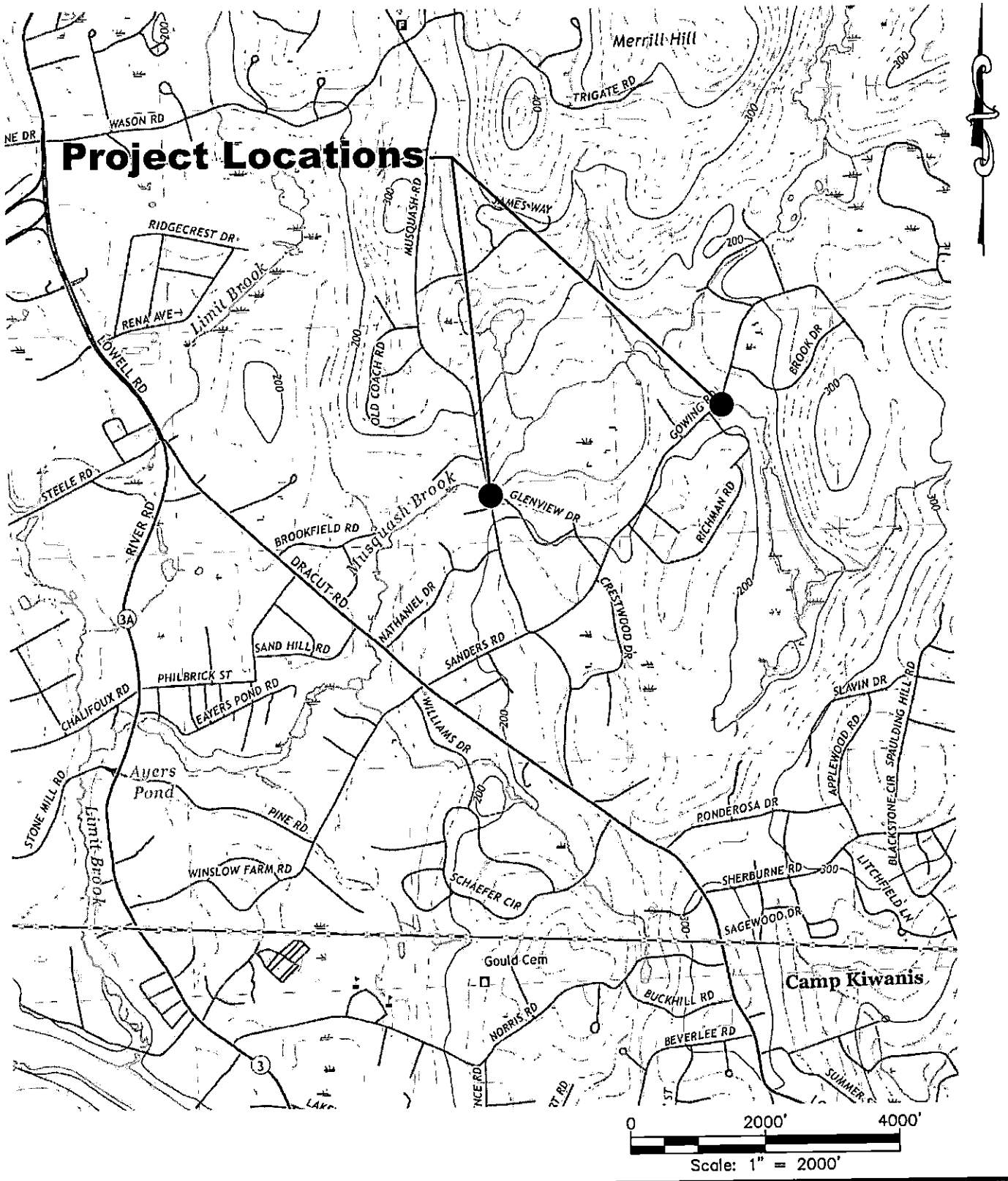
Decision 0/0/0

What to write to intervene... • Subject: Landowner name /Town/ Tax map -Lot # (street) OR File # 2022-0000 (landowner/ town name) "The XXX Conservation Commission (BCC) is providing notification herein, in accordance with RSA 482-A:11, that it intends to investigate the project that is the subject of the Minimum/Minor/Major impact wetlands permit application described above. The Standard Dredge and Fill application was received by the municipal clerk's office on 00/00/00." • Who to send it to? • Permitting inspector listed on OneStop Wetland Permits Query, on permitting inspectors map, lrm@des.nh.gov , or call (603) 271-2147 to get inspector info.

Motion to Purchase Maps

_____ to spend up to $300 dollars for the purchase of new trail maps that will replace the outdated trail maps located at the various conservation properties around town. Motion second_____

Decision 0/0/0



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603/431-6196 • 603/627-0708 • 207/541-4223
cmaengineers.com

Town of Hudson
Hudson, New Hampshire
Musquash Conservation Area
Flooding and Transportation Improvements

USGS Map

F:\CADD\PROJECTS\1297 Hudson PROTECT Grant\Figures\1297-USGS.dwg Date Plotted:, Jul 18, 2023 - 12:44pm

Town of Hudson

Musquash Conservation Area Flooding and Transportation Improvements

Hudson, New Hampshire

Project Narrative

August 2023

Submitted to:

Federal Highway Administration
U.S. Department of Transportation
1200 New Jersey Ave., SE.
Washington, DC 20590

Submitted by:

Town of Hudson
12 School Street
Hudson, NH 03051

Project Narrative
Town of Hudson
Musquash Conservation Area Flooding and Transportation Improvements
Hudson, New Hampshire

August 2023

TABLE OF CONTENTS

I. BASIC PROJECT INFORMATION – DESCRIPTION, LOCATION, AND PARTIES

The Town of Hudson is a rural municipality in southern New Hampshire with a population of 25,394 as of the most recent census. The Town is bordered by Massachusetts to the south and the Merrimack River to the west. The Town lies in the Greater Boston metropolitan region and is considered a commuter town. The Town center is identified as a census-designated place (CDP) in the most recent census with a population of 7,534. The project described in this grant application is outside of the CDP. See attached USGS Map for project location.

The Musquash Conservation Area, within the Town, contains the 416-acre Musquash Pond, hiking trails, a canoe launch, historical sites, and habitat for several threatened plants and animals. A map of the Musquash Conservation Area is provided as an attachment. The Musquash Brook terminates in the Merrimack River, a New Hampshire Department of Environmental Services (NHDES) Designated River (rivers recognized by the state for their important natural resources, historical significance, and their contribution to quality of life). The Musquash Conservation Area contains several acres of freshwater emergent wetlands and forested/shrub wetlands. These wetlands are also characterized as Floodplain Wetlands Adjacent to Tier 3 Streams. Under New Hampshire rules, Tier 3 streams are characterized as having a watershed area of 640 acres or greater, within a designated river corridor, or within a 100-year floodplain. Floodplain Wetlands are considered a Priority Resource Area by NHDES.

This project proposes to fund the preliminary design, permitting, and final design for the replacement of two culverts; a culvert on Musquash Road that is the outlet of Musquash Pond and a culvert on Gowing Road that is hydrologically connected to Musquash Brook, upstream.

The Musquash Road culvert is half concrete pipe, half granite block with an average width of 4.5 feet. The culvert inlet is in poor structural condition. The culvert width is substantially undersized with respect to stream geomorphology (bankfull-width of approximately 25 feet upstream). It is overtopped by the 100-year storm, has a perched outlet, is potential habitat for a species of concern (Pickerel), and has 'No Passage' with respect to aquatic organism passage. The Gowing Road culvert is a 4-inch diameter concrete pipe. The crossing is undersized with respect to stream geomorphology (bankfull-width of approximately 9.25 feet upstream) and is overtopped by the 100-year storm. A photo log of the primary features at each crossing is included as an attachment.

The Musquash Road culvert has an average annual daily traffic (AADT) of 178 and has a 5.1-mile detour. The Gowing Road culvert has an AADT of 473 and has no detour. Flooding at this crossing cuts off all travel, emergency or otherwise, to approximately 90 homes. A map showing the detour route circumventing the Musquash Road crossing and the areas with no access north of the Gowing Road crossing is attached. The properties that are cutoff from transportation access by flooding at the Gowing Road crossing are shown on attached tax maps, with the project location on Map 237. The land surrounding both crossings is zoned as residential, permitting both single-family detached units and two-family dwellings.

Both culverts will be designed in compliance with New Hampshire Stream Crossing Guidelines, published in May 2009. Site survey will be needed to design the crossings; however, some

preliminary information is available from the New Hampshire Stream Crossing Initiative. Based on this information and Stream Crossing Guidelines, both culverts (currently closed bottom pipes) will be replaced by span structures or open-bottom culverts with stream simulation and will more than span the bankfull-width. Preliminarily, the Musquash Road culvert span will be approximately 25 feet and the Gowing Road culvert span will be approximately 13 feet.

The project will not be in a Transportation Disadvantaged Census Tract. The project is not included in any Resilience Improvement Plan. Both culvert crossings are in FEMA Flood Zone A, and all of Musquash Pond is in this zone as well. Section 322 of the Robert T Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5165) is not applicable to this project.

Precipitation events are forecasted to increase in both frequency and magnitude in New Hampshire over the next several decades. This was a key finding in New Hampshire Coastal Flood Risk Summary Part I: Science, a report produced by a team of scientific advisors from the University of New Hampshire in August 2019 (https://dx.doi.org/10.34051/p/2019.1). The report was commissioned by an NHDES Science and Technical Advisory Panel. Infrastructure constructed in the second half of the 20th century was generally designed in accordance with NOAA Technical Paper 40 (1961). The report found that current extreme precipitation values are generally greater than one inch for a given return interval from NOAA Technical Paper 40 when compared to the modern NOAA Atlas 14 (2015). This is supported by the trend of increasing storm frequency and intensity of the last several decades, and this trend is forecasted to continue into the 21st century. The combination of existing infrastructure designed to outdated standards and increasing storm frequency and intensity portends an expected increase in freshwater flooding.

Per New Hampshire Coastal Flood Risk Summary Part II: Guidance for Using Scientific Projections (https://scholars.unh.edu/cgi/viewcontent.cgi?article=1210&context=ersc), published March 2020, projects should be designed to account for at least a 15% increase in extreme precipitation. A 15% increase is recommended for projects with a high or medium tolerance for flood risk. Project examples with a medium tolerance includes replacing a local culvert. An increase greater than 15% is recommended for projects with a low or very low tolerance for flood risk. Project examples with a low or very low tolerance include maintaining a school and renovating a hospital, respectively. Based on this guidance, this project will be designed to account for a 15% increase in extreme precipitation values generated from the Northeast Regional Climate Center Extreme Precipitation in New York & New England.

The Town has successfully implemented assistance agreements utilizing federal funds that are ongoing or fully completed. In recent years, the Town has focused on infrastructure improvements particularly in the areas of multi-modal transportation and public services. The projects have also been completed utilizing assistance agreements through numerous different agencies. This success by the Town underscores their ability to work with a variety of funding partners and to ensure that the reporting, management, and scheduling requirements of these projects are all being met.

Having completed numerous past assistance agreements and being equipped with a full range of staffed departments positively positions the Town to manage and complete this project on schedule. The Town is prepared to fully utilize experienced staff from their Administrative,

Engineering, Finance, Planning, Public Works, Inspection Services, and Zoning/Code Enforcement departments to complete this project. The Town also regularly contracts local engineering firms to assist on large or specialty projects. When applicable, the Town will specifically engage firms specializing in administration of Local Public Agency (LPA) projects to ensure that all federal design, permitting, and construction related requirements are met. As a specific example, the Town is very familiar with the requirements related to tracking and reporting compliance with labor laws through the Office of Federal Compliance.

The current Town Engineer who is typically responsible for oversight of this type of project is currently LPA certified and has overseen numerous federally and state funded projects in the past. The Town is well versed in the qualifications-based selection of engineering consultants for the design services required for this project.

The following is a list of successfully completed or in progress assistance agreements for the Town of Hudson.

Veterans Memorial Bridge and Taylor Falls Bridge
- Status - Engineering study and design complete, scheduled for fall 2023 construction
- Budget - $2.5 million
- Program - Federal funding managed through NHDOT
- Project Number - X-A004(927)

Lowell Road Widening
- Status - Design & permitting complete. Construction currently underway
- Budget - $1.7 million
- Program - Federal Highway Administration funds administered by NHDOT
- Project Number - 17-01-CMAQ #41754

II. GRANT FUNDS, SOURCES AND USES OF ALL PROJECT FUNDING

The requested project budget is **$217,200**. The project applicant has neither applied for nor received other Federal funds for the project. It is anticipated the PROTECT discretionary grant would cover 100% of costs under the Planning Grant. There is no non-Federal match requirement for Planning Grants. Grant funds would be used for the design and permitting of the two culvert crossings, both of which aim to increase infrastructure resiliency and restore natural habitat. The following table breaks down the proposed budget by task:

Field Data Collection (Survey & Geotech.)	$57,700
Hydrologic and Hydraulic Analysis	$8,300
Preliminary Design	$32,900
Final Design	$25,100
Permitting (Local, State, Federal)	$34,000
Public Outreach & Meetings	$18,200
Bidding	$13,700
Contingency/Unanticipated Cost Increases	$27,300
Design Phase Total	**$217,200**

III. MERIT CRITERIA

1. Program Alignment

The project is applying for the Planning Grant category to fund the preliminary and final design to increase the resiliency of two stream crossings against roadway flooding. The project will be designed to exceed minimum state and local standards to increase resiliency at the crossing against climate change. As discussed in Section I, freshwater flooding is forecasted to increase in New Hampshire over the next several decades due to both increasing storm frequency and intensity and existing infrastructure having been designed to outdated precipitation data. The existing culverts are undersized both with respect to hydraulic capacity and geomorphic compatibility. The project design will consider increasing extreme precipitation events in accordance with NHDES guidance.

Increasing storm intensities will exacerbate flooding issues at the two crossings and lead to more frequent roadway closures. Both culverts will be designed such that the roadway elevation will be above the year 2100 anticipated 100-year flood elevation, ensuring continued access and increasing infrastructure resiliency. This adds short-term resiliency be replacing currently undersized crossings susceptible to flooding with culverts and roadway elevations that will withstand the existing 100-year storm, and long-term resilience is provided by the incorporation of 2100 precipitation forecasts into their designs.

Hydraulically deficient culverts are vulnerable to flooding and thereby are a threat to public safety, damage roadways, and degrade alluvial and riparian habitat. Undersized culverts alter natural sediment transport dynamics in stream habitats by increasing water velocities through them. Increased velocities are a substantial impediment to aquatic organism passage (as are perched outlets) and produce bank erosion and streambed scour.

Replacing the undersized close bottom pipes with span structures at both crossings will restore the streams and wetland habitat to their natural state. The proposed crossings will be designed to not be a barrier to sediment transport, not restrict high flows, maintain low flows, provide full aquatic organism passage, decrease the frequency of flooding over upstream banks, reduce downstream erosion, enhance geomorphic compatibility, and preserve hydrologic connectivity of the streams. These benefits will directly impact the Musquash Conservation Area. Enhancing it and providing the tangential benefits that have previously been discussed concerning land conservation. The Town of Hudson Conservation Commission (ConCom) was engaged in the interest of partnering with an abutting environmental resource partner with a strong interest in the project.

More resilient crossings will provide benefits to the community from a transportation and accessibility perspective. Sidewalks, widened shoulders, and bike lanes will be evaluated at both crossings. The Gowing Road crossing is particularly vulnerable due to its status as the sole access to a neighborhood. Redesign of this crossing is critical to increasing resiliency and providing emergency access.

In consultation with the ConCom, replacement of the two crossings will improve habitat in the Musquash Conservation Area. The Musquash Road crossing has been identified as Pickerel

habitat, and the crossing replacement will be fully compatible for aquatic organism passage such that Pickerel will be able to migrate across it and into the Conservation Area. Replacing the undersized culvert at Gowing Road will improve water quality flowing into the Conservation Area from this inlet.

Land conservation, and ensuring healthy habitat in these areas, is critical for enhancing local communities. Land conservation preserves water quality, protects terrestrial and aquatic organisms and their habitat, sequesters carbon, and improves community well-being through access to green space. The primary goal of this project is to enhance the Musquash Conservation Area.

2. *Schedule and Budget*

The project budget was described in Section II. No other funds have been applied for or awarded for this project.

The schedule outlined below assumes all phases will proceed concurrently between the two crossings. Concurrent design is possible due to the related site hydrology and potential to permit under a single application and is desirable to maximize efficient use of funds and coordination with project partners.

With the exact award date of the grant funds unknown, an assumed Notice to Proceed was listed. The ensuing schedule could be advanced or delayed depending on the actual date of funding. The schedule provided is intended to show the Town's ability to work with a design firm to progress the project through the required milestones in a timely manner. This schedule has been prepared to allow for sufficient time to complete all intermediate and final documentation, tracking, and status reporting requirements associated with this funding source.

Assumed Notice to Proceed	Aug. 2024	--
Execution of Grant Agreements and Project Kickoff	Sep. 2024 – Oct. 2024	2 Months
Advertisement for and Selection of Design Consultant	Nov. 2024 – Dec. 2024	2 Months
Site Data Collection	Jan. 2025 – Apr. 2025	4 Months
Project Partner Collaboration Startup	Apr. 2025	--
Hydrology & Hydraulics	May 2025 – Jun. 2025	2 Months
Preliminary Design	July 2025 – Oct. 2025	4 Months
Final Design	Nov. 2025 – Feb. 2025	4 Months
Permitting (Local, State, and Federal)	Nov. 2025 – Mar. 2026	5 Months
Finalize Project Cost Estimate	Mar. 2026	--
Prepare and Advertise Construction Contract Documents	Apr. 2026 – May 2026	2 Months

3. *Public Engagement, Partnerships and Collaboration*

The Town of Hudson Public Works Department, which is responsible for maintaining infrastructure in the Town, has partnered with the Town of Hudson ConCom on this project. The ConCom was engaged in the planning process to develop the project scope. The Gowing Road culvert transmits freshwater flow to the Musquash Conservation Area, and the Musquash Road culvert is the outlet for Musquash Pond. Attached is a letter of commitment between the Town

and the ConCom to work collaboratively. To initiate this partnership, a site walk of the pertinent areas of the Musquash Conservation will be scheduled at the onset of the project, and will include representatives from the Town, ConCom, and engaged consultants.

As a critical component of this project, the proposed budget includes a specific line item for public involvement. The public engagement and outreach for this project includes two public meetings and two working group meetings with the ConCom. The initial public meeting and surrounding outreach will take a blank slate approach, focusing on asking questions and hearing about issues from the stakeholders' perspectives. Two working group meetings will ensure public input on an ongoing basis as the project progresses, laying the groundwork for a balanced second public meeting, where the alternatives will be presented in an open house format. Due to the diversity of interests in this project (municipality, ConCom, community), it is expected that individual meetings with key stakeholders will also be required to answer specific or technical questions.

To bolster and maintain robust public engagement throughout this project, the Town will utilize a project website where stakeholders can submit questions or comments to be added to the project records. An extensive email list of interested parties will also be developed and will be used to send out updates at key project milestones.

Multiple steps will be taken to ensure that input collected through the public engagement process is fully considered throughout the design process. Questions and comments submitted through the website will be directed by email to a prepopulated list of project team members, including the Town and consultant contacts. This will ensure that valuable community input will be distributed to the project team for consideration and response. Additionally, minutes will be recorded at public project meetings and will include all questions and comments that are voiced. Responses provided at the meeting will also be recorded and questions requiring follow up will be completed within a week of the meeting. The completed minutes, questions/comments, and responses will be available on the project website and will be distributed to interested parties through the project email list.

4. *Innovation*

Prior to developing the scope for these proposed projects, the Town sought out a partnership with the Town ConCom with the goal of collaborating with a natural resource management agency. The ConCom directly oversees the Musquash Conservation Area and has a detailed understanding of the needs and uses of this resource area. The objective of this partnership is to focus on combining the technical experience of the Town and their consultants with the knowledge of best management practices and nature-based solutions from the ConCom. This innovative cooperation differs from classical municipal transportation projects where the form and function of the transportation infrastructure fully dictates the process and outcome of projects. For this project, the Town is proposing concurrent improvements to municipal infrastructure and the connecting resources areas, for the mutual benefit and resiliency of both systems.

The Town also intends for this project to highlight the benefits of partnering with natural resource management agencies, versus only engaging them as needed or required by permitting

processes. With many active municipal conservation commissions throughout New Hampshire and New England, this project stands to serve as an example of how this type of coordination can greatly improve the resiliency of transportation infrastructure.

IV. BENEFIT-COST-ANALYSIS

A Benefit-Cost Analysis is not required for Planning Grants.

V. FHWA PRIORITY CONSIDERATIONS

The project meets merit criteria #3 by actively engaging the Hudson ConCom as a project partner. The ConCom will participate in several projects meetings and guide the design such that it maximizes habitat improvement to the Musquash Conservation Area.

There is a strong need for project funding. The Town would not be able to fund design and permitting for this project without the award of a PROTECT Discretionary Grant Program Planning Grant. Hudson is a rural Town, and the municipal funds to support this project are not available at this time.

ATTACHMENT A
CONSERVATION COMMISSION
LETTER OF COMMITMENT

TOWN OF HUDSON

Engineering Department

12 School Street • Hudson, New Hampshire 03051 • Tel: 603-886-6008 • Fax: 603-816-1291

FROM: Elvis Dhima, P.E., Town Engineer
William Collins, Conservation Commission Chairman

DATE: July 24, 2023

RE: Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Program

PROJECT Musquash Conservation Area Flooding and Transportation Improvements

To Whom it Might Concern:

Please be advised that Town of Hudson and Hudson Conservation Commission intent to work in partnership regarding the program listed above.

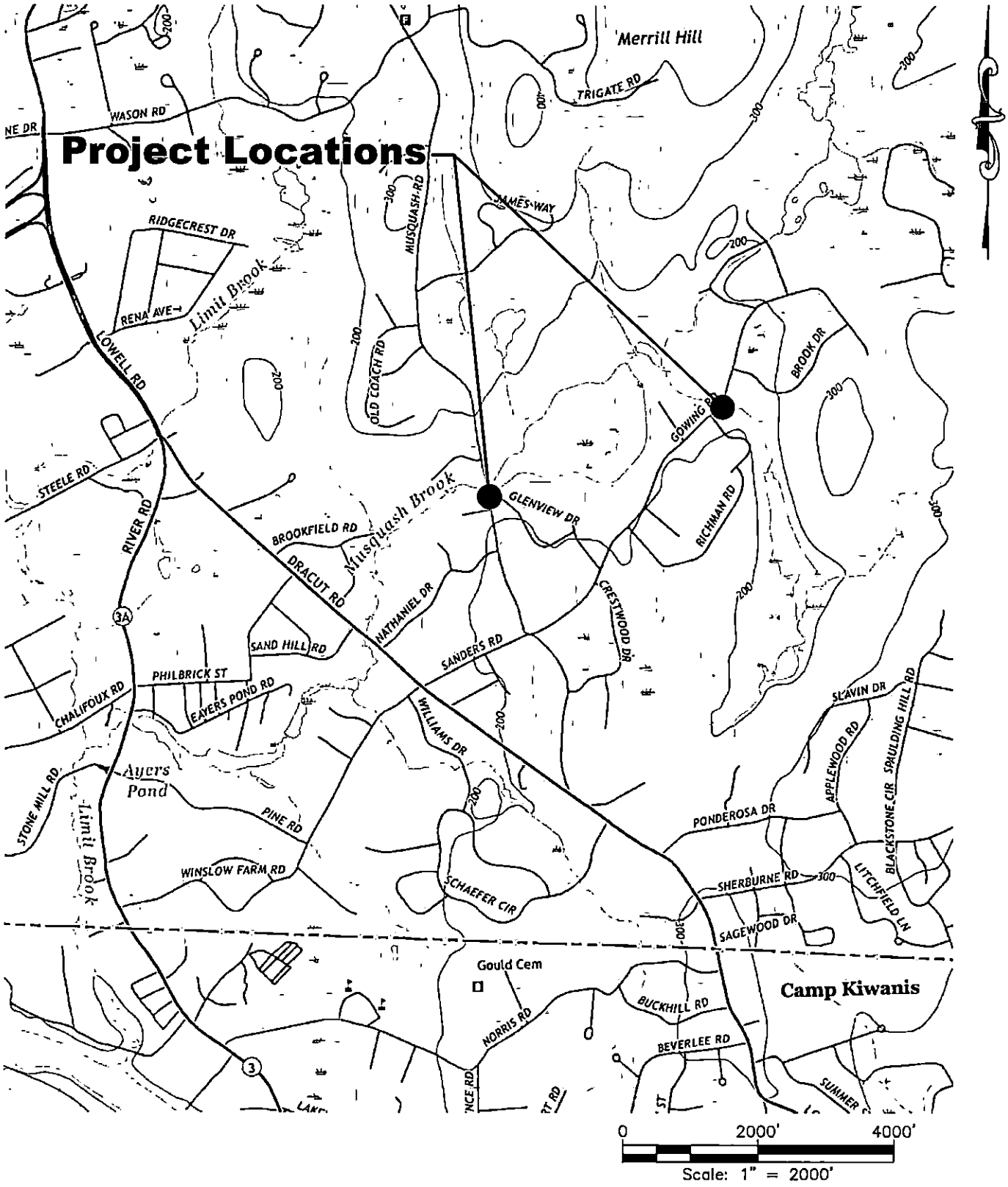
Please feel free to reach out to me if you have any questions

Sincerely,

Elvis Dhima, P.E.
Town Engineer

William Collins
Chairman of Conservation Commission

ATTACHMENT B
USGS MAP



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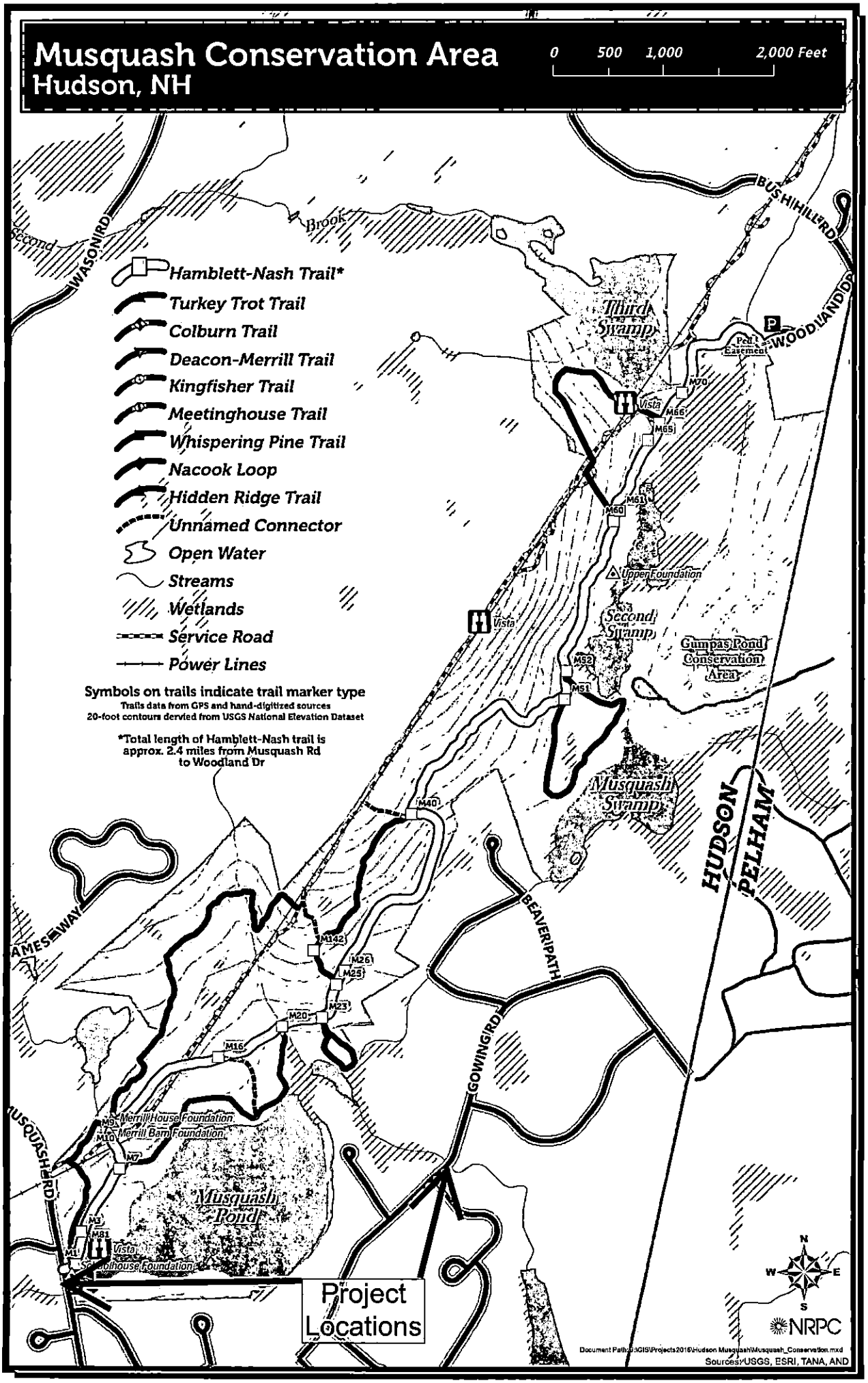
Town of Hudson
Hudson, New Hampshire
Musquash Conservation Area
Flooding and Transportation Improvements

USGS Map

ATTACHMENT C
MUSQUASH
CONSERVATION MAP

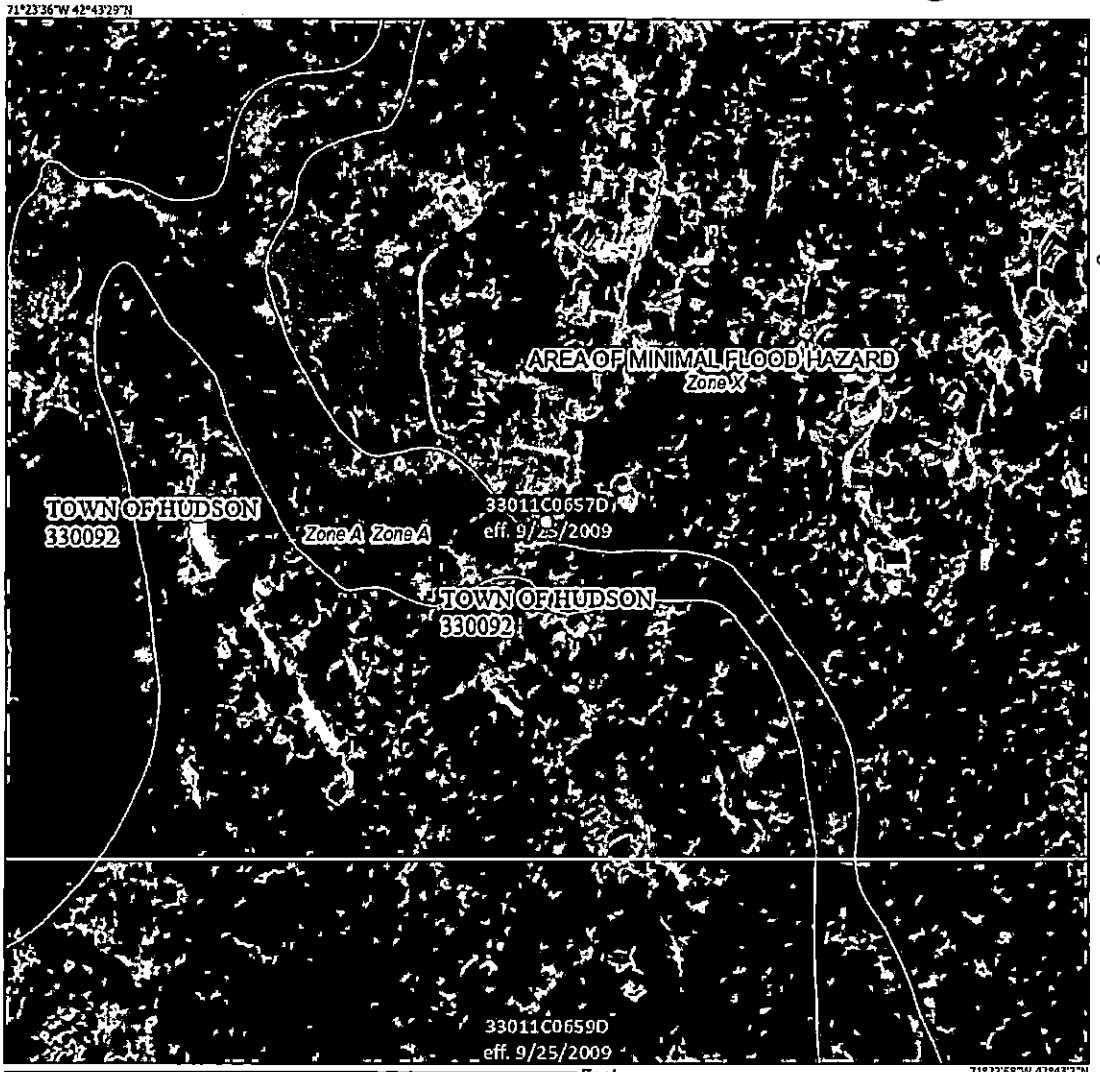

Musquash Conservation Area
Hudson, NH
0 500 1,000 2,000 Feet
Hamblett-Nash Trail*
Turkey Trot Trail
Colburn Trail
Deacon-Merrill Trail
Kingfisher Trail
Meetinghouse Trail
Whispering Pine Trail
Nacook Loop
Hidden Ridge Trail
Unnamed Connector
Open Water
Streams
Wetlands
Service Road
Power Lines
Symbols on trails indicate trail marker type
Trails data from GPS and hand-digitized sources
20-foot contours dervied from USGS National Elevation Dataset
*Total length of Hamblett-Nash trail is approx. 2.4 miles from Musquash Rd to Woodland Dr
Second Brook
WASON RD
BUSH HILL RD
WOODLAND DR
Third Swamp
Ped Easement
Vista
Upper Foundation
Second Swamp
Gumpas Pond Conservation Area
Musquash Swamp
HUDSON
PELHAM
BEAVER PATH
GOWING RD
AMES WAY
MUSQUASH RD
Merrill House Foundation
Merrill Barn Foundation
Musquash Pond
Project Locations
N
W
E
S
NRPC
Document Path:J:\GIS\Projects2016\Hudson Musquash\Musquash_Conservation.mxd
Sources:USGS, ESRI, TANA, AND

ATTACHMENT D
FEMA MAPS

National Flood Hazard Layer FIRMette

FEMA

71°23'36"W 42°43'29"N



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0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee, See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/18/2023 at 11:47 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

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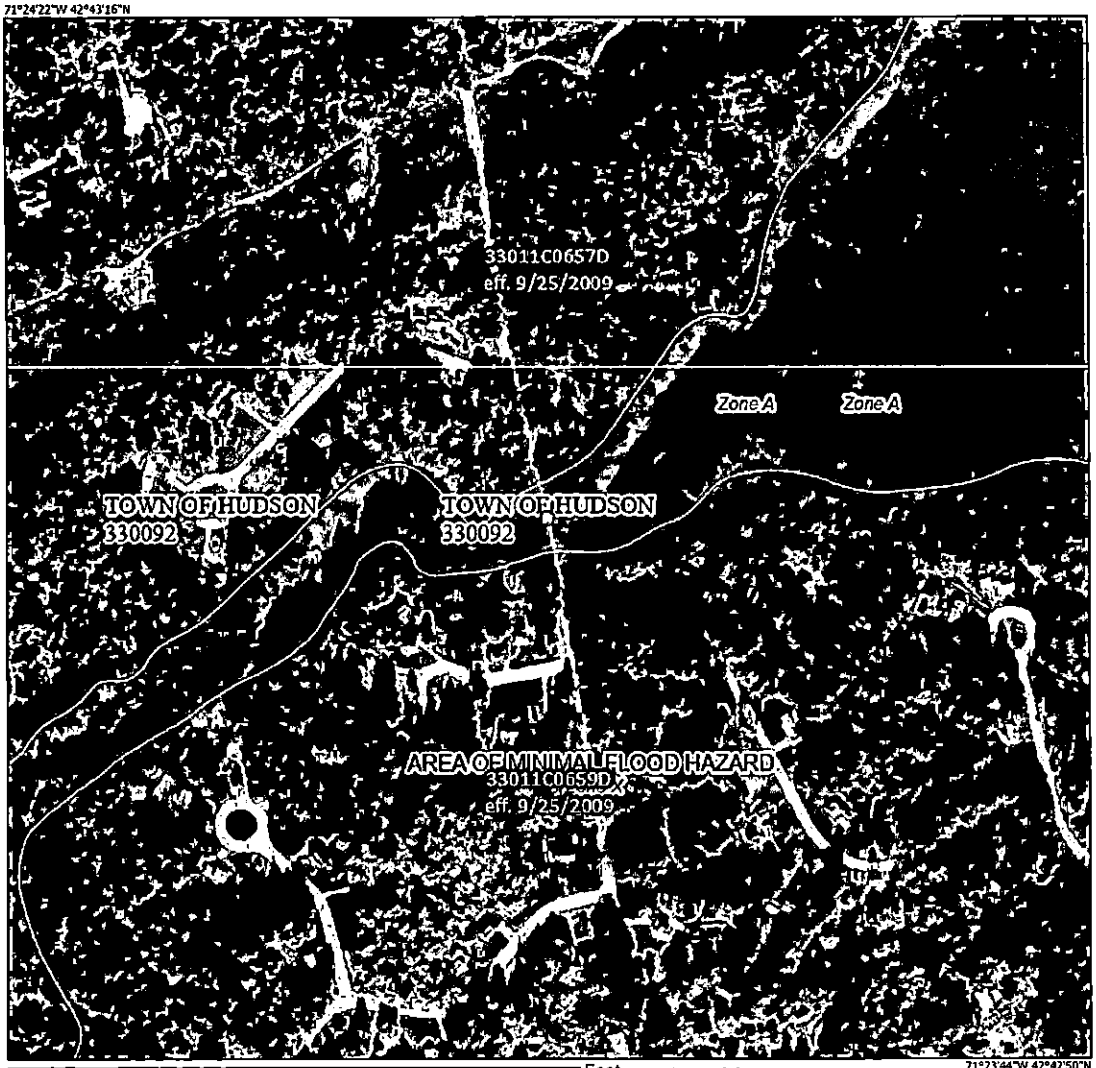

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Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
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- Channel, Culvert, or Storm Sewer
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OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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ATTACHMENT E
SITE PHOTO LOG

Photo 1: Musquash Road – Culvert Inlet

Photo 2: Musquash Road – Culvert Outlet

Photo 3: Musquash Road – Upstream of Crossing

Photo 4: Musquash Road – Downstream of Crossing

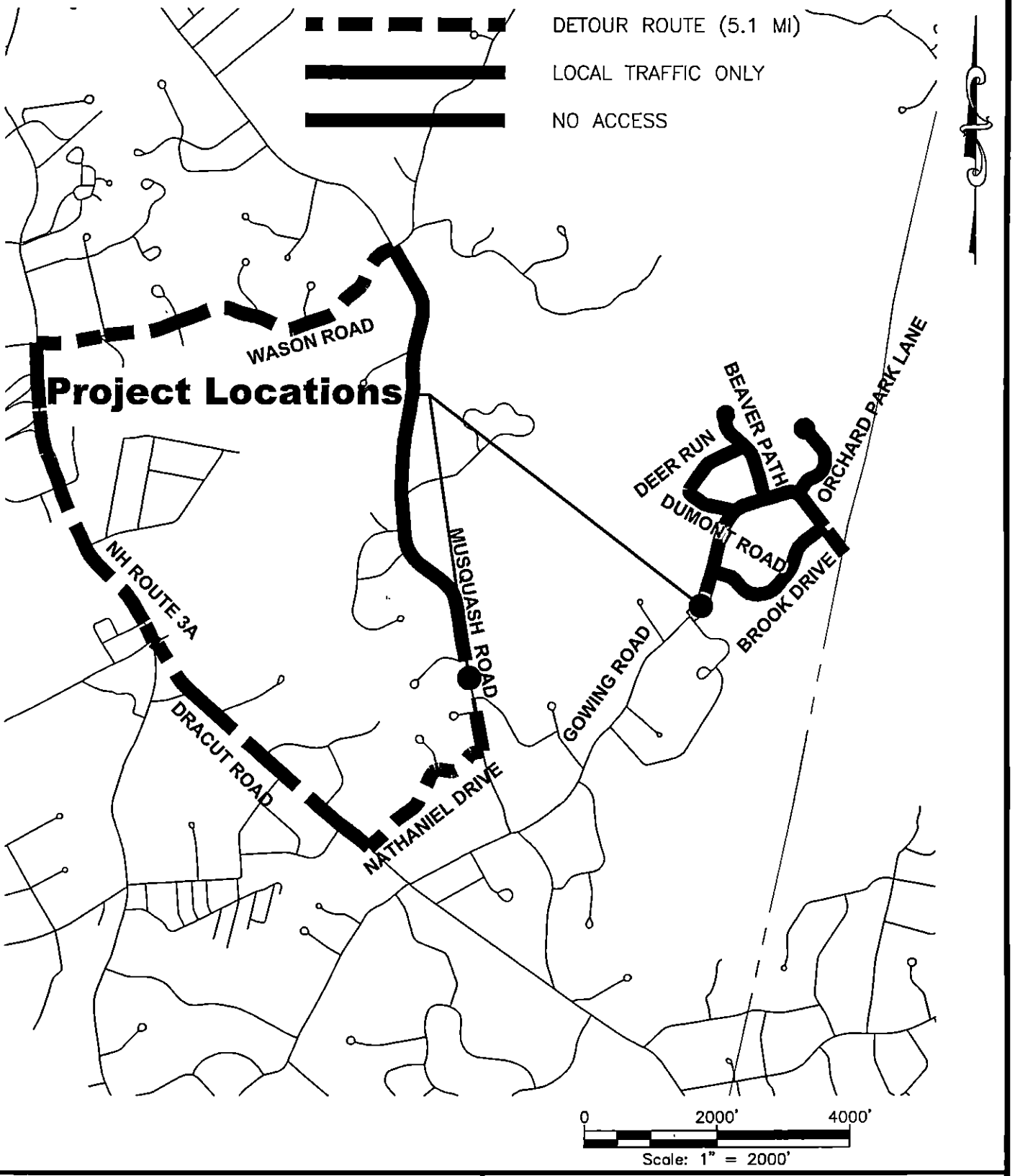
Photo 5: Gowing Road – Culvert Inlet

Photo 6: Gowing Road – Culvert Outlet

Photo 7: Gowing Road – Upstream of Crossing

Photo 8: Gowing Road – Downstream of Crossing

ATTACHMENT F
DETOUR MAP



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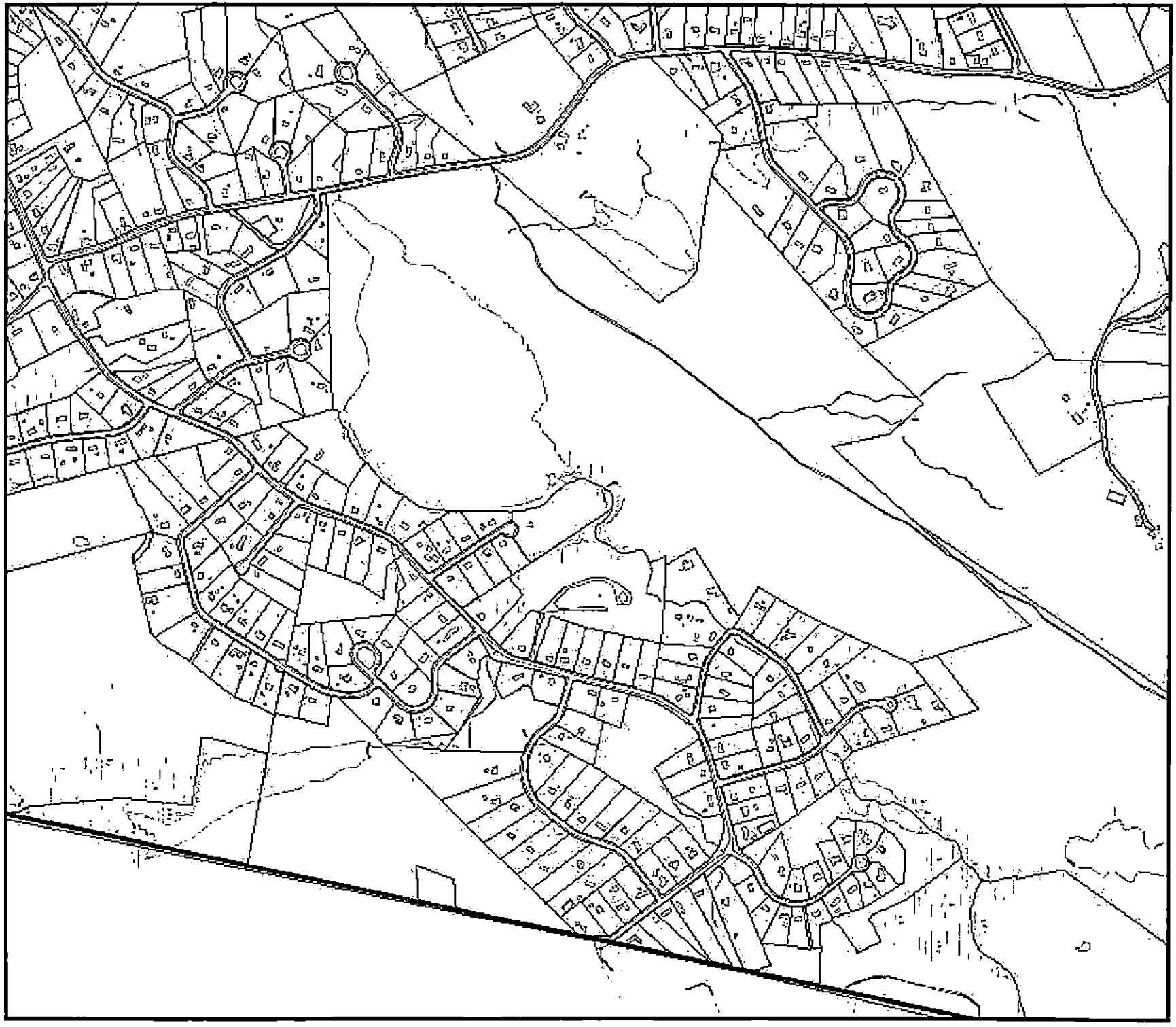
ENGINEERS
CIVIL/ENVIRONMENTAL/STRUCTURAL
Portsmouth, NH • Manchester, NH • Portland, ME
603/431-6196 • 603/627-0708 • 207/541-4223
c m a e n g i n e e r s . c o m

Town of Hudson
Hudson, NH
Musquash Conservation Area
Flooding and Transportation Improvements

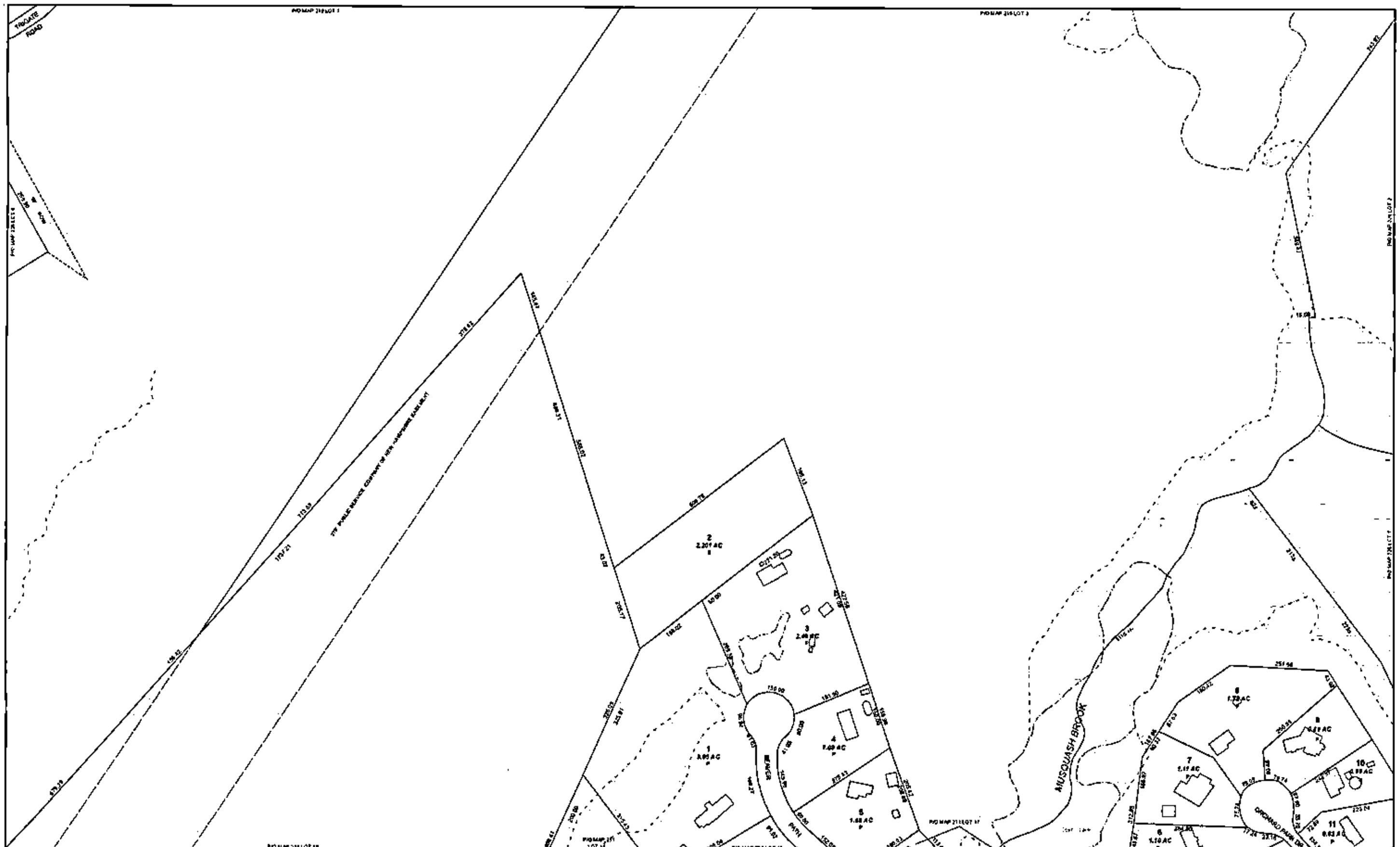
Flooding Detour Map

F:\CADD\PROJECTS\1297 Hudson PROTECT Grant\Production\1297-Traffic Plan.dwg Date Plotted: Jul 27, 2023 - 9:25am

ATTACHMENT G
TOWN GIS MAP



ATTACHMENT H
TOWN TAX MAPS



Notes

1) For Tax Assessment Purposes
Not to be Used for Conveyances

2) P - Parcel Information from Recorded Plan
D - Parcel Information from Recorded Deed
S - Parcel Information from Map Scale Only

TOWN OF HUDSON
12 SCHOOL STREET
HUDSON, NH 03051

MAP LEGEND

PARCEL BOUND		ROAD RIGHT OF WAY	
PAPER ROAD		PRIVATE RIGHT OF WAY	
WETLAND		PARCEL NUMBER	[illegible]
BUILDING		PARCEL DIMENSION	161.21
EASEMENT LINE		PARCEL AREA	2.459 AC
WATER LINE		MATCH LABEL	P/O MAP 111 LOT 34
TOWN LINE			

100 50 0 100 200 300 Feet

1 in = 100 ft (SCALE APPLIES TO PAPER SIZE ARCH D)

NEW HAMPSHIRE STATE PLANE COORDINATE GRID: NAD 1983, US FEET
PHOTOGRAPHY DATE: APRIL 4, [illegible]
PARCEL MAPPING BY EAST COAST MAPPING, INC.
UPDATED BY AERIAL SURVEY & PHOTO, INC.
UPDATED BY NRPC - [illegible]

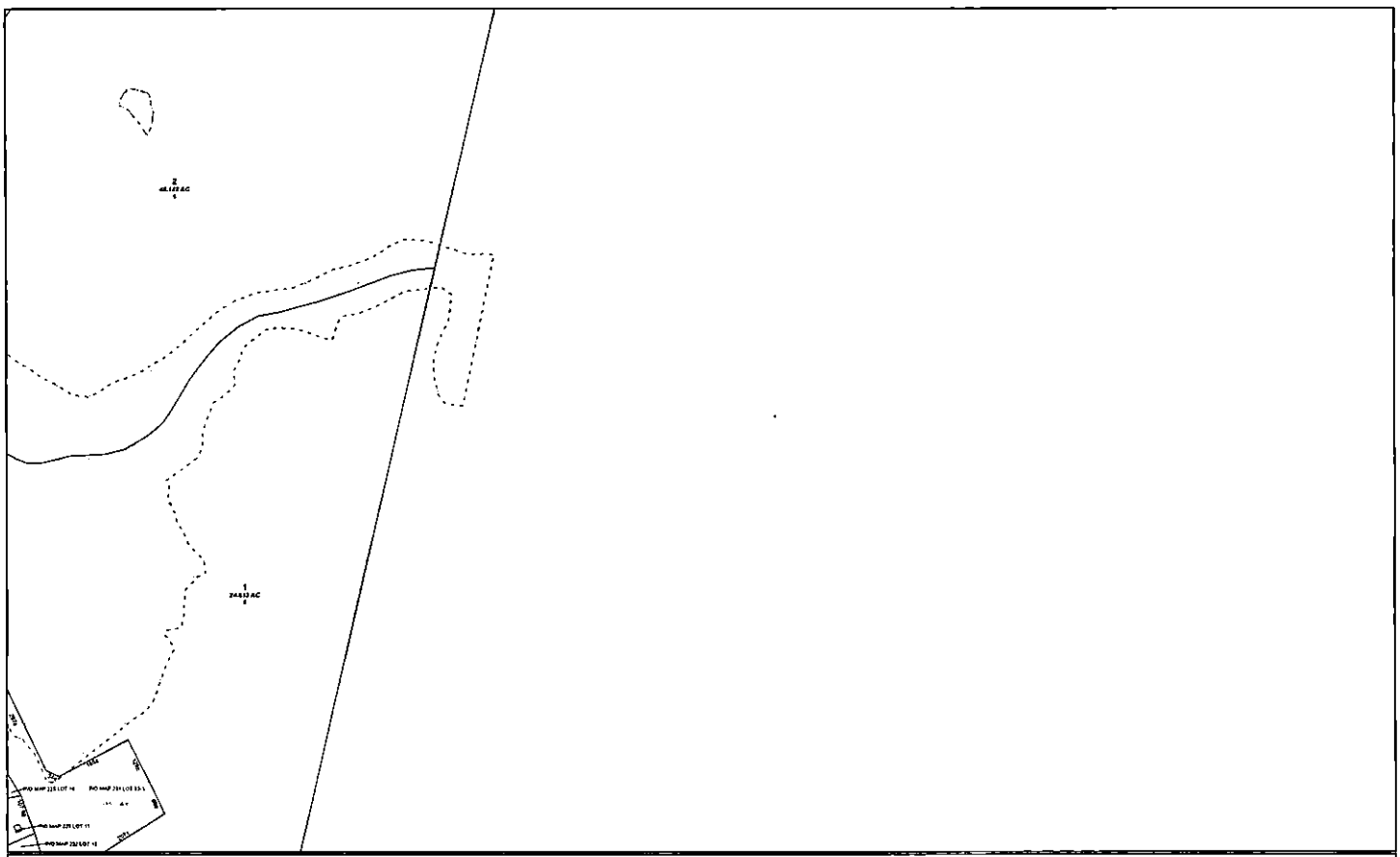
NRPC

INDEX DIAGRAM

218	219	220
224	225	226
230	231	232

PROPERTY MAP
TOWN OF HUDSON
HILLSBOROUGH COUNTY
NEW HAMPSHIRE

225



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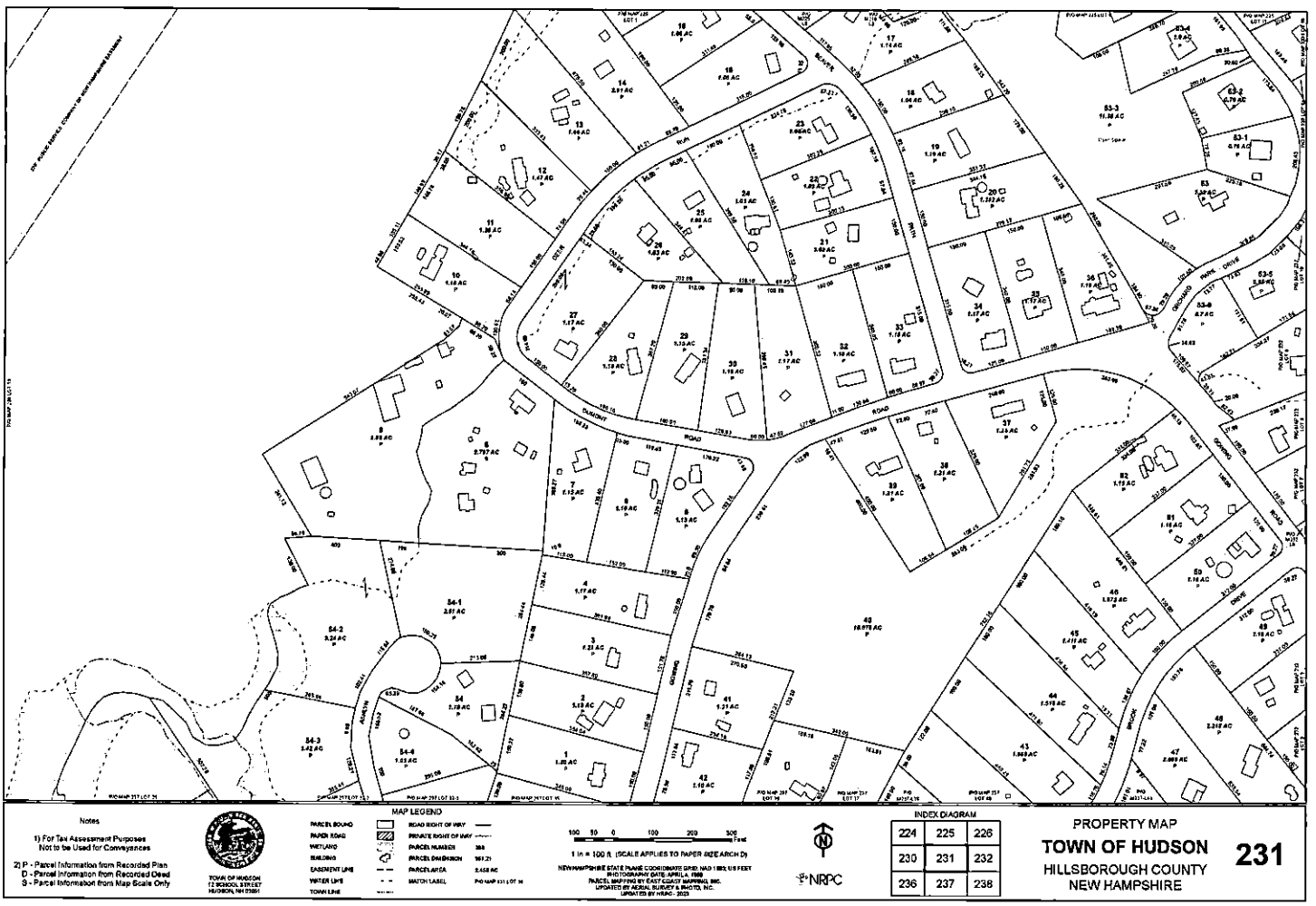
PROPERTY MAP

TOWN OF HUDSON

HILLSBOROUGH COUNTY
NEW HAMPSHIRE

226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TOWN OF HUDSON
12 SCHOOL STREET
HUDSON, NH 03051
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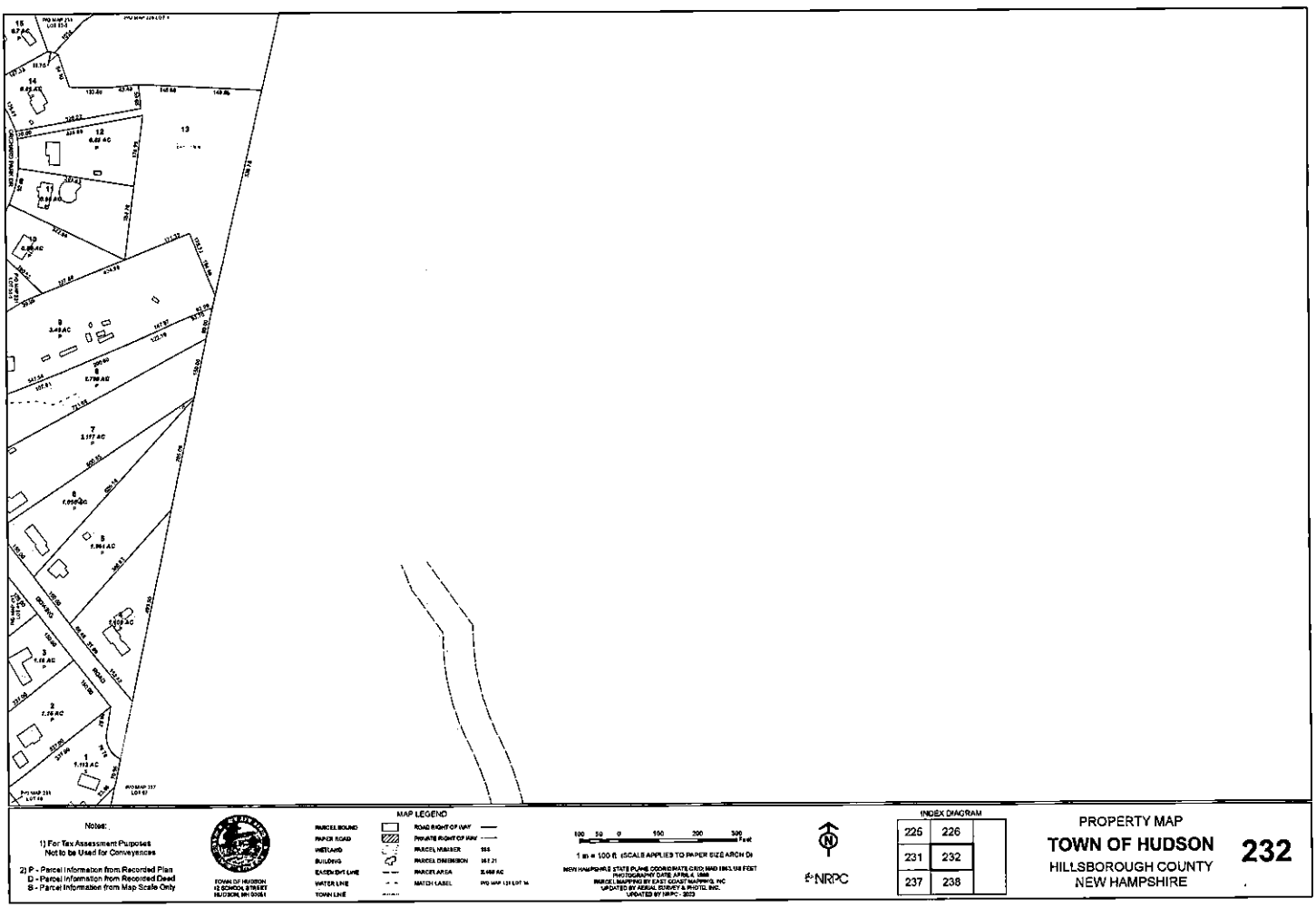
PARCEL BOUND
PAPER ROAD
WETLAND
BUILDING
EASEMENT LINE
WATER LINE
TOWN LINE
ROAD RIGHT OF WAY
PRIVATE RIGHT OF WAY
PARCEL NUMBER
PARCEL DIMENSION
PARCEL AREA
MATCH LABEL
100 50 0 100 200 300 Feet
1 in = 100 ft. (SCALE APPLIES TO PAPER SIZE ARCH D)
NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM, NAD 1983, US FEET
PHOTOGRAPHIC DATE: APRIL 6, 1999
PARCEL MAPPING BY EAST COAST MAPPING, INC.
UPDATES BY AERIAL SURVEY & PHOTO, INC.
UPDATES BY NRPC - 2023
NRPC
INDEX DIAGRAM
224 225 226
230 231 232
236 237 238
PROPERTY MAP
TOWN OF HUDSON
HILLSBOROUGH COUNTY
NEW HAMPSHIRE
231



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TOWN OF HUDSON
12 SCHOOL STREET
HUDSON, NH 03051

MAP LEGEND

PARCEL BOUND
PAPER ROAD
WETLAND
BUILDING
EASEMENT LINE
WATER LINE
TOWN LINE
ROAD RIGHT OF WAY
PRIVATE RIGHT OF WAY
PARCEL NUMBER
PARCEL DIMENSION
PARCEL AREA
MATCH LABEL

100 50 0 100 200 300 Feet

1 in = 100 ft (SCALE APPLIES TO PAPER SIZE ARCH D)

NEW HAMPSHIRE STATE PLANE COORDINATE GRID NAD 1983 US FEET
PHOTOGRAPHY DATE APRIL 6, 1998
PARCEL MAPPING BY EAST COAST MAPPING, INC
UPDATED BY AERIAL SURVEY & PHOTO, INC.
UPDATED BY NRPC - 2023

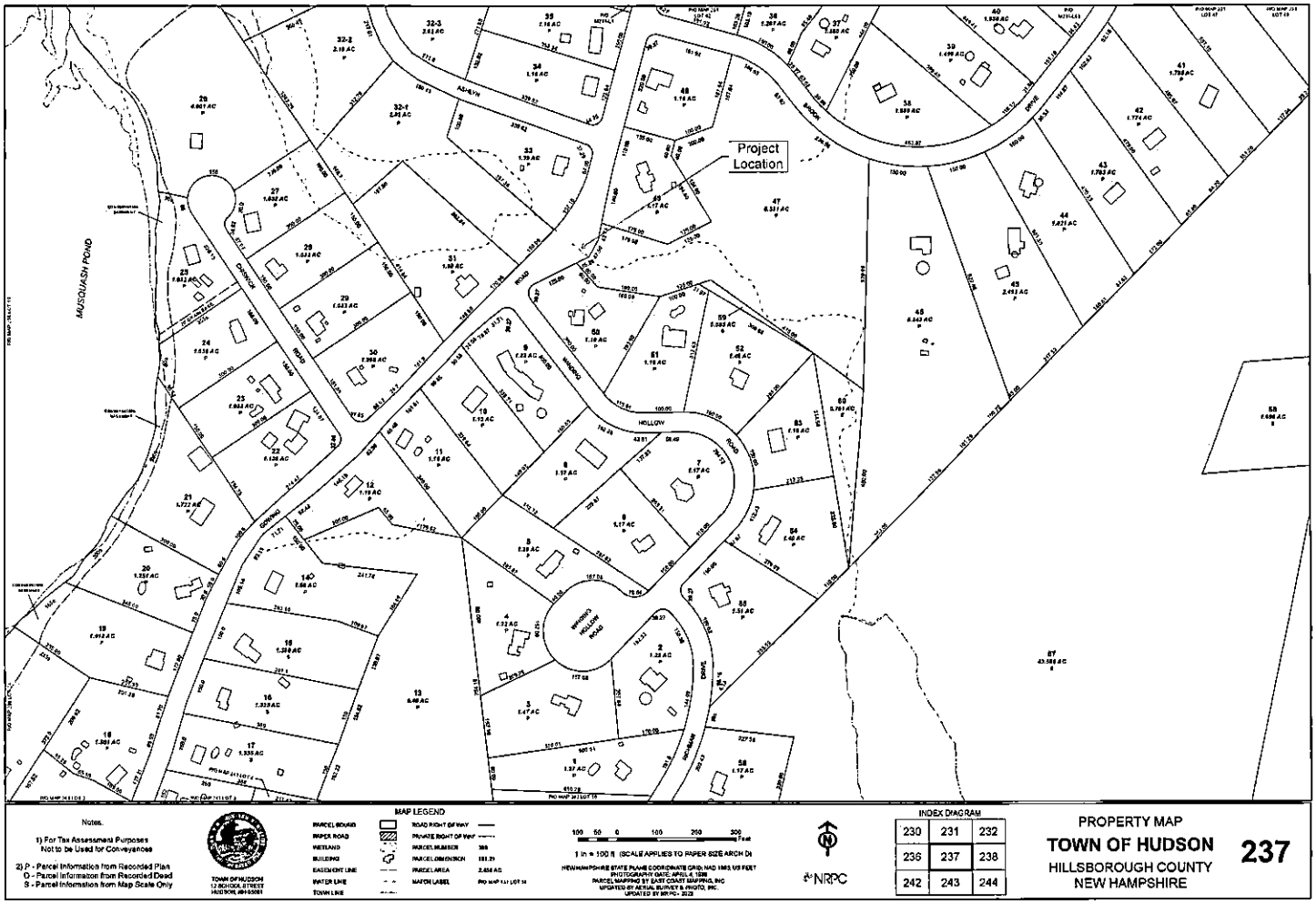
NRPC

INDEX DIAGRAM

225	226
231	232
237	238

PROPERTY MAP
TOWN OF HUDSON
HILLSBOROUGH COUNTY
NEW HAMPSHIRE

232



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TOWN OF HUDSON
12 SCHOOL STREET
HUDSON, NH 03051

MAP LEGEND

PARCEL BOUND
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PARCEL NUMBER
PARCEL DIMENSION
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MATCH LABEL

100 50 0 100 200 300 Feet

1 in = 100 ft (SCALE APPLIES TO PAPER SIZE ARCH D)

NEW HAMPSHIRE STATE PLANE COORDINATE GRID NAD 1983 US FEET
PHOTOGRAPHY DATE: APRIL 6, 1998
PARCEL MAPPING BY EAST COAST MAPPING, INC
UPDATED BY ACTUAL SURVEY & PHOTO, INC.
UPDATED BY NRPC - 2023

NRPC

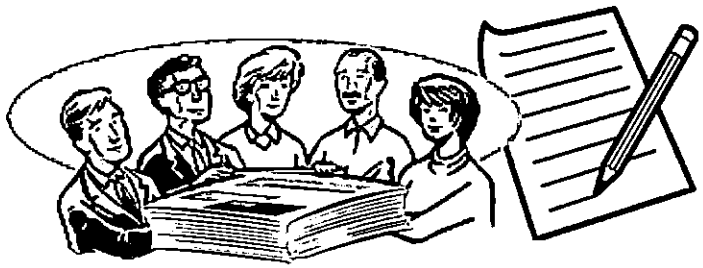
INDEX DIAGRAM

230	231	232
236	237	238
242	243	244

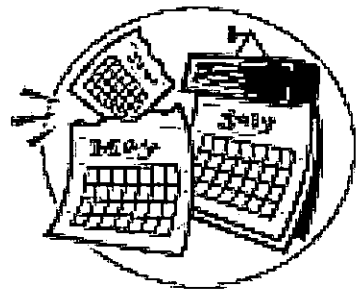
PROPERTY MAP
TOWN OF HUDSON
HILLSBOROUGH COUNTY
NEW HAMPSHIRE

237

How to Review and Comment on Wetland Permit Applications



Sandra Crystall, PWS
Bow Conservation Commission
conservation@bownh.gov



NHACC Annual Meeting & Conference
November 2022

Overview

- Statutory authorization
- Process and timeframes
- What to comment on?
- Site walks

RSA 482-A:11, III Intervention

- Conservation Commission (Also LAC or NH Rivers Council)
- Upon written notification ... that it intends to investigate any notice received by it pursuant to RSA 482-A:3, NHDES shall not make its decision on the application that is the subject of the notice until it has received and acknowledged receipt of a written report ... or until 40 days from the date of filing with the municipal clerk of such notice, whichever occurs earlier, subject to an extension of up to 40 days, as permitted by the commissioner, for good cause shown.
- Relative to any expedited permit .... the notification by a municipal conservation commission of intended investigation shall be assumed unless the application filed under RSA 482-A:3 was signed by the conservation commission.

Timing of Intervention Notice and Comments on Standard Dredge and Fill Applications

Municipal Clerk signs Standard Dredge & Fill application

Day 0

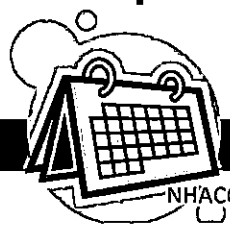
Notice of intervention to NHDES

NHDES must receive comments by Day 14

- Conduct site walk
- Prepare & submit comments

Email/Submit comments to NHDES

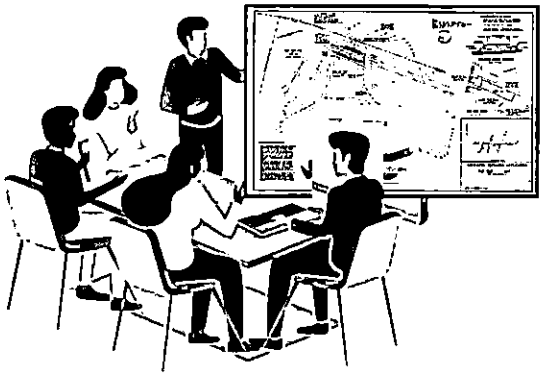
NHDES must receive comments by Day 40



For expedited applications, intervention is assumed *if* the application is *not* signed.

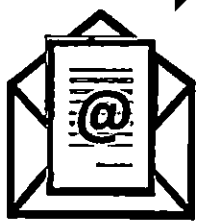
Municipal Clerk signs Expedited application

Day 0



- Meet
- Conduct site walk
- Prepare comments

Email/Submit comments to NHDES

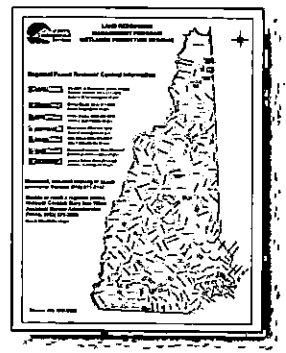


NHDES must receive comments by Day 21

How to make the intervention timing work?

- Pre-approve the chairperson or another (back-up) member to file an intervention notice ahead of a scheduled commission meeting, as needed.
  - Based on certain criteria (or not)
    - Such as, impact category, resources in your community, etc.
- Consider extra meeting as necessary.

What to write to intervene...



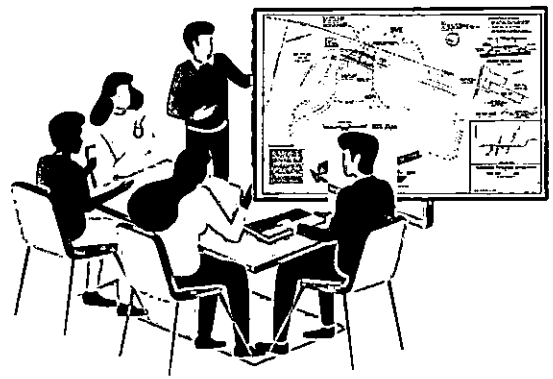
- Subject: Landowner name /Town/ Tax map - Lot # (street)

OR File # 2022-0000 (landowner/ town name)

"The XXX Conservation Commission (BCC) is providing notification herein, in accordance with RSA 482-A:11, that it intends to investigate the project that is the subject of the Minimum/Minor/Major impact wetlands permit application described above. The Standard Dredge and Fill application was received by the municipal clerk's office on 00/00/00."

- Who to send it to?
  - Permitting inspector listed on OneStop Wetland Permits Query, on permitting inspectors map, lrm@des.nh.gov, or call (603) 271-2147 to get inspector info.

What to comment on?



- Anything within NHDES "Wetlands jurisdiction."
  - RSA 482-A
  - Administrative Rules Env-Wt 100-1000

- **Avoid** commenting on resources and local zoning or site plan regulations not covered by RSA 482-A and the Env-Wt rules.

Wetlands Rules Structure

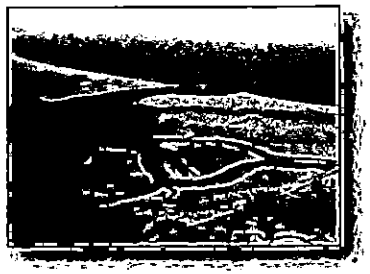
Env-Wt	Content
100	Definitions
200	Hearings, Appeals & Waiver Requests
300	**Permit Types & Procedure**, Standard Conditions, Criteria for Standard Permits
400*	**Delineation** & Classification of jurisdictional areas & **General Project Classification**
500	**Project Specific Requirements** (e.g. docks, utility, forestry, residential, commercial)
600	Coastal Lands & Tidal Waters/ Wetlands
700	Prime Wetlands
800	Mitigation
900	Stream Crossings
1000	Registration of Docks

Impact (Project) Classification

Env-Wt 407

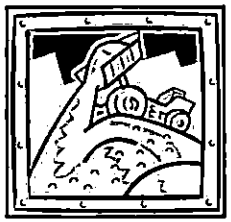
- **Resource.**



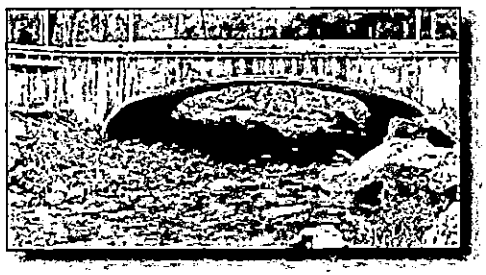


- **Size** of impact (Square feet, linear feet).

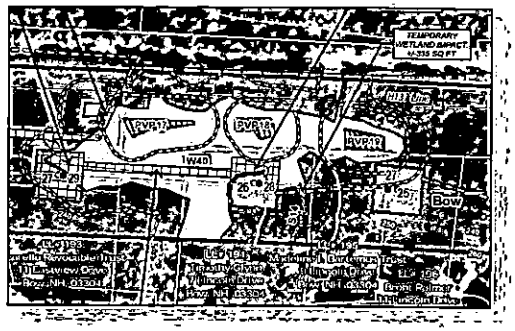




- Project **type.**

1. Confirm the Site Resources



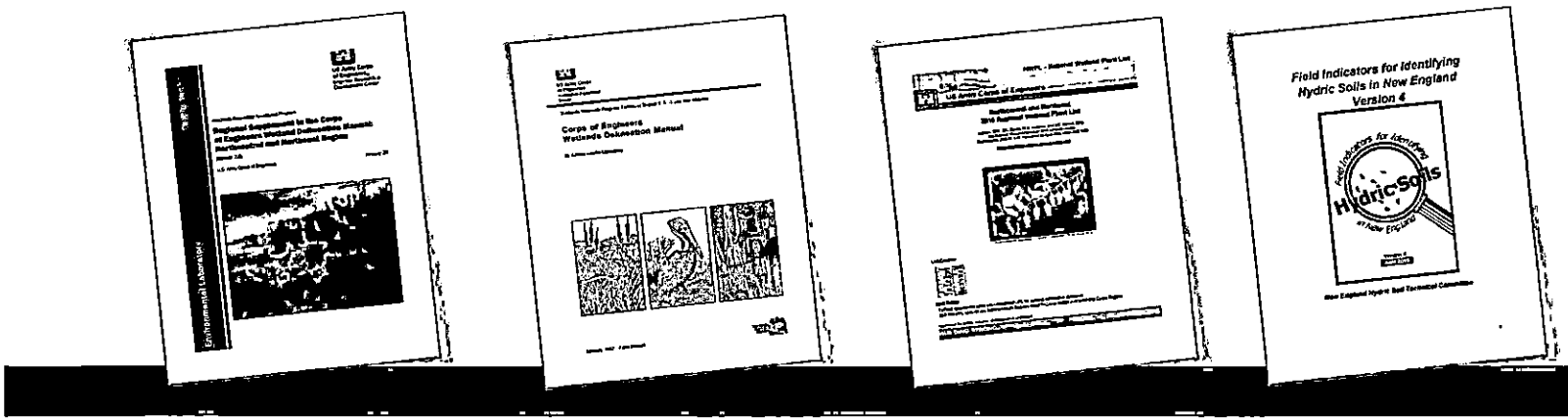
- Project classification is affected by the type of resources present/proposed for impacts.
- How are the resources represented on the plans?
- Type & size of proposed impacts?
  - How are they represented in text (wetlands, streams, coastal lands, etc.) ?
  - Are they correct and in agreement between the text and plans?
- Review the application before doing a site walk.

Impact Area Table – SD&F application (section 11)

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland			☐			☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland			☐			☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface Water	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River			☐			☐
	Lake / Pond			☐			☐
	Docking - Lake / Pond			☐			☐
	Docking - River			☐			☐
Banks	Bank - Intermittent Stream			☐			☐
	Bank - Perennial Stream / River			☐			☐
	Bank / Shoreline - Lake / Pond			☐			☐
Tidal	Tidal Waters			☐			☐
	Tidal Marsh			☐			☐
	Sand Dune			☐			☐
	Undeveloped Tidal Buffer Zone (TBZ)			☐			☐
	Previously-developed TBZ			☐			☐
	Docking - Tidal Water			☐			☐
TOTAL							

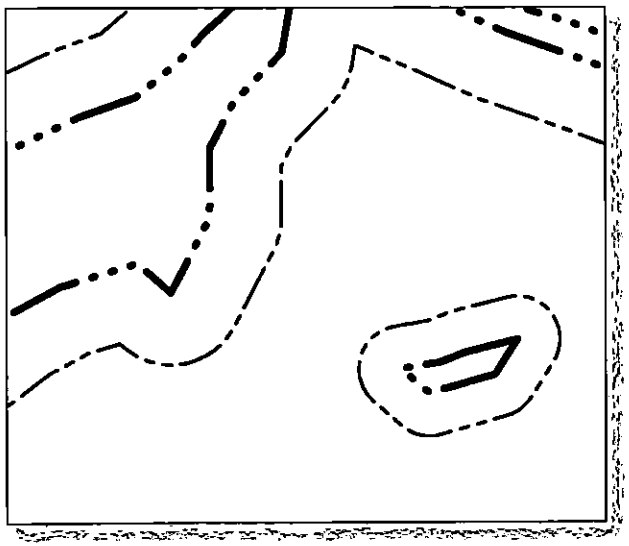
Delineation of Jurisdictional Areas: Wetlands

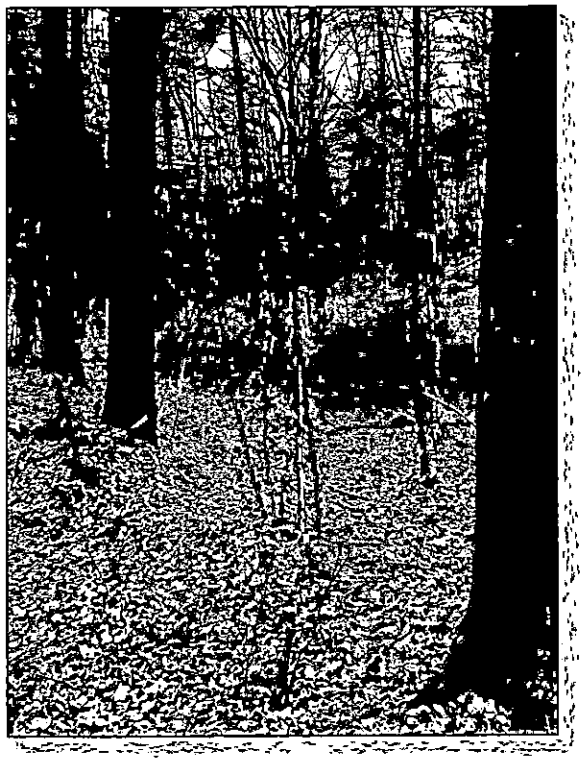
- Wetlands (Env-Wt 406)
  - 1987 Corps Wetland Delineation Manual
  - *2012 Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region.*
    - Hydrology.
  - Hydric Soils – Field Indicators... (v4).
  - Hydrophytic Plants: National Wetland Plant List (2016/2020).



Isolated wetland – vernal pool or not?

- Confirm with site walk (best during appropriate season).





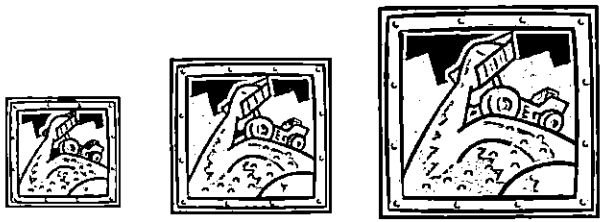
Priority Resource Area
(Env-Wt 103.65)

- Documented occurrences of protected species or habitat for such species, using the **DataCheck Tool.**
- Bog (subset of peatlands).
- Floodplain wetland contiguous to a Tier 3 or higher watercourse.
- **Designated prime wetland** or a duly-established 100-foot buffer.
- Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone.
- Generally elevates a project to a major impact, except for some PBN, SPN, or EXP projects.

Use the Wetland Permit Planning Tool!

2. Confirm the Impact Area: Size

Env-Wt 407

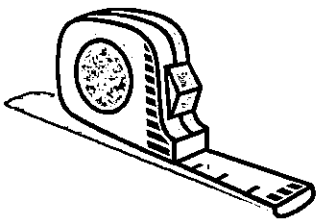


- **Size** of impact (SF, LF).

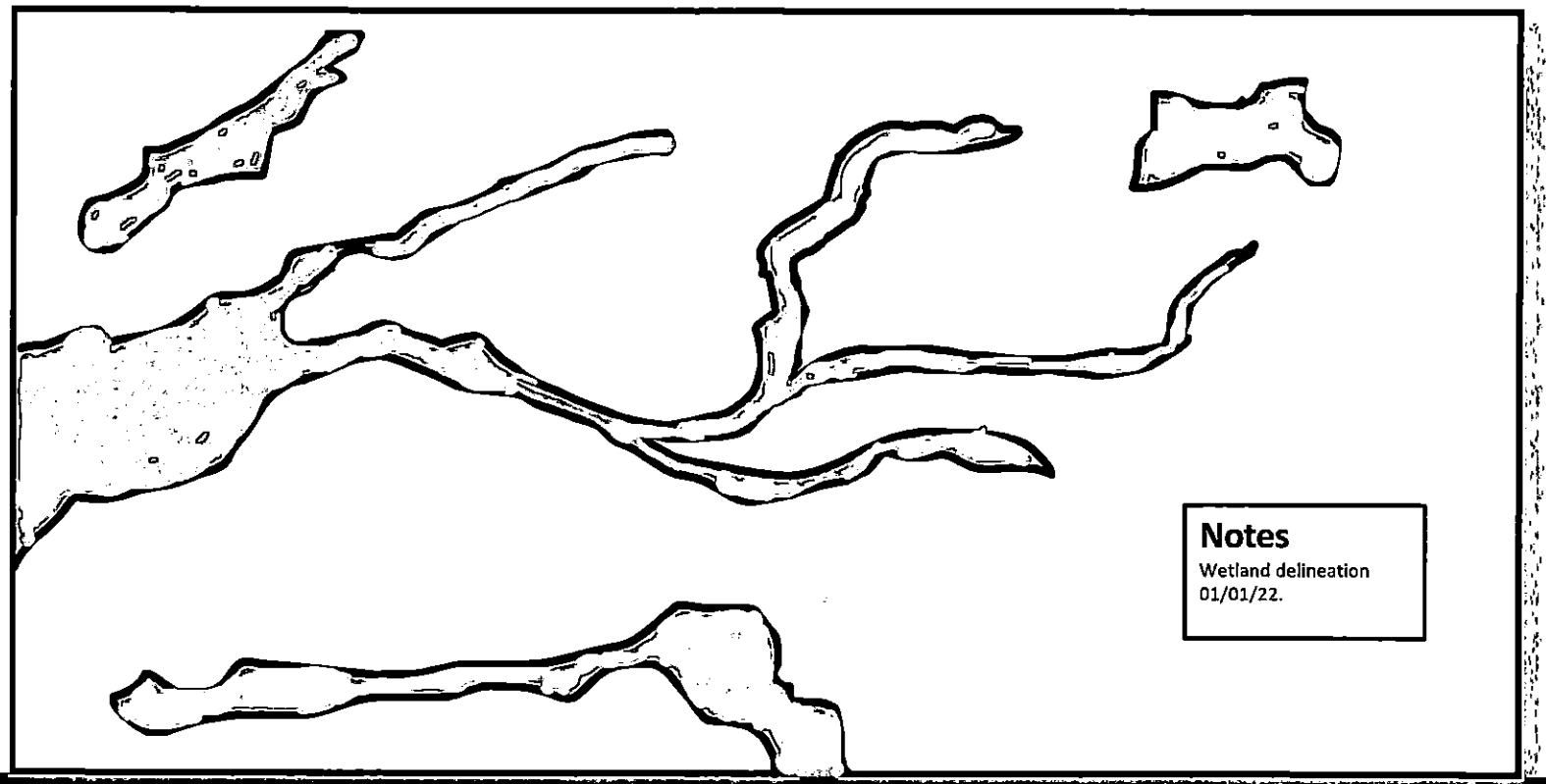
Table 407-1: Classification Based on Size of Impact

Type of Jurisdictional Area	Minimum	Minor	Major
Other than watercourse	< 3,000 square feet (SF)	≥ 3,000 SF to < 10,000 SF	≥ 10,000 SF
Watercourse	< 50 linear feet (LF)	≥ 50 LF to < 200 LF	≥ 200 LF

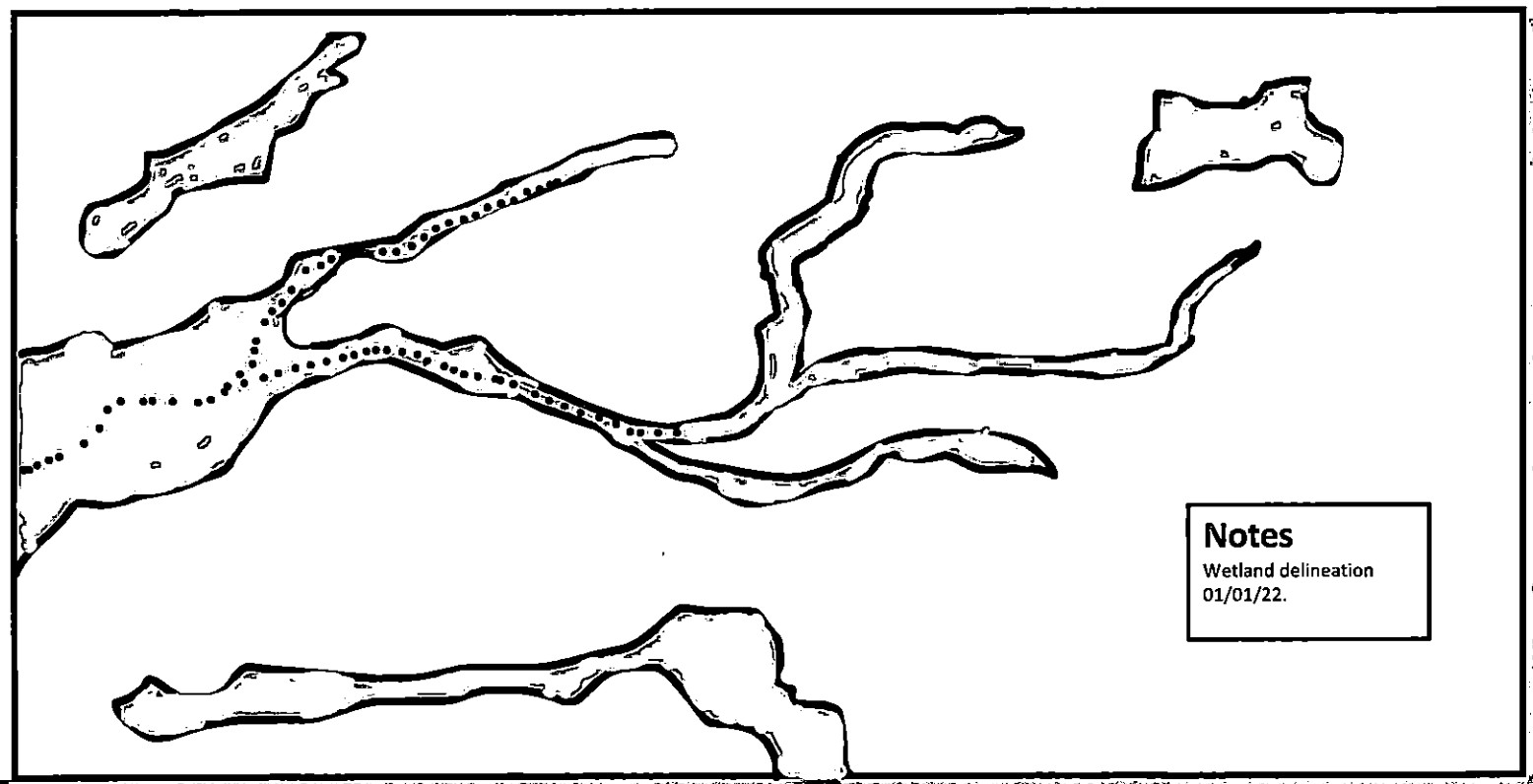
- Do the impacts indicated on the plans match the narrative (and the observed site resources)?



Example: Existing Conditions Plan...



Example: Existing Conditions Plan... in Reality...



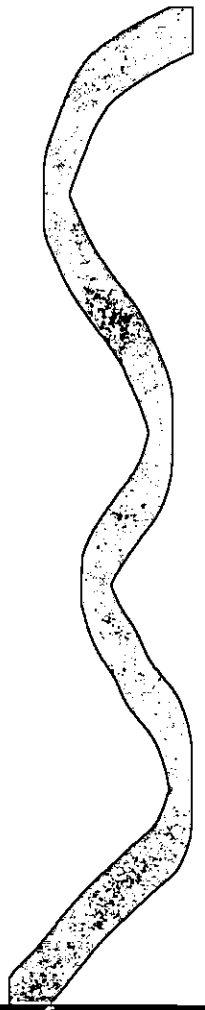
Watercourse Definition and Types

Watercourse - any surface water that develops and maintains a defined scoured channel, with evidence of sediment transport, or that is a continuous channel that flows to or from a wetland or other surface water. The term includes rivers and streams. (Env-Wt 104.48)

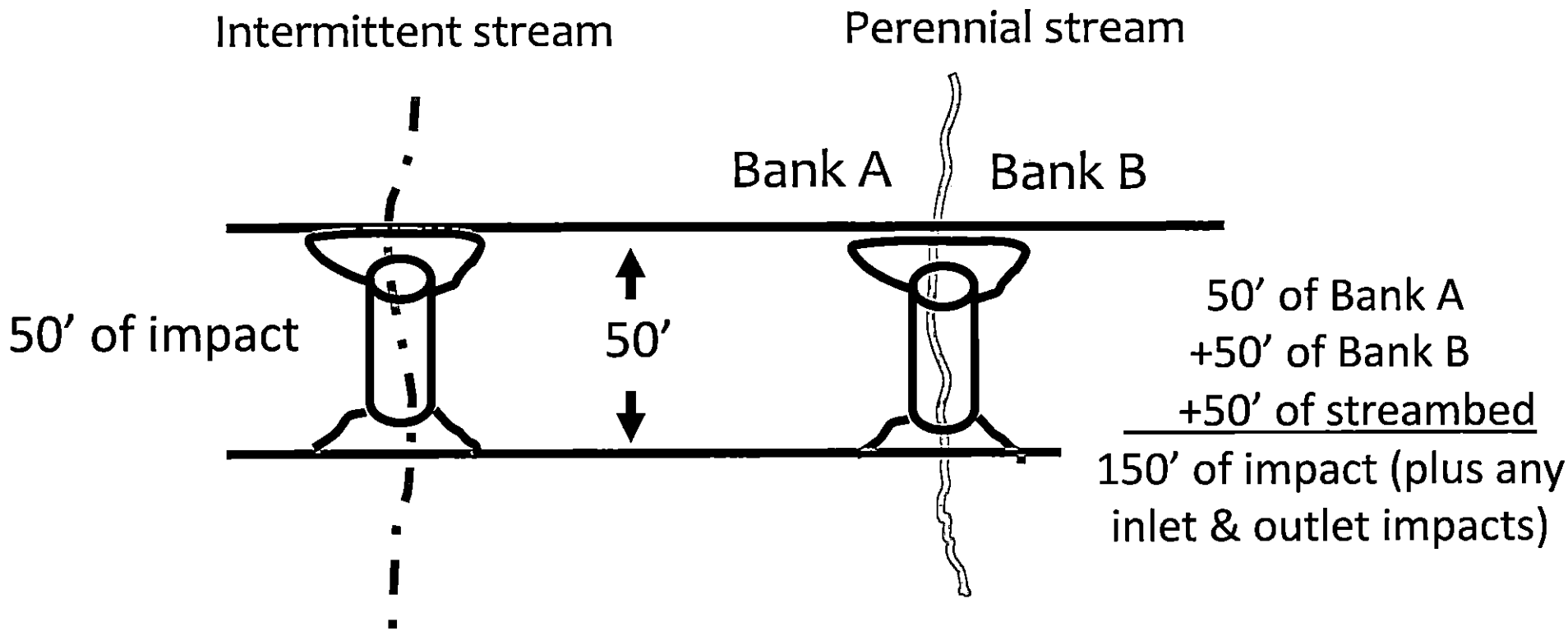
Ephemeral stream - a watercourse that is located above the water table year-round and is not fed by groundwater, such that runoff from rainfall and snowmelt is the primary source of stream flow and so the stream has flowing water only during, and for a short duration after, precipitation or spring thaw events, but which has less flow than an intermittent stream and no evidence of riffles, meander bends, point bars, or braiding. (Env-Wt 102.65)

Intermittent stream - means a watercourse that is fed by groundwater but is not in the groundwater table throughout the year, where runoff from rainfall and snowmelt is a supplemental source of water for flow, such that the stream typically does not have flowing water during dry portions of the year. (Env-Wt 103.21)

Perennial stream - a watercourse that is in the groundwater table for most of the year and so has groundwater as its primary source of water for stream flow, with runoff from rainfall and snowmelt as a supplemental source of water, so that it contains flowing water year-round during a typical year. (Env-Wt 103.53)



Stream Crossings: Measuring Impacts to a Stream



3. Review Classification Criteria for Specific Project Types (Env-Wt 500*)

- Agricultural activities (Env-Wt 522)
- Aquatic vegetation control (Env-Wt 510)
- Bank stabilization (Env-Wt 514)
- Breakwaters (Env-Wt 512)
- Dams (Env-Wt 526)
- Docking structures and accessory docking structures (Env-Wt 513)
- Dug-in basins/boat houses (Env-Wt 515)
- Forestry (Env-Wt 520)
- Intake & Outflow Structures (Env-Wt 516)
- Nontidal dredging (Env-Wt 523)
- Ponds (Env-Wt 519)
- Public highways (Env-Wt 527)
- Residential, Commercial & Industrial Development (Env-Wt 524)
- Restoration/Enhancement Activities (Env-Wt 525)
- Stream crossings (Env-Wt 900)
- Tidal and coastal lands projects (Env-Wt 600)
- Trails, paths, and boardwalks (Env-Wt 517)
- Utility projects (Env-Wt 521)
- Water access structures & beach replenishment (Env-Wt 511)
- Water-related non-docking structure (Env-Wt 518)

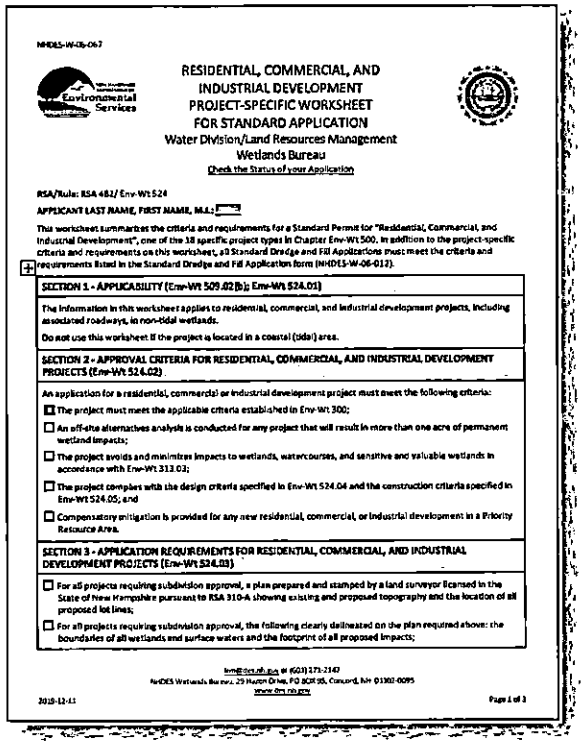
* Except where otherwise noted

Chapter Env-Wt 500 - Nontidal
Project-Specific Requirements (18 project types)

Consistent sub-headings for each project type

- Applicability
- Approval Criteria
- Application Requirements
- Design Requirements
- Construction Requirements
- Project Classification

} Project-Specific Worksheet



NHDES-W-06-067

RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL DEVELOPMENT PROJECT-SPECIFIC WORKSHEET FOR STANDARD APPLICATION
Water Division/Land Resources Management
Wetlands Bureau
Check the Status of your Application

RSA/Rule: RSA 482/ Env-Wt 524

APPLICANT LAST NAME, FIRST NAME, M.I.:

This worksheet summarizes the criteria and requirements for a Standard Permit for "Residential, Commercial, and Industrial Development", one of the 18 specific project types in Chapter Env-Wt 500. In addition to the project-specific criteria and requirements on this worksheet, all Standard Dredge and Fill Applications must meet the criteria and requirements listed in the Standard Dredge and Fill Application form (NHDES-W-06-012).

SECTION 1 - APPLICABILITY (Env-Wt 509.02(b); Env-Wt 524.01)

The information in this worksheet applies to residential, commercial, and industrial development projects, including associated roadways, in non-tidal wetlands.

Do not use this worksheet if the project is located in a coastal (tidal) area.

SECTION 2 - APPROVAL CRITERIA FOR RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL DEVELOPMENT PROJECTS (Env-Wt 524.02)

An application for a residential, commercial or industrial development project must meet the following criteria:

- ☒ The project must meet the applicable criteria established in Env-Wt 300;
- ☐ An off-site alternatives analysis is conducted for any project that will result in more than one acre of permanent wetland impacts;
- ☐ The project avoids and minimizes impacts to wetlands, watercourses, and sensitive and valuable wetlands in accordance with Env-Wt 313.03;
- ☐ The project complies with the design criteria specified in Env-Wt 524.04 and the construction criteria specified in Env-Wt 524.05; and
- ☐ Compensatory mitigation is provided for any new residential, commercial, or industrial development in a Priority Resource Area.

SECTION 3 - APPLICATION REQUIREMENTS FOR RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL DEVELOPMENT PROJECTS (Env-Wt 524.03)

- ☐ For all projects requiring subdivision approval, a plan prepared and stamped by a land surveyor licensed in the State of New Hampshire pursuant to RSA 310-A showing existing and proposed topography and the location of all proposed lot lines;
- ☐ For all projects requiring subdivision approval, the following clearly delineated on the plan required above: the boundaries of all wetlands and surface waters and the footprint of all proposed impacts;

email@des.nh.gov or (603) 271-2147
NHDES Wetlands Bureau, 29 Hazen Drive, PO BOX 95, Concord, NH 03302-0095
www.des.nh.gov

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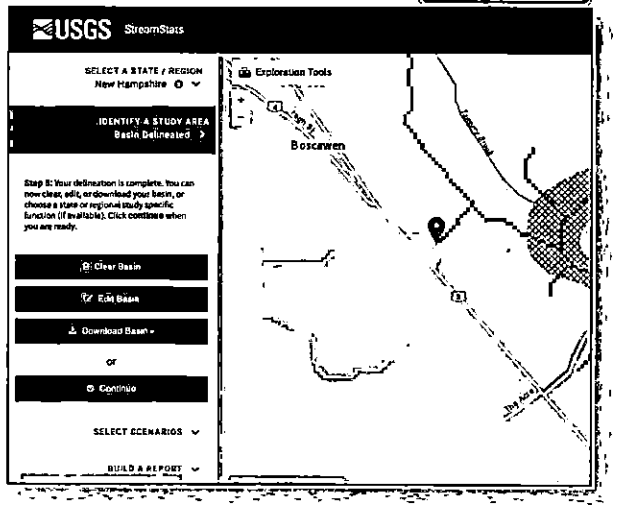
https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/wetlands-project-specific-info.pdf

Classification of Stream Crossings: Tiers
(Env-Wt 904)

- Based on contributing watershed size or waterbody type (tidal) AND other factors...

Tier 1	Tier 2	Tier 3	Tier 4
≤ 200 acres	> 200 - < 640 acres	≥ 640 acres	Tidal Watercourse



Use USGS StreamStats to define watershed size for stream.

Demonstration of Avoidance and Minimization

Env-Wt 313.03

From local site knowledge, have the impacts to jurisdictional areas been avoided and minimized?

NHDES-W-06-050

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

AVOIDANCE AND MINIMIZATION CHECKLIST
Water Division/Land Resources Management
Wetlands Bureau
Check the Status of your Application

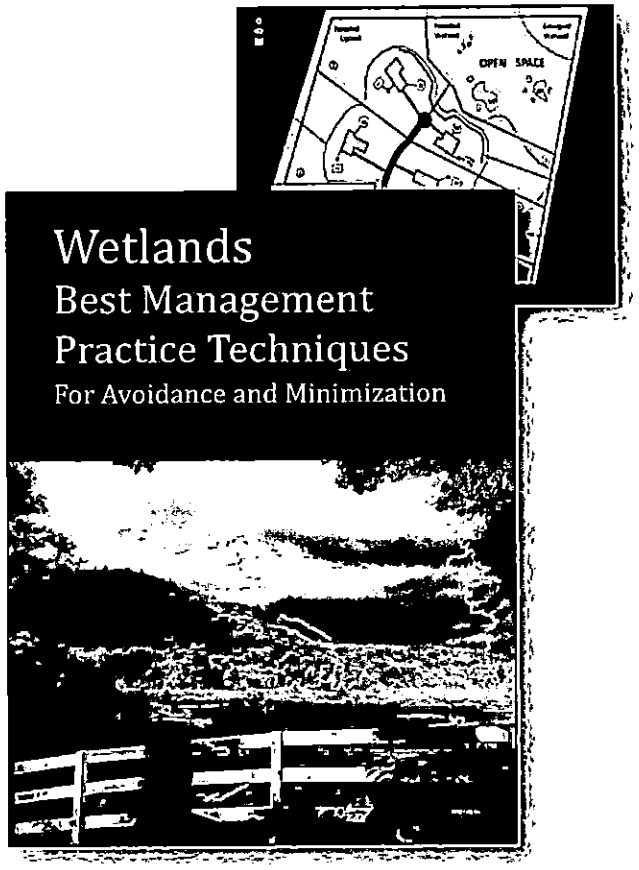
RSA/Rule: RSA 482-A/ Env-Wt 311.07(c)

This checklist can be used in lieu of the written narrative required by Env-Wt 311.07(a) to demonstrate compliance with requirements for Avoidance and Minimization (A/M), pursuant to RSA 482-A:1 and Env-Wt 311.07(c).

For the construction or modification of non-tidal shoreline structures over areas of surface waters without wetland vegetation, complete only Sections 1, 2, and 4 (or the applicable sections in Attachment A: Minor and Major Projects (NHDES-W-06-013).

The following definitions and abbreviations apply to this worksheet:

- "A/M BMPs" stands for Wetlands Best Management Practice Techniques for Avoidance and Minimization dated 2019, published by the New England Interstate Water Pollution Control Commission (Env-Wt 102.18).
- "Practicable" means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes (Env-Wt 103.62).

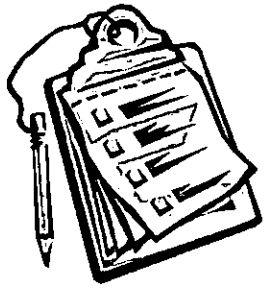


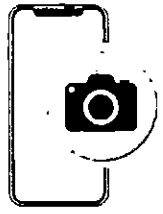
Site Walks

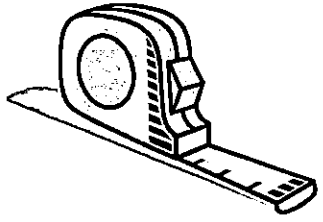
- Invaluable to ensure plans reflect the existing landscape and resources on the site.
- Confirm information on plans/ in text.
  - For development w/ new road, have center lines staked.
- Conduct one for every wetland permit application, if possible.
  - Provides a "before" view.
  - Confirm that resources are accurately represented on plans and in application narrative.
  - Document with photos! Requires public notice if quorum of Commission; Take "minutes."

Site Walks; Suggested gear

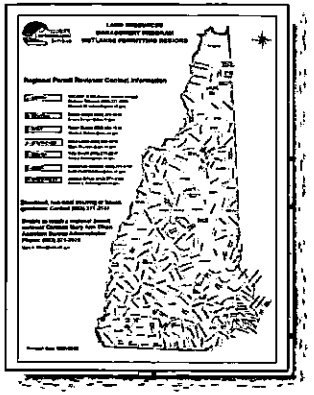
- 100-foot measuring tape
- Camera/ smartphone camera
- Wetland application and site plans that accompanied the application – in hard copy or on a tablet.







Your Commission's comments...



- Send/ Email them to the NHDES permitting inspector in the required timeframe
  - Refer to the file number, now available.

- Commission's comments are addressed in decision findings.
  - "If a conservation commission ... makes a recommendation to the department in its report, [NHDES] shall specifically consider such recommendation and shall make written findings with respect to each issue raised in such report which is contrary to the decision of the department. "

In Summary

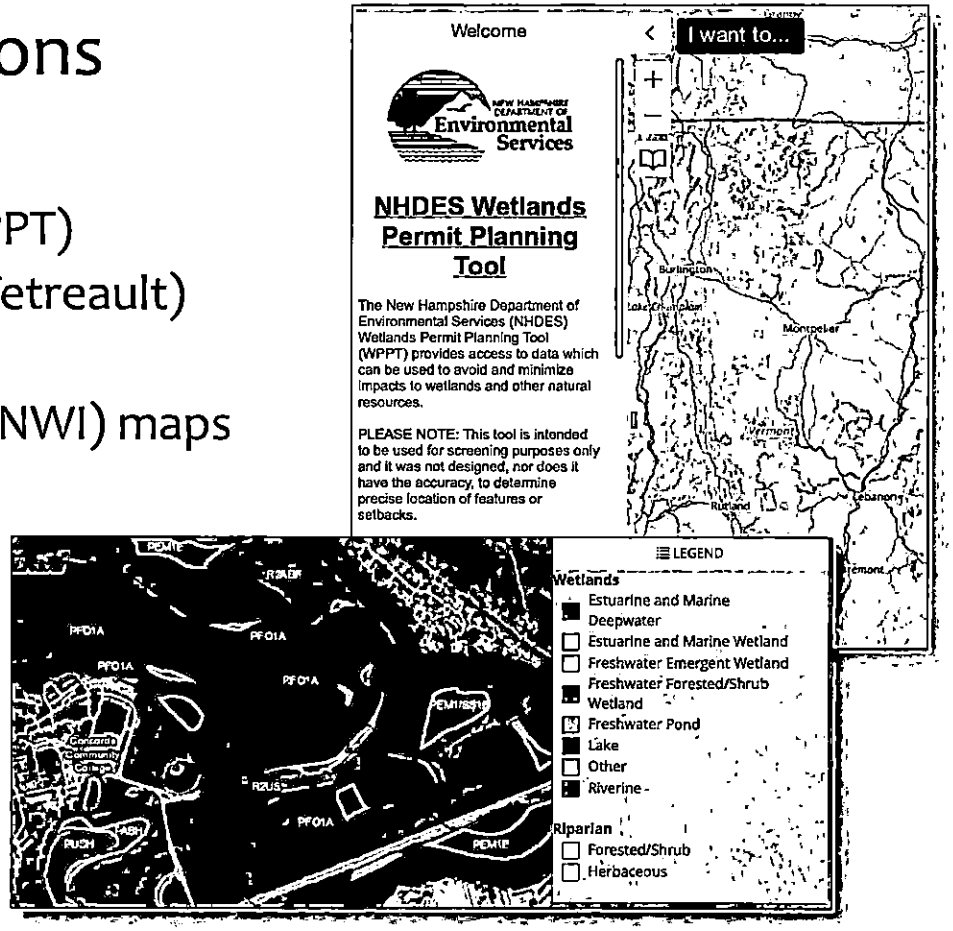
- Establish process with municipal clerk to enable the Commission to intervene in a timely manner, when needed.
- Check the NHDES Wetland Permits Query *weekly* for new applications, until process is established.
- Conduct site walks to confirm information and identify issues to address in your comment letters.

For information:

- Review copies of NHDES RFMI letters for what applicants omit and need to provide or address.
  - Access the letters on the NHDES One Stop Wetlands Permit Query.

More Wetlands Presentations

- After lunch:
  - Wetland Permit Planning Tool (WPPT)
    Mary Ann Tilton (for Stephanie Tetreault)
  - New National Wetland Inventory (NWI) maps
    Mary Ann Tilton



Questions?

Image by Freepik