

TOWN OF WARE

Planning & Community Development 126 Main Street, Ware, Massachusetts 01082 (413) 967-9648 ext. 120

PLANNING BOARD

MEETING AGENDA

Location: Board of Selectmen's Meeting Room Town Hall, 126 Main Street, Ware, MA 01082 Date & Time: Thursday, August 17th, 2023 @ 7:00 PM Digital Participation: Phone number: 929-205-6099 Meeting ID: 784 604 1861 Passcode: 01082

<u>Instructions for call-in option</u>: at or before 7pm call the phone number above and when prompted enter the Meeting ID number. The platform is Zoom Meetings. Join online: <u>https://zoom.us/join</u>

- Pledge of Allegiance
- <u>Administrative</u>
 - Approval of minutes from August 3rd, 2023
- Public Hearings



- <u>ANR</u>
 - o ANR-2023-03 34-33-2 & 34-0-31 Osborne Road
 - Applicant seeks to create one conventional building lot from two parcels. Remaining land and frontage would meet regulations for estate lot requirements.
- New Business
 - Discussion and presentation Angela Panaccione of P.V.P.C. regarding the Muddy Brook Subwatershed Resiliency Master Plan M.V. P. Grant
- Old Business
 - Revisit Proposed Zoning Changes : 415 417 Belchertown Road (Bergeron)
 - Appointment of P.V.P.C. Commission Member and Alternate
 - Any matters that are brought up that the Chair did not anticipate including on the agenda prior to this meeting.
- Planning & Community Department Update

The next Planning Board meeting will be held September 7th, 2023.



TOWN OF WARE

Planning & Community Development 126 Main Street, Ware, Massachusetts 01082 t. 413.967.9648 ext. 120 Planning Board Meeting Minutes from Thursday, August 3, 2023 Selectboard Meeting Room

126 Main Street, Ware MA 01082

Chair

Absent

Planning Board Members in Attendance:

Rick Starodoj Vice Chair Ed Murphy Ken Crosby Chris DiMarzio Elizabeth Hancock

Staff Members in Attendance:

Members of the Public in Attendance:

Kristen Jacobsen PCD Dept. Admin. Assistant Stuart Beckley Town Manager Anna Marques Building Commissioner/Zoning **Enforcement Officer** Bernie Bergeron

Alex Bergeron

PLEDGE OF ALLEGIANCE

Chairman E. Murphy called the meeting to order at 7:03pm and led the Pledge of Allegiance.

ADMINISTRATIVE

• Approval of minutes from July 20th, 2023

Motion by R. Starodoj to approve the July 20th 2023 meeting minutes. Seconded by K. Crosby. Discussion. None

E. Murphy		Aye	
R. Starodoj		Aye	
K. Crosby		Aye	
E. Hancock		Absent	
C. DiMarzio Aye			
Four in favor. One Absent			
Approved 4/0/1.			

OLD BUSINESS

Kulas Earth Removal Project- Babcock Tavern Road

• Response from Bond Construction regarding the demarcation of the buffer area of the Earth Removal Operation at 240 Babcock Tavern Road.

-Sherman and Frydryk provided a plan of the placed boundary markers depicting the stakes which were set on 7/20/ 2023. K. Jacobsen had reached out to them regarding the placement of the silt fence and was awaiting a response.

Open Space and Recreation Plan

C. DiMarzio discussed the remarks he stated in an email on sent Friday July 14, 2023 at 9:37 a.m. :

"In 2008 the Town adopted the Flexible Residential Open Space Development (FROSD) zoning provision, which

requires that 50% of the development be set aside as open space. However, no developer has proposed an FROSD

since 1) as written, it has no provisions for density bonuses or other incentives to use it"???

It was my recollection that the whole idea of the bylaw was to give a density bonus. Unless I am wrong, or it has been changed during my absence from the board, the bylaw allowed a developer to take the number of lawful lots they could develop under our current zoning requirements for lots, and then use half that acreage for development with the requirement that the other 50% be set aside for open space, resulting in smaller more dense lots. This also results in less road and drainage infrastructure cost, which hopefully creates more affordable housing. That is how I remember passing that bylaw, and was always surprised nobody ever proposed a FROSD. Am I missing something? "

S. Beckley addressed the email and answered that it should be amended.

The board discussed the possibilities of why no one had taken advantage of that as of yet.

Motion by R. Starodoj to recommend the Open Space and Recreation Plan as presented. **Seconded** by K. Crosby. **Discussion**. None

E. Murphy		Aye	
R. Starodoj		Aye	
K. Crosby		Aye	
E. Hancock		Absent	
C. DiMarzio	Aye		
Four in favor. One Absent			
Approved 4/0/1.			

NEW BUSINESS

Belaire Drive

The board discussed the current condition of Belaire Drive. S. Beckley had anticipated the owners being present during the Planning Board meeting and being able to brake the cyclical issues they have encountered. The owner is having issues finishing the road and not being able to sell or build which would enable them to fund the road construction. The board discussed that the road condition is fine until house number 6 after that point, it is in unacceptable condition and they are using concrete to smooth out areas. The dention/retention pond is completely overgrown.

Snow Plowing of Unaccepted Roads Discussion (Private Subdivision Roads)

To discuss the roads to be considered during the yearly unaccepted roads inspection and to set a date for the inspection.

The board discussed dates to inspect unaccepted roads settling on Tuesday, Septemmber 5, 2023 at 9am.

Revisit Proposed Zoning Changes : 415 – 417 Belchertown Road (Bergeron)

S. Beckley and the Bergeron's discussed the issues the proposed zoning change had last fall. (questions of lot sizes, spot zoning, and the parcels included).

A. Bergeron asked about the possibility of adding Battery Storage which would link with their existing solar system and connect to the grid.

B. Bergeron spoke about the zoning changes and the notification process. S. Beckley explained that 417 Belchertown Road was not included in the original RB district.

Would like to add two 30,000 gallon propane storage tanks.

The Bergerons would like to revise their discussion from 2022 taking into account questions and concerns which were raised during the Public Hearing on November 3, 2023.

The board suggested eliminating the 5 acre minimum requirement, selecting multiple uses, and the possibility of adding properties that abut state highway.

S. Beckley and A. Marques would meet and speak with the Bergerons to discuss their ideas.

Motion by K. Crosby to continue the discussion of the revision of the proposed Rural Business Overlay District to August 17, 2023. **Seconded** by R. Starodoj. **Discussion**. None

E. Murphy		Aye	
R. Starodoj		Aye	
K. Crosby		Aye	
E. Hancock		Absent	
C. DiMarzio		Aye	
Four in favor. One Absent			
Approved 4/0/1.			

Discussion

A.Marques and the board discussed business using flutter flags. R. Starodoj found that it seemed to fall under #13 on page 115 of the Ware Zoning Bylaw:

"Banners and pennant signs shall be allowed for a period of 30 days per permit, consecutive or non-consecutive, for up to four times within a calendar year (i.e. maximum of 120 days, including all banner and pennant signs)"

The board discussed the interpretation of the bylaw is at the discretion of the Zoning Enforcement Officer.

A.Marques discussed the possibility of charging per pole for such flags. The board said that it should be written and defined so as to be clear and fair for everyone.

C. DiMarzio proposed such signs could be permitted could be allowed for a period of 30-days per permit which would not limit the number of these signs.

The board and A. Marques discussed the possibility of these signs being a hazard or distraction. E. Murphy noted that #7 on page 114 of the Zoning Bylaw states: "Signs must not be placed so as to obstruct the view of traffic entering or leaving a premises, as determined by the Building Inspector."

PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT UPDATE

Tractor Supply- appears to be in the beginning stages of their permitting process.

Integrity Towing- Owners met with A.Marques and K. Jacobsen to address their need for a Special Permit to operate their towing business. A. Marques had told them what materials they would need to apply for the Special Permit. No materials were brought in by the owners at that time.

As of 8/3/2023 they had not applied for a Special Permit.

There has been visual evidence that the company is operating as of 8/3/2023

R. Starodoj proposed that a Cease and Desist may be in order.

Town Planner Search- no applicants. S. Beckley noted that there are 20 openings throughout the state

ADJOURN

Motion made by C. DiMarzio to ADJOURN at 8:03 pm. Seconded by R. Starodoj Discussion: None

E. Murphy		Aye	
R. Starodoj		Aye	
K. Crosby		Aye	
E. Hancock		Aye	
C. DiMarzio		Absent	
Four in favor. One Absent			
Approved 4/0/1.			

NEXT PLANNING BOARD MEETING DATE:

Thursday, August 17, 2023 at 7:00pm.

Minutes from Thursday, August 3, 2023.

Respectfully submitted by,

Kristen Jacobsen Administrative Assistant Planning & Community Development

Minutes Approved on:
Starodoj
Murphy
Hancock
Crosby
DiMarzio

Planning Board

3

Robert A. Watchilla Director of Planning & **Community Development**

Town of Ware **Planning & Community Development**

Application for ANR



Ware, MA 01082 413.967.9648 ext. 120

(Approval Not Required under the Subdivision Control Law)

ANR 20-23 - (+ 03

	ANR 20	23 - 400	www.townofware.com	
plicant	Name of Applicant (primary contact): Tim Kularski Address: 5 Pine Street, Ware Ma			
Ap	Phone:			
	Email Address: timkularski@gmail.com			
ner	Parcel ID 34-0-31	Parcel ID 34-	33-2	
ð	Name Paul Kularski	Name Russe	II & LYNN Kularski	
_	Address Osborne Rd	Address Osborne Rd		
yor	Name of Surveyor: Jeremy Croteau			
Irve	Company: DC Engineering & Survey Inc.			
SL	Address: 32 Cranberry Meadow Rd, Charlton Ma			
	Phone: 508-341-2127 Email: jscrotea	u@yahoo.com		
lest	Check one: Boundary Line Adjustment Create new I	ot(s); indicate total p	umber including original parcel	
Sedu	Description of proposal: The purpose of this plan is to create one conventional building lot out of two parcels owned by kularski			
hele	the remaining land and frontage of kularski meets the estate	e lot regulation for fro	ontage and area requirements	
ħ	Location of Property: Osborne Road			
opel	Assessor's Tax Map/Lot Number Affected: 34-33-2 & 34-0-31			
à	Deed References - Hampshire District Registry of Deeds Book /Page Number: 14839/238& 2315/170			
	Plan References – Hampshire District Registry of Deeds Book/Plan Number 227-28			
	Zoning District: RR			
ug	Note: All affected ownets must sign the application			
S	Applicant's signature:		Date:	
	Owner's Signature (s): Paul Kulanh		Datc:	
	Russell Malal	2.	Date:	
	A		Town Clerk's Stamp:	
Į.	Official Use Only:			
ſ	Fee: \$ 000 Date Paid: 8/9/23 Check #	1052	DECEMED	
1	Meeting Date: 8/17/23			
1	Date of Decision:		LI LI AUG O ZUEST	
I	Planning Board Decision:		TIME RECEIVED 122010	
S	submitted to Assessors' Office on:			
		and the second se	1	



JASON D. DUBOIS, P.E. PROFESSIONAL ENGINEER MA.LIC.NO.: 48724 JEREMY S. CROTEAU, P.L.S. PROFESSIONAL LAND SURVEYOR LIC.NO.: 48722	Andrey
	Young 9586 9666 Pol 247 Ap: 28-42-1 / 199 / 199
INR PLAN OF LAND DRAWN BY: JSC Storne Road are, MA SC CK'D BY REV #: O JENT: JENT: JDD REV #: O DATE: T-6-2.3 1'=50' JUI Kularski Storne Road are, MA ENGINEERING SCALE: 1'=50' JUI Kularski Storne Road ENGINEERING NO: 23-182 1'=50' Storne Road ENGINEERING ENGINEERING SCALE: 1 1'=50' JUI Kularski SURSURVEY ING: 1'=50' 1 1'=50' JUI Kularski ENGINEERING ENGINEERING SCALE: 1 1 JUI Kularski SURSURVEY ING: 1 1 1 JUI Kularski SURSURVE ING: 1 1 1 JUI Kularski SURSURVE ING: 1 1 1 1 JUI Kularski SURSURVE ING: 1 1 1 1 1 JUI Kularski SURSURVE ING: 1 1 1 1 1 <t< th=""><th>Subject of the product of the p</th></t<>	Subject of the product of the p

DRAFT

TOWN OF WARE MUDDY BROOK WATERSHED RESILIENCY MASTER PLAN



Municipal Vulnerability Preparedness Action Grant Project

Prepared by:

The Town of Ware's Muddy Brook Working Group and

The Pioneer Valley Planning Commission





Acknowledgements

Grant funding from the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) Municipal Vulnerability Preparedness (MVP) Program made this project possible.

The Town of Ware extends special thanks to the Muddy Brook Working Group as follows:

Stuart Beckley, Town Manager

Robert Watchilla, Director of Planning & Community Development

Christopher Gagnon, Fire Chief/Director of Emergency Management

Anna Marques, Building Commissioner

Geoff McAlmond, Director of Public Works

Jay Mooney, Grants Coordinator

Dan Flynn, President of the Ware Business and Civic Association

Pastor Carole of the United Church of Ware

SK Robinson, Muddy Brook Subwatershed Resident

The Town of Ware offers thanks to the EEA, the Massachusetts Emergency Management Agency (MEMA), and the Massachusetts Executive Office of Public Safety and Security (EOPSS) for developing the Massachusetts State Hazard Mitigation and Climate Adaptation Plan (SHMCAP), which served as a model for this combined MVP and HMP.

In addition, special thanks are extended to the staff of the Pioneer Valley Planning Commission (PVPC) for professional services, process facilitation and preparation of this document.

The Pioneer Valley Planning Commission Angela Panaccione, Senior Environmental Planner

Jacob Dolinger, GIS Specialist

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EXECUTIVE SUMMARY

INTRODUCTION

The Muddy Brook Watershed Resiliency Master Plan identifies current and future threats to the Muddy Brook watershed and assesses strategies for increasing resilience reducing localized flooding and the volume and velocity of storm flows, better protecting drinking water supplies, addressing failing infrastructure, and increasing the resiliency of the Muddy Brook Watershed to climate change. The Plan develops a set of updated priority resiliency actions and strategies that reflect the current and future concerns and priorities related to protecting the environmental, water supply, recreational, and public health interests of the Muddy Brook watershed area. Resiliency is the ability to plan for, withstand and recover from severe events -- without suffering permanent loss of functions, devastating damage, diminished productivity or decreased quality of life. Resilient watersheds are better able to respond and recover from extreme weather events, such as extreme precipitation events which in turn increase the likelihood of flooding.

The health of the Muddy Brook watershed is critical for the Town. While the watershed area provides most of the drinking water for residents in Ware and lies within a valuable economic and social area of Town, the lower watershed has large amounts of impervious cover that contribute to heat island effects, higher stormwater runoff volumes, and water quality concerns for Muddy Brook.

As part of a 319-grant funded Nonpoint Source Watershed Planner project, the Pioneer Valley Planning Commission (PVPC) identified the Muddy Brook watershed as a priority sub-watershed within the Chicopee River Basin for development of locally meaningful and effective multi-purpose projects that advance water quality improvements and climate resiliency. As planning for mitigation strategies for this watershed on a proactive basis is important to the Town of Ware, PVPC worked with the Town to win Massachusetts Municipal Vulnerability Preparedness (MVP) grant funding to do an initial analysis of and plan for the watershed.

This MVP-grant funded plan includes consideration of climate change impacts that range from the ongoing changes in precipitation patterns from more frequent, smaller rainstorms to longer dry periods broken by intense rainfall events to increases in temperature and impervious cover. The impacts of climate change in the Muddy Brook watershed area potentially include increasing stormwater quantity and decreasing quality; impacts to the Town's drinking water supply aquifers; increasing riverine flooding; impacts to the ecological systems in the upland areas from changing temperatures, increasing invasive species, and increasing impervious area; and impacts to public health from increasing temperatures in the downtown stretch of the Muddy Brook watershed area.

PROJECT GOALS

The goals for the Muddy Brook Watershed Resiliency Master Plan project are thus three-fold:

- 1. Develop a watershed plan that characterizes current and future threats to the watershed and associated drinking water supplies from climate change and development and create a roadmap for increasing resiliency through identified areas of focus for improvements.
- 2. Conduct robust public engagement, particularly with Environmental Justice communities within the watershed, to assist with identification of vulnerabilities and future actions, and to increase awareness of the importance of maintaining the health of the watershed.
- 3. Tee up projects for future applications to grant programs, including the Section 319 Water Quality and Drinking Water Supply Protection programs.

The vision for the overall project is to create a process and lessons learned that can be used in other subwatersheds in the region through identification of shared strengths, vulnerabilities, and resiliency strategies, addressing shared concerns such as drinking water aquifer protection and flooding. The proposed master plan process will increase the resiliency of the subwatershed to the climate change impacts of changes in temperature and precipitation through identification and analysis of current and future threats to each subwatershed, development of strategies for reducing flooding and stormwater impacts across the watershed, assessment of stormwater management facilities and culverts with priority ranking and recommendations for improvements, identification of Town-owned parcels for installation of green infrastructure stormwater management facilities, identification of critical areas to focus on for future projects to soak up and slow flows, identification of opportunities to connect resilience to community development needs through regulatory code review, an analysis of needed improvements to recreational opportunities, identification of strategies to improve effectiveness of flood control levee system, and identification of opportunities for land acquisition and conservation in floodplains and wetlands.

The Muddy Brook Watershed Resiliency Master Plan is available through the City of Ware's website located at:

https://www.townofware.com/departments/planning_department/muddy_brook_subwatershed_resili ency_master_plan.php

CHAPTER 1: THE MUDDY BROOK WATERSHED

MUDDY BROOK

Muddy Brook flows from its headwaters near the Quabbin Reservoir along protected land down through the center of Ware to the downtown confluence with the Ware River. The Muddy Brook subwatershed is an important, large, healthy watershed that includes both the Town's public water supply aquifer and a substantial geographic area of the Town, spanning multiple land uses from forested to agricultural to suburban and the urban downtown, and including two mapped Environmental Justice populations. The Muddy Brook watershed area includes both the brook itself and the adjacent floodplains and wetlands. It is associated with its 12-digit HUC ID- 010802040206.

The Muddy Brook subwatershed starts up at the Quabbin Reservoir, and extends south through Hardwick into Ware, crossing conservation and wooded lands into large agricultural parcels, becoming suburban and finally more densely urban at the confluence with the Ware River in downtown Ware. The subwatershed includes the Town wells, a variety of land uses including a cemetery, Snow Pond, and residential neighborhoods with high amounts of impervious area and buildings that have potentially been abandoned or dilapidated. The subwatershed is currently identified as a healthy cold-water stream that supports a state-endangered mussel species, so proactive protection of the watershed is important for ecological reasons as well as drinking water, recreation, and social equity purposes.

Muddy Brook is classified as a ____

Bankful Width

SNOW POND

Snow Pond is a 25-acre impoundment managed by the Water Department. Snow's Pond was a favorite destination for fishing, walking, and picnicking, and is close to the center of town. Now extensive weed growth, coupled with nutrient loading, shoreline and watershed development and stormwater discharges have accelerated the natural succession of Snow Pond, resulting in increased eutrophication. Unmanaged nuisance aquatic plant growth and degrading water quality decrease the availability of high-quality fish and wildlife habitat, decreases aesthetics, and reduces recreational appeal of the pond.

WETLAND RESOURCES

BORDERING VEGETATED WETLANDS

Wetlands are part of our "common wealth." They contribute to public health and safety, not only for you and your family, but for your community as well. Wetlands protect drinking water, prevent storm damage,

and provide fish, shellfish, and wildlife habitats. Wetlands also support commercial fishing, tourism, recreation, and educational opportunities. These valuable resource areas are found in every community across Massachusetts and are an important part of a river's watershed. Inland wetlands are areas where water is at or just below the surface of the ground. Although these wetlands can appear dry during some seasons, they contain enough water to support certain plants and soils. Inland wetlands include marshes, wet meadows, bogs, and swamps. Wetlands that border on ponds, lakes, rivers, and streams are called bordering vegetated wetlands. Wetlands are abundant along the muddy brook corridor.

Wetlands and the species they support face numerous threats, including impacts from development, fragmentation, unsustainable water withdrawals, pollution, invasive species, and climate change. Protection of not only these wetlands but their upland buffers and surrounding watersheds will help minimize these impacts, maintain connectivity among habitats, and allow for essential natural processes that will support the long-term persistence and abundance of a wide diversity of wetland species and habitats. Wetlands have the added bonus of a filtration system. Wetland plants are a natural filter, so that when runoff from parking lots, roads, and other paved surfaces reaches a wetland, pollutants like gasoline and oil are filtered out of the water before it reaches the groundwater system. When these wetlands are built upon, the pollutants are not filtered out and runoff from streets and parking lots may flow directly into groundwater or streams and rivers. Ware's wetlands are regulated by Conservation Commission who administer and enforce the Wetlands Protection Act (WPA) and the Town of Ware's Wetlands Bylaw.

VERNAL POOLS

There are 25 Certified Vernal Pools in the Muddy Brook Watershed, and an additional 10 identified potential vernal pools. Vernal pools are seasonal that provide habitat to plants and animals and often form in the spring with snow melt. Muddy Brook also encompasses a Vernal Pool core as identified in BioMap 2.

FLOODPLAINS

Floodplains provide numerous flood loss reduction benefits as a result of their unique natural functions. Rivers and streams shape floodplain topography and influence riparian habitats and riverine ecosystems. Likewise, the physical characteristics of the floodplain shape water flows and can provide flood loss reduction benefits. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body in the area. Vegetation also reduces shoreline erosion. In coastal areas, floodplain features such as beaches, sand bars, dunes, and wetlands act as natural barriers to dissipate waves and protect back-lying areas from flooding and erosion.

A natural floodplain has surface conditions favoring local ponding and flood detention, plus subsurface conditions favoring infiltration and storage. Slowing runoff across the floodplain allows additional time for the runoff to infiltrate and recharge available groundwater aquifers when there is unused storage capacity. The slowing of runoff provides the additional benefit of natural purification of water as local runoff or overbank floodwater infiltrates and percolates through the floodplain alluvium (flat land area

adjacent to a stream). Natural floodplains provide flood risk reduction benefits by slowing runoff and storing flood water. They also provide other benefits of considerable economic, social, and environmental value that are often overlooked when local land-use decisions are made. The floodplain also serves as critical habitat for many plant and animal species and is typically an area with rich fertile soils.

Floodplains are regulated by FEMA and terms used to describe floodplain areas include the 100-year floodplain, or 1% Annual Chance flood zone, and the 500-year floodplain, or 0.5% Annual Chance flood zone. Flood hazard areas are mapped by the Federal Emergency Management Agency (FEMA) and can be seen on the following map. Floodplains bordering Muddy Brook are primarily classified as A/AE. Flood Hazards A & AE are associated with the 100-year floodplain and also designated as Bordering Land Subject To Flooding (BLSF) under the MA Wetlands Protection Act.

RARE/ENDANGERED SPECIES

The Muddy Brook Watershed contains two state designated Priority Habitat areas for Endangered Species. PH 1355 runs the length of Muddy Brook, beginning in Hardwick and ending at Snow Pond. PH 1136 encompasses the very end of Muddy Brook, where it enters the Ware River and continues to border the Ware River through Palmer.

Blue-spotted Salamanders were reported from Ware in the 1800s, but not since then. Although the species is known from only scattered occurrences in the Quabbin area, there are recent records in nearby towns. Working in cooperation with landowners to survey vernal pools in the spring might locate the species. Blue-spotted Salamanders inhabit upland forest during most of the year. In the spring, adults migrate to breed and lay their eggs in vernal pools, swamps, marshes, and other predominantly fish-free wetlands. After larvae metamorphose during late spring they disperse into upland forest.

Four-toed Salamanders nest in patches of sphagnum moss that overhang streams. The young drop into the streams where they live until maturity, at which time they move to nearby forests. Protecting healthy populations will help prevent them from needing additional protections of the Endangered Species Act. While not an obligate vernal pool species, the occurrences in Ware are in an area with a cluster of certified and potential vernal pools in BioMap2 Core 1694 as well as in Core 1704 in the Aquatic Core along Muddy Brook.

Wood Turtles have been reported from multiple areas in Ware, particularly along Muddy Brook. Wood Turtle habitat is comprised of streams and rivers, preferably with long corridors of connected uplands extending on both sides of the waterways. Both of the turtle species known in Ware nest in sandy upland areas and are susceptible to a high mortality rate when they move among parts of their habitats, particularly where they must cross roads. Because turtles have low nest and juvenile survivorship, losing only a few adults annually can cause populations to decline because of low replacement rates.

Ware has two state-listed species of freshwater mussel and another that was recently removed from the list and remains of conservation interest. The presence of these species in local streams, particularly Muddy Brook and the Ware River, confirms the importance of maintaining the clean, flowing waters for

these species and others that share these habitats. Brook Floater (or Swollen Wedge mussel) are small freshwater mussels that inhabit streams and rivers with low to moderate water velocities, stable substrates, low nutrients and good water quality. They are currently known in only four water bodies in the state, making Ware's population very important. Creepers are freshwater mussels that inhabit low-gradient reaches of small to large rivers with sand or gravel substrates. Creepers are best supported by cool to warm waters with diverse fish assemblages. Triangle Floaters are commonly found in low-gradient river reaches with sand and gravel substrates and low to moderate water velocities.

Several rare plants in Ware grow in moist woods along streams or in swamps. Narrow-leaved Spring Beauty typically occurs in deciduous forests on upper floodplain terraces and adjacent toe slopes. These areas have moist fertile soils and are subject to infrequent flooding events. Swamp Lousewort grows in open areas that are periodically flooded such as wet meadows, marsh edges, and stream banks. It occurs primarily in calcareous soils. Great Laurel, a member of the Heath family, is an evergreen shrub or small tree that grows up to 10 meters high. Its natural habitat is moist woods, swamps, and the edges of ponds. One-flowered Pyrola (also called Single Delight) is a short herbaceous plant of moist forests with a single white, waxy flower.

BIOMAP 2 CORE HABITATS & CRITICAL NATURAL LANDSCAPES

Several of the BioMap2 Core Habitats are located within the Muddy Brook Watershed. Core Habitat identifies areas that are critical for the long-term persistence of rare species, exemplary natural communities, and resilient ecosystems across the Commonwealth. Muddy Brook has both Aquatic Cores and Wetland Cores designated to the riparian area of the Brook.

Aquatic Cores contains freshwater habitats (rivers, streams, lakes and ponds) with the highest fish and freshwater mussel diversity, strongest anadromous (migratory) fish runs, aquatic rare species habitat, and habitats most resilient to a warming climate. These areas represent the most structurally and functionally intact freshwater ecosystems in the state. Climate change significantly affects the structure and function of aquatic ecosystems both directly and indirectly. Direct effects include increases in water temperatures and changes to hydrology, while indirect effects may alter plant and animal communities, and accelerate the spread of invasive species. Aquatic habitats are particularly susceptible to these changes because habitat conditions like water temperature and the amount of water are climate-dependent, species that inhabit them are less able to disperse, and multiple stressors are already impacting them.

Wetland Core comprises the most intact, least disturbed wetlands within resilient landscapes—those with intact buffers, hydrological integrity, and areas with little fragmentation or other stressors associated with development. These wetlands are most likely to support diverse plant and animal habitats as well as critical wetland functions, and they are most likely to maintain these functions into the future. Also included are wetland-dependent rare species habitats and priority wetland natural communities. BioMap includes both Wetland Core, assessed from a statewide perspective, and Local Wetlands, assessed from the perspective of each city and town.

In addition, BioMap 2 has also identified Critical Natural Landscapes blocks within the Muddy Brook Watershed. Both Aquatic Core Buffers and Wetland Core Buffers have been identified along the Muddy Brook Cpooridor. The Dougal ridge in the northeastern part of town, shown as BioMap2 Supporting Natural Landscape (SNL) between Muddy Brook and the Ware River supports several recent rare species observations, many vernal pools (certified and potential), and older forest, all of biodiversity interest.

CHAPTER 2: CURRENT & FUTURE THREATS TO MUDDY BROOK WATERSHED

INTRODUCTION

This chapter will characterize the current uses and future threats to the watershed to focus goals and actions needed to increase climate resiliency across the Muddy Brook watershed. The summary of current and future threats to the Muddy Brook watershed is based on a GIS analysis of the watershed features utilizing data layers from MassGIS, previous Town reports, and local knowledge provided by the Working Group.

LAND USE

Land uses within the Muddy Brook watershed are primarily low to high density residential, but also include protected open space & recreation areas, commercial & industrial development, and agricultural activities. Key threats include known or potential future developments, agriculture, hazardous materials and transportation corridors.

CURRENT & POTENTIAL FUTURE DEVELOPMENT WITHIN THE MUDDY BROOK WATERSHED

Housing development varies dramatically withing the Muddy Brook watershed in Ware. Like many urbanized communities, Ware is trying to focus new residential development closer to the downtown area where public utilities (water and sewer) and facilities (parks and sports fields) are available. Ware's urbanized area is located at the southern end of the Muddy Brook watershed, near its confluence with the Ware River. Pedestrian facilities in Ware are concentrated in the more densely developed areas of downtown and extend south on Route 32 to the school campus.

The working group identified several potential future developments as threats to the watershed including: Proposed large scale solar arrays in abandoned gravel pits (or alternatively converting them into residential subdivision use instead), housing and population projections leading to increased subdivisions to be located in the northern part of the watershed. In the downtown area, development is more likely to take place as mixed use redevelopment which could alleviate some threats of new development if constructed properly.

Of all the potential new developments, lack of construction oversight can become one of the biggest threats to the watershed. Lack of adequate stormwater controls can contribute a significant amount of sediment to nearby bodies of water as sediment reduces stream capacity, interferes with fish life cycles, and can carry unwanted nutrients.

AGRICULTURAL ACTIVITIES

Between 1971 and 2005 Ware's farmland acreage decreased by 71%. The majority of agricultural activities within the Muddy Brook Watershed are located in the norther section of town. Much of Ware's undeveloped, unforested land is in private ownership. Currently, over 1,647 acres of privately owned open lands are enrolled in MGL Chapter 61A for agricultural use, or 6.4% of town acreage. One of the largest farms within the Muddy Brook Watershed is Shea Farm on Gilbertville Road.

Approximately 3% of the watershed is agricultural land use, including a large livestock agricultural operation off Old Greenwich Road in the northern part of the watershed. Pesticides, fertilizers, and manure have the potential to contaminate Muddy Brook and the drinking water source if improperly stored, applied, or disposed. Farms also often have large maintenance garages for equipment and storage tanks that can potentially be sources of contamination due to leaks or spills of the products they store if improperly managed. Additionally, if livestock are permitted to freely access the areas adjacent to Muddy Brook and its tributaries, they can cause loss of the riparian buffer, bank erosion, and contamination of the brook with sediment and manure.

HAZARDOUS MATERIALS STORAGE

Approximately 1% of the Muddy Brook Watershed is mapped as commercial/industrial land use. Many businesses use hazardous materials, produce hazardous waste products, and/or store large quantities of hazardous materials. If hazardous materials are improperly stored, used, or disposed, they become potential sources of contamination. Hazardous materials should never be allowed to enter a catch basin, septic system or floor drain leading directly to the ground. Vehicle washing is a restricted activity under the UIC regulations. Review the attached fact sheet for additional information about vehicle washing activities. Activities within the Zone II may also pose a potential threat to the water supply. Specifically, under conditions when the river contributes water to the aquifer, an accidental release to the river may pose a threat to water quality.

Common potential sources of hazardous materials include:

- Household hazardous materials automotive wastes, solvents, pesticides, and fertilizers
- Heating oil storage underground and above ground fuel oil storage tanks
- Commercial/industrial hazardous waste many businesses store, use, and/or produce hazardous waste products and materials

The Working Group was not familiar with any large producers or storage places of hazardous materials. There are several businesses within downtown that have been identified by MassDEP as small quantity generators of hazardous materials, and there are two known historical oil spills that were reported and remediated at residential sites within the watershed. There are, however, two known historic dumping sites for trash and construction materials: the area behind Big Y near the telecom tower, and the bridge over West Street. There are also potential unpermitted junkyards within the upper portions of the watershed with unauthorized storage of vehicles and equipment that could lead to pollution from leaks or spills. Former Ware Farm Equipment Company, 200 West Street: The roughly 14 acre site was formerly the Ware Farm Equipment Company and was contaminated with both hazardous material and petroleum substances. Approximately 5 to 7 acres of the property was also a solid waste disposal area that was last used in the mid-1920s and is now capped and inspected annually. Burning waste at the disposal site led to elevated concentrations of total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAHs) in the soil, groundwater and surface water samples. The parcel was subdivided in 2010 and 4.4 acres, where the old buildings were located, has been cleaned up and redeveloped into the town fire and rescue station.

A parcel of land on Sheehy Road was used as a dump at one time for approximately one year. The DEP required site assessment and remediation, which has been completed with the installation of a cap in 2015. The site is located in the Zone II Groundwater Protection Area associated with Muddy Brook, with groundwater contributing to the town wells.

TRANSPORTATION CORRIDORS

Streets, roads, and highways are the primary mode for moving goods, people, and services but also can carry stormwater runoff pollutants from the adjacent land and from cars, trucks, and buses, including heavy metals from tires, brakes, and engine wear, and hydrocarbons from lubricating fluids. If the pollutants are not properly controlled, they can impair waters causing them to no longer support the water's designated uses and biotic communities.

In regard to the Muddy Brook watershed, Major routes include Route 32 & Route 9 – Both of which cross Muddy Brook and have point source discharges to Muddy Brook from roadway drainage. Ware has two major routes that intersect in the center of town – MA Route 9 & MA Route 32. Route 9 runs east-west and Route 32 runs north-south. These two major routes provide convenient access to neighboring towns as well as Worcester, Springfield, Northampton, and Amherst. Route 9 is the major east-west connector, running from downtown Ware east to the City of Worcester and west to the Town of Amherst and City of Northampton (where I-91 can be accessed). Route 32 runs northeast to southwest, following the Ware River through town. Route 32 has become a magnet for more recent commercial development, including "strip mall" development. Beyond Ware, Route 32 extends into Palmer where the Massachusetts Turnpike can be accessed. Pedestrian facilities in Ware are concentrated in the more densely developed areas of downtown and extending south on Route 32 to the school campus. It is important to note, both Route 9 & Route 32 have bridges that cross Muddy Brook in the downtown area.

A significant amount of high-density residential streets in and around the downtown area are located within the Muddy Brook Watershed. Local streets within the Muddy Brook watershed were identified as having stormwater flooding issues during and after large rainfall events – the Working Group identified a local street near the United Church of Ware as being known as "Water Street" due to the frequency of flooding. Additionally, many stormwater systems and road-stream crossings within the area have been using outdated rainfall models and are therefore undersized relative to current and future rainfall in the region, leading to additional stormwater flooding, erosion, and water quality concerns. Catch basins

transport stormwater from roadways and adjacent properties to the ground, streams, rivers or reservoir. As flowing stormwater travels, it picks up de-icing materials, petroleum chemicals and other debris on roads and contaminants from streets and lawns. Common potential contaminants in stormwater originate from automotive leaks, automobile maintenance and car washing, or accidental spills.

North of Snow Pond the roads take on the traditional characteristics of a typical rural New England town. Drainage converts from urbanized grey infrastructure to traditional country drainage – where water sheet flows off the road to vegetated or rock swales. The working group has identified this as a problem, especially on Sorel Road & Greenwich Road which are graded towards Muddy Brook. Illegal dumping is also very common on remote roadways in particular, are frequent sites for illegal dumping of hazardous or other potentially harmful wastes that poses a significant threat to the water supplies and roadways.

ROAD-STREAM CROSSINGS & CULVERTS

The four major road crossings on Muddy Brook itself are bridges, which are considered adequate Upgrading the stream crossings on Muddy Brook is critical to providing navigable pathways for trout and other aquatic organisms.

By installing a well-designed crossing with an open-bottom and a minimum openness ration of 0.5m the Town will be able to re-establish the natural stream channel with natural substrates. Over time the water depth and velocity of the stream will become comparable to conditions upstream and downstream and will allow natural stream processes to occur. Additionally, by ensuring the crossing spans bank to bank we will be able to establish dry passage for wildlife through the crossing for wildlife migration, thereby improving the passage for fish and wildlife as well as creating good habitat for stream dwelling animals. Also, as the climate changes, many organisms depend upon access to cooler upstream habitat to survive and reproduce so upgrading road-stream crossing as well as improving the stormwater infrastructure associated with roadways will mitigate against climate change impacts.

DRAINAGE INFASTRUCTURE WITHIN THE MUDDY BROOK WATERSHED

The Department of Public Works is responsible for the public storm drainage system, including catch basins, drain manholes, and pipes and culverts. The Town of Ware is not a regulated small municipal separate storm sewer system (MS4) under the US Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES), and therefore does not currently have a public outreach and education program or illicit discharge detection and elimination program in place. In 2012, Ware participated along with 30 other towns in central Massachusetts Community Innovation Challenge Grant from the Massachusetts Office of Finance and Administration to develop a detailed map of their stormwater infrastructure that can be utilized to track operation and maintenance of the system. The DPW does have a program to map stormwater infrastructure town-wide and develop a more systematic approach to operation and maintenance are important best management practices for reducing stormwater pollution.

Several catch basins connect by cross culverts discharge directly into the Brook, especially at the two bridge crossings on RT-9 & RT-32. Additionally, these roads are treated with salt during the winter for deicing which threatens the water quality of the watershed through stormwater runoff. Other stormwater pollutants from roads that affect the water quality of Muddy Brook include heavy metals from tires, brakes, and engine wear, hydrocarbons from lubricating fluids, other petroleum products, and significant amounts of trash and debris. Additional hazards include the potential for spills and contamination associated with vehicle accidents on the roads.

PUBLIC WATER SUPPLIES & AQUAFIRS

Seventy percent of Ware's population is served by a public water supply and the remainder draw from private wells. The most important and largest aquifer in Ware runs along Muddy Brook and Greenwich Road down to Snow Pond, and it supplies four wells and a cistern west of Barnes Street—each with its own pump station and treatment facilities. The Ware Water Department maintains and operates four groundwater sources located within two distinct sand and gravel aquifers. Wells 1/2/3 (01G) is a set of three, 8 x 18-inch diameter, gravel packed wells originally installed in 1978 to replace a shallow tubular wellfield just north of Pines Pond. Well #4, Snow Pond Well (02G), is an 18 x 24-inch diameter, gravel packed well located just north of Pines Pond and just south of Snow Pond. In 2015, the three (3) wells at the Barnes Street site were replaced with new gravel-packed wells. Drinking water is transported from these locations through town via 40 miles of water main. The system includes two standpipes (holding tanks), located at Church Street and Anderson Road. The wells have a daily capacity of 1.8 million gallons per day, and the town's average daily demand is 1.2 million gallons per day. The system is able to meet the average water demands of the present population.

An aquifer is defined as an underground water-bearing layer of permeable material that will yield water in a usable quantity to a well. The Town's drinking water wells have designated Zone I and Zone II areas to protect the area closest to the wells and the primary recharge area for the aquifer, respectively. The most important and largest aquifer in Ware is the one now designated as a Zone II protection area by DEP which runs along Muddy Brook and Greenwich Road, down to Snow's Pond, which supplies the town wells off of Barnes Street. These three sources (01G, 02G and 04G) are located within the same relatively shallow, unconfined sand and gravel aquifer along the Muddy Brook valley. The Zone II (GIS ID # 470) for wells (01G, 02G and 04G) was delineated as part of the SWAP program utilizing empirical data, analytical modeling and geologic mapping. Part of the Zone II #470, in the Muddy Brook valley for sources 01G and 02G, is served by municipal sewer, however, there is no sewer in the northern part of the Zone II. Various development and use restrictions exist in these areas to protect both water quality and potable water availability for the town.

The number one identified threat by the working group is protecting the Towns drinking water supply. The proximity of recreational, residential and commercial activities that utilize on-site septic disposal pose the greatest threat to the water sources. The overall ranking of susceptibility to contamination for the entire system is high, based on the presence of at least one high threat land use within the water supply protection areas. Drinking water is protected under Massachusetts drinking water regulation (310 CMR

22.00 Drinking Water). Massachusetts drinking water regulation (310 CMR 22.00 Drinking Water) requires public water suppliers to own the Zone I, or control the Zone I through a conservation restriction. Activities other than those directly related to the public water supply are prohibited within the Zone I. The Zone I for the wells is a 400-foot radial area around each of the wellheads.

According to the Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report for Ware Water Department Zone I is considered non-conforming under the regulations. Many public water supply sources were developed prior to promulgation of the MA DEP's regulation and contain non-water supply activities such as homes and public roads. The wells in the Muddy Brook valley are non-conforming, with residential and recreational land uses in the Zone I. The Zone I of the Cistern source has a baseball field with vehicle parking, residential homes that are connected to the sewer system and the Water Department's maintenance garage. The following non-conforming activities are located within the Zone I of the wells:

<u>Wells #1, 2 and 3 (01G)</u> - Wells #1, 2 and 3 (source 01G) are located within a residential area of town. A portion of Pleasant Street, two homes and portions of two other lots are located within the Zone I of source 01G; the three lots with homes are served by Town sewer and water. There is also a town baseball field within the Zone I; parking occurs within the Zone I during events at the field.

<u>Well #4 (02G)</u> - Well #4 is located north of the source 01G (Wells 1, 2 and 3). A portion of Pleasant Street, two homes (one served by a private septic system and one served by the Town sewer system) are located within the Zone I.

<u>Cistern (04G)</u> - The Cistern (04G) is located south of source 01G. The baseball field and parking area, the Water Department's motor control building (old pumping station), the storage (maintenance) garage and residential backyards are within the Zone I of the Cistern. The motor control building has secondary containment for the petroleum products stored on site.

The Zone II is the primary recharge area for the aquifer. This area is defined by hydrogeologic studies that must be approved by DEP. The Zone II area (# 490) for the wells located in Muddy Brook valley is 55% forest, water or wetland, with the remaining area a mix of low to high density residential land use (22%), a few commercial activities and agricultural activities. The most densely developed southern portion of the Zone II near the wells in the Muddy Brook valley is served by municipal sewer. However, the area immediately upgradient of the Snow Pond Well (04G) is not served by municipal sewer. The proximity of recreational, residential and commercial activities that utilize on-site septic disposal pose the greatest threat to the water sources. Land uses and activities that are potential sources of contamination include

Nutrient pollution in ground water can be harmful, even at low levels. Infants are vulnerable to a nitrogenbased compound called nitrates in drinking water. Excess nitrogen in the atmosphere can produce pollutants such as ammonia and ozone, which can impair our ability to breathe, limit visibility and alter plant growth. When excess nitrogen comes back to earth from the atmosphere, it can harm the health of forests, soils and waterways.

DEP Facility Number	Facility Name	Street Address	Town	Permitted Activity	Activity Class	Facility Description
	Gilbertville Bottled Gas	109 Gilbertville Road	Ware	Hazardous Waste Generator	Very Small Hazardous Waste Generator	Propane delivery
	Hardwick Auto Sales	551 Greenwich Road	Ware	Hazardous Waste Generator	Very Small Hazardous Waste Generator	Auto Sales
	D. Petracon & Sons/ D & P Bus Co.	100 Pleasant Street	Ware	Waste Oil Generator	Very Small Hazardous Waste Generator/Oil	Sales Repair/Bus terminal
	Four Seasons Repair	53 Crescent Street	Ware	Hazardous Waste Generator	Very Small Hazardous Waste Generator/Oil	Sales Repair/Bus terminal
	Construction & Auto Repair Company		Ware	Not registered		Auto Body & Repair

SIGNIFICANT HAZARD DAMS

There are three dams located withing the Muddy Brook Watershed. Two of the three dams are classified as Significant Hazard Dams. This means the dams are located where failure or improper operation may cause loss of life and damage to homes, industrial or commercial facilities, secondary highways or railroads or cause interruption of use or service of relatively important facilities.

POINT & NON-POINT SOURCE POLLUTION

POINT SOURCE POLLUTION

The U.S. Environmental Protection Agency (EPA) defines point source pollution as "any single identifiable source of pollution from which pollutants are discharged, such as a pipe, ditch, ship or factory smokestack." Factories, sewage treatment plants and separate municipal stormwater systems are three common types of point sources. Factories, including oil refineries, pulp and paper mills, and chemical, electronics and automobile manufacturers, typically discharge one or more pollutants in their discharged waters (called effluents). Some factories discharge their effluents directly into a waterbody. Others treat it themselves before it is released, and still others send their wastes to sewage treatment plants for treatment. Sewage treatment plants treat human wastes and send the treated effluent to a stream or river. Discharge from separate municipal storm drain systems is also considered point source discharge, even though the true source of stormwater pollution can be traced to runoff across the land surface. This is largely due to the grey infrastructure traditionally used for stormwater management by cities and towns. Gray infrastructure is the connection of catch basins, drains, pipes, ditches, swales, culverts, and outfalls meant to slow the flow of stormwater during rain events to prevent flooding. Often times the grey stormwater infrastructure's outfall is directly into a waterway – making it a point source pollutant.

Unregulated discharges from point sources can result in water pollution and unsafe drinking water and can restrict activities like fishing and swimming. Some of the chemicals discharged by point sources are harmless, but others are toxic to people and wildlife. Whether a discharged chemical is harmful to the

aquatic environment depends on a number of factors, including the type of chemical, its concentration, the timing of its release, weather conditions, and the organisms living in the area.

The Working Group was not aware of any point source pollution locations within the watershed. As many of the roads, houses, and farms were constructed in the mid-1900s, and Ware is not a MS4 community, a future field investigation may find undocumented point source discharges that could benefit from treatment.

STORMWATER RUNOFF

Stormwater runoff is defined as rainwater or snow that is not absorbed into the ground, instead traveling overland until it is collected by the municipal stormwater system or is carried into a wetland or waterbody. EPA studies have demonstrated that stormwater pollution is one of the most significant sources of water pollution today. When it rains or snow melts the resulting stormwater picks up or dissolves pollutants and washes them into stormwater conveyance systems. Polluted stormwater runoff is often discharged into local rivers and streams without treatment. Common pollutants include oil, grease and metals from cars and roadways; pesticides and fertilizers from lawn maintenance activities; sediment from construction sites; and the improper disposal of litter including cigarette butts, paper wrappers and plastic bottles. Stormwater can impair waterways, degrade animal habitat, pollute drinking water, increase flooding, cause erosion of streambeds or siltation of waterways, and decrease the amount of water recharged to aquifers.

Stormwater runoff is often worsened by human activities and increased development. Urban and suburban areas produce much more stormwater runoff due to the high amount of paved and hard surfaces because stormwater flows over hard surfaces directly into a water body or storm drain, there is no opportunity for soil and plants or a water treatment facility to filter out pollutants Residents and businesses can play a major role in the reduction of stormwater impacts to surface water bodies. When residents and businesses are provided with the appropriate information, they can better understand the effects of illegal discharges and the improper disposal of waste.

Stormwater was identified by the Working Group as a significant concern for the Muddy Brook watershed area, and an opportunity to connect with residents on methods for reducing stormwater flows and pollution from their property through public outreach and education.

Church St to Aspen St Flooding – Highland Village, Hillside Village

NUTRIENT POLLUTION

One of America's most widespread, costly and challenging environmental problems is nutrient pollution via stormwater, and is caused by excess nitrogen and phosphorus water. Nitrogen and phosphorus are nutrients that are natural parts of aquatic ecosystems. Nitrogen is also the most abundant element in the air we breathe. Nitrogen and phosphorus support the growth of algae and aquatic plants, which provide food and habitat for fish, shellfish and smaller organisms that live in water. But when too much nitrogen

and phosphorus enter the environment - usually from a wide range of human activities - the air and water can become polluted. Nutrient pollution has impacted many streams, rivers, lakes, bays and coastal waters for the past several decades, resulting in serious environmental and human health issues, and impacting the economy.¹

Too much nitrogen and phosphorus in the water causes algae to grow faster than ecosystems can handle. Significant increases in algae harm water quality, food resources and habitats, and decrease the oxygen that fish and other aquatic life need to survive. Large growths of algae are called algal blooms and they can severely reduce or eliminate oxygen in the water, leading to illnesses in fish and the death of large numbers of fish. Some algal blooms are harmful to humans because they produce elevated toxins and bacterial growth that can make people sick if they come into contact with polluted water, consume tainted fish or shellfish, or drink contaminated water. This can clearly be seen in Snow Pond, as the lack of any stormwater management around the pond is resulting in alga blooms and severely degraded water quality.

PESTICIDE/HERBICIDE/FERTILIZER USE

One particular type of stormwater pollution that is both a current and future threat to the health of the Muddy Brook watershed is pesticide/herbicide/fertilizer use. These chemicals are applied to lawns of residential and commercial properties, and picked up by stormwater or absorbed into groundwater, potentially contaminating the brook and aquifer. Fertilizers can lead to excessive and harmful algal growth in waterbodies like Snow Pond and decrease both the health and recreational usability of the waterbody.

The State of Massachusetts has a stringent program for registration of pesticides and certification of those authorized to apply them. Once a pesticide has been approved for use by the USEPA, it must be registered by the Massachusetts Pesticide Board Subcommittee prior to being distributed, purchased, or used in Massachusetts. Pesticide classification in Massachusetts is based on the potential adverse effects the pesticide may have on humans or the environment. "Restricted Use" pesticides can only be sold by Licensed Dealers to Certified Applicators, while "State Limited Use" pesticides may be restricted to use by certain individuals or require written permission from the Department of Agricultural Resources prior to use. Legal application of pesticides must be performed by an individual licensed or certified by the Massachusetts Department of Agricultural Resources. A Commercial Applicator License is required for applying general use pesticides, and a Commercial Applicator Certification is required for applying restricted and state limited use products.

¹ https://www.epa.gov/nutrientpollution/issue

Right-of-way maintenance can also be a source of contamination. National Grid power lines cross from Old Gilbertville Rd to Greenwich Rd and actively employ the use of pesticides and herbicides in their yearly maintenance.

SEWER AND SEPTIC SYSTEM FAILURE

The Town has municipal sewer that services the urbanized areas of Town. The Town's wastewater treatment plant and collection system are old and in need of significant work and upgrades. The collection system itself involves approximately 32 miles of gravity sewer mains and one small pump station serving approximately 1,548 accounts. This includes approximately 55% of town residents as well as several industries. The rest of the town relies on on-site septic systems. The most densely developed southern portion of the Muddy Brook valley is served by municipal sewer. However, the area immediately north of the Snow Pond Well is not.

As previously stated, the Muddy Brook watershed north of Snow Pond is outside of the municipal sewer service area and relies on on-site septic systems for wastewater disposal. On-site septic systems utilize leach fields to treat wastewater prior to recharge into the water table and aquifer and require appropriate subsurface or above grade materials with specific permeability rates and adequate separation to seasonal high groundwater levels in order to provide sufficient treatment. The useful lifespan of an on-site septic system depends on the type of on-site septic system used and level of maintenance but is typically on the order of 25-30 years. Ware has many areas of poorly draining soils, and consequently proper on-site sewage disposal is a challenge.

When on-site septic systems reach the end of their useful lifespan, the wastewater disposed into the system is no longer adequately treated, and can present a hazard to groundwater quality, human health, and environmental health. If the system's leachfield no longer has adequate pore space, the untreated wastewater will break through at the ground surface or back-up into the residence. Occasionally, failure of on-site septic systems can go unnoticed if the system is directly discharging untreated wastewater into the groundwater aquifer without causing a breakout at the ground surface or back-up into the structure.

Septic systems allow treated wastewater effluent, which is rich in phosphorus and other nutrient content, to leach into the groundwater and potentially migrate to the pond. Because phosphorus tends to become bound to soil particles, the distance it can travel may be relatively short. For this reason, it is recommended to assess septic systems within 200 feet of Muddy Brook and its tributaries to determine the annual septic system phosphorus load. Although investigating the specific ages and types of construction of on-site septic systems thorough town records within the Muddy Brook watershed area is outside the scope of this plan, based on the overall age of residential structures and subdivisions within the watershed area, the Working Group expects that many of the on-site septic systems within the area are at or close to the end of their useful life.

HABITAT LOSS

COLDWATER FISHERIES RESOURCE

Muddy Brook is a designated cold-water fisheries resource and primary recharge area to a public water supply for the Town, as well as a Zone II wellhead protection area. Brook Trout are abundant in the stream and require access to cool headwater tributaries for survival. Coldwater tributaries are also very important in helping maintain the cold-water status of their receiving waters and are highly susceptible to changes in water quality and/or quantity such as siltation and run-off, water level fluctuations, loss of riparian habitat, stream fragmentation and alterations of the temperature regime. DEP's stormwater management standards for critical areas such as cold-water fisheries resources and Zone II's to Public Water Supply areas require BMPs that assure no untreated or warmwater runoff from impervious surfaces directly enters these resources. Recent studies have shown that stormwater BMPs that allow standing, surface water function as "heat sinks" in summer and lose heat in winter.

Untreated stormwater discharges to the stream add warm, untreated water directly into the brook. By upgrading the crossing and improving the stormwater management along the roadways to stop the direct discharge of untreated and warm-water runoff from impervious surfaces from directly entering the stream will increase the ability of the brook to support cold-water fish species. Ideally, removing any point source discharges and incorporating into future crossing designs a chain of cold-water BMPs with deep infiltration and filtration capabilities to cool the stormwater to ground temperature in both summer and winter will provide the most effective long-term protection of the cold-water resources and will directly lead to healthier fish populations and improved water quality.

CLIMATE CHANGE

The overarching threat to the health of the Muddy Brook watershed in the future as identified by the Working Group is climate change. Losses to aquatic biodiversity occur at a rate five times faster than they do on land. This accelerated rate of loss results from a variety of stressors that are amplified in aquatic habitats, including climate change. Climate change affects the structure and function of aquatic ecosystems both directly and indirectly. Direct effects include increases in water temperatures and changes to hydrology, while indirect effects may alter plant and animal communities, and accelerate the spread of invasive species. Aquatic habitats are particularly susceptible to these changes because habitat conditions like water temperature and the amount of water are climate-dependent, species that inhabit them are less able to disperse, and multiple stressors are already impacting them.

These additional stressors, affecting many of Massachusetts' freshwater habitats, include adverse effects from past timber harvest, spread of invasive species, urbanization, flow alteration, pollution, and damming, often amplified by climate change. In some cases, multiple historic events have led to the degradation of habitats in the same waterbody. Located at the lowest elevations, freshwater habitats are susceptible to these activities occurring on upstream and upslope portions of their landscapes.

Conservation actions to protect or restore freshwater habitats can help address these threats. For example, areas with high native species biodiversity are assumed to be more intact and are therefore

often prioritized for land acquisition. Landscape level planning can inform freshwater conservation at the site scale and can incorporate the link between freshwater and terrestrial systems across large landscapes. Dam removal, culvert upgrades, eradication of invasive species, daylighting of streams and floodplains, removal of channelization structures, and upslope revegetation are all examples of management actions that can be used to improve conditions in freshwater habitats.

The Climate Change Clearinghouse for the Commonwealth provides climate projections downscaled to watershed basins², based on data from the Intergovernmental Panel on Climate Change (IPCC) 5th report and modeled by the Northeast Climate Adaptation Science Center based on a high and medium carbon emissions pathways. Ware is located within the Chicopee River Basin, which is projected to see the following changes from the baseline levels observed between 1971 and 2000 by the end of the century (2090):

- Annual precipitation: 3.55 to 5.58 inches increase from the baseline of 46.64 inches
- Average temperature: 5.13 to 9.47 degrees hotter than the baseline of 46.16°
- Days over 90° F: 19.3 to 58.8 days more than the baseline of 3.35 days
- Days below 32° F: 28.93 to 53.04 days less than the baseline of 161.76 days

The increase in precipitation is expected to impact overland flooding, riverine flooding, road-stream crossings, streambank erosion, functionality of on-site septic systems, functionality of stormwater treatment systems, and stream temperature. The increase in average temperature and days over 90° F is expected to result in increased algal growth, increased need for recreational opportunities related to cooling, and impacts on habitat and increased invasive species. Similarly, the loss in days below 32° F is expected to result in more winter precipitation occurring as rainfall, which will lead to the need for application of more deicing materials, more erosion of road materials and stream banks due to increased freeze-thaw cycles, and changes in invasive insect species longevity.

INVASIVE SPECIES

Invasive species are an increasing threat to the health of the watershed both in terms of habitat loss and protection of the drinking water recharge area. Invasive species are species that are not native and have the potential to out compete beneficial local species. Invasive plant species are problematic in that they do not provide food and habitat to native animal and insect species as beneficial indigenous plants do, and also may not provide additional benefits such as erosion control. Similarly, invasive insect species are

² <u>https://resilientma.mass.gov/map/</u>

a concern due to their potential negative impact on trees and native plant species that provide habitat, food, and erosion control within the watershed.

The Massachusetts Invasive Plant Advisory Group (MIPAG) maintains a list of invasive plant species in Massachusetts³; during discussion with the Working Group, it was noted that multiflora rose, and bittersweet have been identified within the East Quabbin Land Trust's property on Muddy Brook. Snow's pond is riddled with invasive species including aquatic invasives species (AIS) such as Eurasian milfoil and fanwort. Purple Loosestrife, Japanese Knotweed, garlic mustard, oriental bittersweet, Japanese barberry Japanese honeysuckle, and multiflora rose were all observed just along the banks of Muddy Brook South of the North Street Bridge until its confluence with the Ware River.

The presence of invasive species is anticipated to increase with increasing temperatures and precipitation from climate change and is expected to detrimentally impact the health of the forests and riparian areas within the watershed. The presence or absence of invasive insect species such as the Spongy Moth or Emerald Ash Borer, both of which can lead to significant tree loss, is currently unknown, but was flagged by the Working Group as a potential future concern.

RIVERBANK EROSION/LOSS OF RIPARIAN BUFFER

The USDA Forest Service defines the riparian buffer as "an area adjacent to a stream, lake, or wetland that contains a combination of trees, shrubs, and/or other perennial plants." Buffers provide numerous benefits to streams, including filtering of nutrients, pesticides, and animal waste from agricultural runoff; stabilizing eroding banks; providing shade, shelter, and food for aquatic and terrestrial organisms; and protecting adjacent properties from flood damage.⁴

The overall state of the riparian buffer throughout the Muddy Brook watershed was not known by the Working Group but is expected to be not functional or non-existent in the downtown and urban areas, and at risk near the large agricultural operation in the northern part of the watershed. Similarly, the area of the stream near the confluence with the Ware River downtown is a known area of bank erosion. Protection of the riparian buffer of Muddy Brook is of particular importance in maintaining the coldwater fisheries habitat and high water quality required to sustain the rare and endangered species that currently thrive in the Muddy Brook, such as the Brook Floater mussel. The Working Group identified an opportunity to coordinate with the large agricultural operation for potential restoration and protection of the riparian buffer, which could potentially be funded through a grant from the Natural Resources Conservation Service (NRCS).

³ <u>https://www.mass.gov/service-details/invasive-plants</u>

⁴ <u>https://www.fs.usda.gov/nac/practices/riparian-forest-buffers.php</u>

Muddy Brook Watershed Resiliency Master Plan (Ware, Massachusetts)

INTRODUCTION

Public Involvement and Community Engagement will consist of the creation and maintenance of a dedicated Town webpage for project materials and a link to contact the Working Group with feedback, development and distribution of mailed non-point source pollution prevention outreach materials to residents and businesses within the watershed, local cable access broadcasts of the Working Group meetings and stakeholder interviews, and coordination with Pathfinder Technical School and the Division of Ecological Restoration (DER) on training that will enable students to perform stream-crossing assessments. The non-point source material content and messaging will be tailored to local groups via input from the community liaison and the Working Group. Interviews of stakeholders within the watershed regarding their hopes and concerns for the future for the watershed are proposed to be broadcast on the local cable access channel and posted to YouTube.

PUBLIC INVOLVEMENT

WORKING GROUP

The Working Group is proposed to consist of a mix of representatives of Town boards, committees, and departments and paid volunteers to represent the residents within the subwatershed area, businesses within the subwatershed area, and the Environmental Justice community (community liaison). Working with the community liaison, watershed area volunteers from the Working Group, and relevant Town department representatives and supported by the GIS mapping, areas where there is a high amount of impervious area will be evaluated to identify opportunities to connect resilience to community blighted. Similarly, the Working Group members will assist with identification of opportunities for land acquisition and conservation in floodplains and wetlands based on water supply protection needs, recreation needs, current and future threats, and areas of known current and anticipated future flooding that would impact public health and safety.

The core working group was established in October 2022. The responsibilities of the Working Group are to provide local knowledge and expertise, assist with development and distribution of public outreach materials, assist with publicization of public events, and to meet every 1-2 months to review Plan chapters and deliverables. The Working Group will also coordinate with the local cable access network to record Working Group meetings and to post the recordings online for asynchronous viewing.

The kickoff meeting was held October 24, 2022 and had 11 participants. The Working Group discussed the scope of the grant, public outreach and adding representatives not identified in the original proposal. Key underserved populations identified were the elderly, religious organizations and indigenous peoples.

The second Working Group Meeting was held November 15, 2022 and the group discussed current and future threats to the watershed. Current and future threats were discussed in terms of overall categories including: known or potential future development, on-site septic system failure, agricultural uses/issues, hazardous materials, transportation corridors, stormwater runoff, pesticide/herbicide/fertilizer use, invasive species, riverbank erosion/loss of riparian buffer, point source pollution, climate change and habitat loss.

COMMUNITY LIASONS

The project used the community liaison model in order to ensure that the viewpoint of the Environmental Justice communities is represented on the Master Plan committee. Public outreach and engagement events are proposed to occur at locations within or near the Environmental Justice areas, and events will be coordinated with local neighborhood groups and religious organizations, such as the United Church of Ware, who provided a support letter for the project. The project will increase climate resiliency for the Environmental Justice areas in the lower reaches of Muddy Brook by identifying strategies to address riverine and stormwater flooding, protect the quality and quantity of the water supply aquifer, and reduce impervious areas in potentially blighted neighborhoods, as well as protecting and enhancing recreational opportunities associated with the brook and Snow Pond.

ENVIRONMENTAL JUSTICE POPULATIONS

Ware's 2018 MVP Summary of Findings identified water provision and protection vulnerabilities, as the Town's water supply infrastructure is located within Muddy Brook's 100- year floodplain. The MVP Plan also identified that rehabilitating vacant or condemned downtown private property near Muddy Brook could increase social and economic vitality and resilience to hazard events. Environmental Justice populations associated with the lower reaches of Muddy Brook were identified as at risk to hazard impacts and climate shifts. The mitigation actions and strategies presented in the 2018 Summary of Findings, however, are not clear about how to address the identified vulnerabilities to the Town's water supply, social and economic health, and Environmental Justice communities.

Based on the 2020 Census, there are two Environmental Justice neighborhoods in the lower reaches of Muddy Brook, designated based on Minority and Income in Block Group 3, Census Tract 8201.02 in the vicinity of the Snow Pond impoundment, and Income in Block Group 2, Census Tract 8201.02, in the downtown area where Muddy Brook meets the Ware River. By identifying opportunities to improve water quality, reduce localized flooding, remove impervious surfaces, and enhance recreational opportunities along Muddy Brook and Snow Pond, the Muddy Brook Watershed Master Plan will define a program to improve resiliency, safety, and quality of life in these neighborhoods.

COMMUNITY ENGAGEMENT

STAKEHOLDER IDENTIFICATION & INTERVIEWS

Muddy Brook Watershed Resiliency Master Plan (Ware, Massachusetts)

Beginning at the working group meeting held on August _, 2023 the group conducted a stakeholder identification exercise and identifies X stakeholder for interviews.

PUBLIC EDUCATION & OUTREACH

The development of the Muddy Brook Subwatershed Resiliency Master Plan included a strong public outreach and engagement component to both ensure meaningful participation in addressing future threats and mitigation actions, and to gather the public around the importance of protecting the Muddy Brook watershed.

The Working Group will coordinate with the local cable access network to record Working Group meetings and to post the recordings online for asynchronous viewing. Interviews of local stakeholders and their hopes and concerns for the future of the watershed are also proposed to take place during both fiscal years of the proposed project, and posted on YouTube.

YOUTH ENGAGEMENT & NAACC CULVERT ASSESSMENTS

The Town has an excellent relationship with and a high level of success with engaging with the Pathfinder Technical School, and hopes to coordinate with DER to train students in the NAACC stream crossing methodology, both to perform road-stream crossing assessments to benefit the Master Plan process and to provide job training services to interested youth. The development of a training plan with DER and Pathfinder Technical School will educate local youth on the importance of and risks from damages to stream-crossings, potential benefits and hazards to aquatic and terrestrial organisms, and will allow trained students to perform stream-crossing assessments in other communities.

PUBLIC CELEBRATION & WATERSHED WALK

A watershed walk/celebration public event is also proposed, to provide an outdoor day of engagement highlighting the benefits of the currently healthy watershed and potential threats from development and climate change. The watershed walk public event is proposed to kickoff at a location central to the Environmental Justice populations, include free childcare and refreshments, and will be held at a date and time convenient to families (e.g., a weekend not during a school vacation week). The event will celebrate the watershed to bring awareness of its importance to the Town, potential threatsto the health of the watershed, and a presentation of highlights of the draft Master Plan.

IDEAS FOR FURTHER PUBLIC EDUCATION, OUTREACH AND PARTICIPATION

Creating and sustaining a public education program creates expectations that greater awareness will influence behavior and habits that exacerbate the problems of stormwater and water pollution in general. An informed community can also be enlisted to aid in the identification of illicit discharges. In an effort to provide relevant information to the community, targeted educational and outreach materials should be
developed for residents and businesses and/or existing materials developed by EPA and DEP should be used and modified as necessary.

In addition to public education, getting the public to participate in events

- Earth Day events & town wide clean-ups
- Educational booths at Town Events (First Night, 4th of July, Carnival, etc.)
- River clean-ups
- Community subsidized Rain Barrel & Compost Bin programs
- Adopt-a-Drain and Catch basin stenciling programs
- Hotline/Webline for reporting problems, violations
- Household hazardous waste/used oil collection days
- Partnerships with advocacy groups
- Stormwater workshops
- Public surveys about opinions, behaviors
- Stormwater committee/task force

CHAPTER 4: OPPORTUNITIES FOR INSTALLATION OF GREEN INFRASTRUCTURE ON TOWN-OWNED PARCELS

INTRODUCTION

The vast majority of active recreational facilities in Ware are located within the Muddy Brook Watershed, close to the downtown area, and within or close to the Environmental Justice area. This area is ideal

GREEN INFASTRUCTURE

By capturing rainfall close to where it falls, green infrastructure strategies reduce the impact of impervious surfaces, providing volume control and preventing the transport of urban runoff to rivers and streams. Instead, rainfall has a short journey to facilities that can help filter, absorb, or break down pollutants, either through proprietary devices or simply through microbial action in soils and plant roots. At the same time, the infiltration of stormwater into soils helps to recharge groundwater resources that are important to Ware for drinking water supply and are also essential to maintaining base flows for aquatic life in Muddy Brook and streams during the drier summer months.

Table 4.1: Town Owned P	Parcels with Potentia	l for GI/LID		
Property Name	Current Use	Location	Map/Lot	Area (Acres)
Aspen Grove Cemetery			60-0-72	31.2
Indian Cemetery			52-0-91	0.7
Ware Center Cemetery			21-0-51	0.9
Water Tank @ Church Street			23-0-13	11.5
Snow's Pond Dam			62-0-44	1.4
The Pines			62-0-45	3.1
The Pines			60-0-177	5.6
The Pine's; Kubinski Field; Reed Pool			60-0-70	26.6
Open Space			29-0-72	13.5
Snow's Pond			29-0-67	3.0
Snow's Pond off Greenwich RD			23-0-8	11.4
Snow's Pond Lakeview Park			63-0-45	3.2
Pleasant ST Lot			60-0-228	0.2
Storrs Land			60-232-1	1.3
Veteran's Park			61-0-6	0.8
Pocket Park			57-0-98	0.1

Muddy Brook Watershed Resiliency Master Plan (Ware, Massachusetts)

Dearden Memorial Athletic	57-0-62	5.0
Banas Farm-Landfill	11-0-21	61.2
Old Sheehy Rd Landfill	29-48-1	5.27
Pennybrook	14-0-8	38.5
Pennybrook	14-8-66	0.7
Greenwhich Road Drainage	29-69-1	0.7
Gilbertville Road Slice	36-0-38	0.3
Greenwich Road Drainage	63	0.6
Gilbertville Road Slice	64	0.3
TOTAL ACERAGE		

WARE DOG PARK

The dog Park

ST. WILLIAMS CEMETERY

The

ASPEN GROVE CEMETERY

Aspen Grove Cemetery is located

WATER DEPARTMENT PUMP HOUSE

The water department pump house

REED POOL & BEAUREGARD MEMORIAL PLAYGROUND

The Beauregard Memorial Playground is located at 119 West Main Street. There is a playground and picnic tables at this site. Reed Municipal Pool is also located at this site and was an outdoor pool that opened during the summers. The recent closure of the Reed Pool has angered many citizens and during the 2023 OSRP planning process it was identified as a top priority by many as important for safety (swimming lessons) and responding to climate change (increased heat and drought). The re-opening of the pool was strongly supported in the both the public survey and community visioning session. Beyond the playground is a trail that leads to Muddy Brook and consists of several fields and an old double culvert stream crossing.

KUBINSKI FIELD

Kubinski Field is located close to some of the municipal water supply wells and is thus under the jurisdiction of the DPW. The baseball diamond is maintained by the Parks Department. The field is used by both youth and adult baseball programs. A high priority goal identified in the 2023 OSRP is to relocate Kubinski Field parking lot from Zone I Groundwater Protection District to town-owned land on Pleasant Street.

CHAPTER 5: OPPORTUNITIES FOR REDEVELOPMENT PROJECTS

INTRODUCTION

Building resilience through development and redevelopment projects in the neighborhoods of the Muddy Brook watershed involves two interrelated strategies: minimizing impervious cover (driveways, rooftops, and parking lots) and maximizing use of green vegetated areas, particularly the use of trees.

These strategies can have multiple benefits across Ware's neighborhoods with direct benefits to Muddy Brook. Most importantly, these include reducing storm flows and localized flooding and providing cooling during hot summer days. Soils, vegetation, and particularly trees have the ability to soak up rainfall as well as lower surface and air temperatures through shading and evapotranspiration, the return of moisture to the air by plants through transpiration. Shaded surfaces can be 20 to 40°F cooler than nonshaded surfaces, thus providing cooling on hot summer days that also helps to reduce electricity demand for air conditioning.

OPPERTUNITIES FOR REDEVELOPMENT OF EXISTING INFASTRUCTURE

Urban Revitalization and redevelopment of existing infrastructure can advance the goals of this plan dramatically.

Table 5.1: Urbanized Sit	Table 5.1: Urbanized Sites for Potential Redevelopment				
Property Name	Owner/ Manager	Current Use	Location	Map/Lot	Area (Acres)
Mc Donalds	Mc Donalds Corporation	Restaurant	117 West Street	56-0-11	1.21
Taco Bell	Aldrich Management Corp.	Restaurant	118 West Street	56-0-93	0.44
Phillps Plaza Shopping Center - O'Reilys Auto Parts, Curaleaf	Aldrich Management Corp.	Parking Lot, Restaurant & Recreational Marijuana	124 West Street	56-0-94	7.00
Edgar Machine	David Edgar	Auto Machine Shop	132 West Street	56-0-95	0.36
Swift River Valley Auto Wash	Nor Cor Autowash Inc.	Car Wash	134 West Street	56-0-96	0.74
Monson Savings Bank	Monson Savings Bank	Bank	136 West Street	56-0-98	1.27
Big Y	D'Amour	Grocery Store	148 West Street	56-0-102	8.59

Bowling Alley	Roland Josefiak	For sale	140 West Street	56-0-99	1.07
Coin Laundry	Carlos Martin	Laundromat	142 West Street	56-0-100	0.39
R & K Auto Repair	Scott Pisarski	Auto Repair	118 W. Main Street	59-0-119	0.74
Kippy's Auto Repair	Philip Arello	Auto Repair	2 Vernon Street	56-0-117	1.66
Overflow Parking Lot	Philip Arello	Auto Repair/Auto Storage	Vernon Street	56-0-118	1.84
SubaGuru of MA	CKG Properties LLC	Auto Repair	105 West Street	56-0-115	0.24
	Robert Shurtleff	Auto Repair	115 West Street	56-0-112	0.63
Brookside Mart	Brookside Mart	Gas Station	131 West Street	56-0-109	0.45
	Alexandria Trust, LLC		139 West Street	56-0-107	1.73
	413RSCS2 LLC		143 West Street	56-0-106	0.2
Ware Savings Bank	Ware Savings Bank	Bank	155 West Street	56-0-105	1.7
R & K Auto Repair	Scott Pisarski	Auto Repair	118 W. Main Street	56-0-119	0.74
Highland Village	Highland Ware Associates Limited	Housing	27 Boulder Drive	63-0-122	12.14
Hillside Village	Hillside Properties, LLC	Housing	17 Convent Street	63-0-134	6.00
Mobile Home Park	Eric Moulton	Housing	221 Upper North Street	29-0-50	10.31
Mt Carmal Cemetery	Romal Catholic Church	Burial ground	Greenwich Road	23-0-6	12.00
New St. Williams	Romal Catholic	Burial ground	West Main Street	56-0-110	24.00
Cemetery	Church				
Old St. Williams Cemetery	Romal Catholic Church	Burial ground	West Street	56-0-26	5.49
TOTAL ACERAGE					

REDEVELOPMENT OPPORTUNITIES FOR MARKETABLE LANDS

Table 5.2: Rural Sites fo	r Potential Redevelop	ment		
Property Owner	Current Use	Location	Map/Lot	Area (Acres)
Brian & Martha Klassano	Exposed open gravel pit	25 Hardwick Pond Road	40-0-38	
Richard & Edward Couture		1555 Greenwich Road	40-0-79; 40-0- 79-1	
Greenwich Road Realty, LLC	Possible gravel pit	1316 Greenwich Road	35-12-1	
FT Smith Trucking & Excavation	Trucking company	1287 Greenwich Road	35-0-12	
Edward & Harriet Wyzik	Possible Unpermitted Junkyard/Transfer Station	81 Greenwich Road	29-30-1; 29-30- 2	

CHAPTER 6: OPPORTUNITIES FOR LAND ACQUISITION

INTRODUCTION

This chapter will identify existing protected open space, identify lands connecting to existing conservation properties (Coy Hill, Dugal Range) for potential acquisition and also identify strategic parcels for land protection in Zone II Groundwater Protection District, particularly along Muddy Brook.

OPEN SPACE AND RECEATION WITHIN THE MUDDY BROOK WATERSHED

Protecting open space is important to ensure that future generations have land available for farming, timber production, and recreation. It also protects water supplies from degradation due to increased development. Protecting open space is critical to preserving habitats and habitat corridors for wildlife, from insects to moose and bears. Open space helps maintain clean air which all life depends on, whether plant or animal. Protecting land for recreational purposes – both active and passive – is important to ensure that future generations have places to play sports or simply walk among fields or trees, observing the natural world. Such activities are important for human health, helping with issues such as weight control, cardio-vascular health, and stress reduction among many other benefits.

The Town of Ware owns 529.2 acres of land for conservation and recreation purposes with the Muddy Brook watershed containing several large areas of protected land, including land conserved by the East Quabbin Land Trust, the Town Forest, and areas around Snow Pond and the Town wells. The total amount of protected land within the Muddy Brook Watershed is XXX acres.

The Town Forest is comprised of three different non-contiguous parcels. The so-called Muddy Brook lot is approximately 66 acres and is surrounded by forest and agricultural properties, some in Chapter 61 or 61A, and the land to the north is permanently protected by the East Quabbin Land Trust by a conservation restriction. The Muddy Brook Town Forest lot has two access roads that are maintained by hikers and recreational ATV users, and there are several smaller trails that connect the roads. This parcel provides important habitat for many species and the corridor along the brook has been identified as a priority habitat by NHESP.⁵ The Town Forest is managed under a Forest Management Plan developed with assistance from PVPC, with the goal of developing adequate trails while maintaining the forest's natural resources.

Hyde Woodland Preserve is a100-acre parcel owned by the East Quabbin Land Trust and is located along the southern flank of the Dougal Range. The property is entirely forested and is dominated by white pine and a mixture of hardwoods. The property is divided by the heavily eroded and abandoned Old Stagecoach

⁵ Master Plan (Appendix)

Road, a public way, which is currently overtaken by a host of invasive plants. This old town road once connected Old Gilbertville Road to Hardwick Pond Road. Interesting stone walls, cellar holes, and unique landscape features such as steep talus slopes are found throughout the property. The property is currently open for hunting, fishing, and passive recreation. Access is from existing trails along the Dougal Range, such as through the adjacent Ware Town Forest parcel or from Hardwick Pond Road via the abandoned section of Old Stagecoach Road. In 2016 the land trust and the Town are working to establish a small trailhead parking area on Old Gilbertville Road, with a trail leading to the Hyde Woodland Preserve via Old Stagecoach Road. Hyde Woodland preserve directly borders Muddy Brook and is adjacent to the Muddy Brook Town Forest lot. The Town oversees a conservation restriction on the parcel.

Lable 6.1: Existing Protected Open Space Land – including Agricultural Preservation Restrictions (APR) & Conservation Restrictions (CR)				
Property Name	Owner/ Manager	Location	Map/Lot	Area (Acres)
Ware Town Forest	Town of Ware	Greenwich Road	29-0-72	13.50
Ware Town Forest	Town of Ware	Greenwich Road	35-15-1	66.38
Ware Town Forest	Town of Ware	Upper North Street	29-0-46	6.31
Ware Town Forest	Town of Ware	Walker Road	<mark>29-0-15</mark>	<mark>104.0</mark>
Klassano CR	Brian & Martha Klassanos & EQLT	25 Hardwick Pond Road	40-0-38	38.80
Klassano CR	Brian & Martha Klassanos & EQLT	Old Stagecoach Road	40-0-37	4.82
Klassano CR	Brian & Martha Klassanos & EQLT	Old Stagecoach Road	40-0-35	6.95
Finn Woodland	EQLT & Ware Conservation Commission	Old Stagecoach Road	40-36-1	37.82
		Old Gilbertville Road	40-0-36	25.11
Storrs Conservation Land	Town of Ware	Pleasant Street	60-232-1	1.3
Snow's Pond	Town of Ware	Greenwich Road	23-0-8	11.40
Baker CR	EQLT & Hardwick Conservation Commission			
Hyde Conservation Area	EQLT & Ware Conservation Commission	Old Stagecoach Road	40-0-80	61.78

TOTAL ACREAGE	Commission			
Turkey Street Preserve	EQLT & Hardwick Conservation	Hardwick Pond Road	44-0-4	1.62
Strawberry Fields CR	Penny Lane Development LLC	Off Greenwich Road	40-44-5, 40-44-6	
Dumas	EQLT & Ware Conservation Commission			

Table 6.2: Potential Land Acquisitions for Zone II Groundwater Protection District				
Owner	Current Use	Location	Map/Lot	Area (Acres)
TOTAL ACERAGE				

Table 6.3: Potential Acquisitions for Landscape Connectivity				
Owner	Current Use	Location	Map/Lot	Area (Acres)
Eric & Alicia Moulton	largely undeveloped but with fields	19 Sheehy Road	29-53-1	32.85
Gary & Lorna	largely undeveloped but with a field and some exposed soils with trucks	28 Sheehy Road	29-0-48	161.88
Estate of Heny Dumas c/o David Dumas	Vacant Land connecting town land to EQLT land	Off Greenwich Road	35-0-15	50.5
Mark & Doreen Swett	Contains Knights Pond that feeds into Snows Pond	238 Upper North Street	29-0-68	7.79
Christopher & Lisa Dimarzio	SFH with tributary through lawn	Clinton Street	62-90-1	
Great Lakes Camp Inc. c/o Bill Dougan	Woods & wetlands	Hardwick Pond Road	43-0-12	39
Donald & Blanche Carlson	Open fields	Hardwick Pond Road	40-0-25, 40-0- 41; 41-1-X	
Donald & Blanche Carlson		8 Hardwick Pond Road	40-0-23	
Kevin Shea	Five Star Ranch; alpacas; tributary starts on farm	124 Old Gilbertville Road	36-0-1	
Corrine Campbell	Open Fields	Campbell Road	43-1-2; 43-1-1; 43-1-3; 43-3-2; 43-3-3	

Muddy Brook Watershed Resiliency Master Plan (Ware, Massachusetts)

TOTAL ACERAGE		

CHAPTER 7: STRATEGIES TO IMPROVE THE EFFECTIVENESS OF FLOOD CONTROL LEVEE SYSTEM

CHAPTER 8: REGULATORY REVIEW & RECOMMENDATIONS FOR REVISIONS

INTRODUCTION

The proposed regulatory review and recommendations for revision will take long-term climate change impacts into account by recommending use of precipitation models that include extreme precipitation, particularly for large storm events, such as Atlas14 or the Cornell Extreme Precipitation Analysis, in coordination with the guidance anticipated to be provided by the updated Stormwater Handbook and Climate Resilience Package during the spring/summer of 2022. Regulatory code improvements will specifically review water supply Zone II land uses and protections, stormwater management, and advancing use of green infrastructure strategies, assessment of developer incentives to support use of green infrastructure and reductions in impervious cover creation in the watershed and throughout Town, and coordination with other potential grant funding programs like the Section 604b and 319 grant programs, and Drinking Water Supply Protection grant program.

CURRENT ZONING & GENERAL BYLAWS

Without any zoning districts until 1987, land use patterns were well established based on proximity to customers (downtown) and, after World War II, roadways (Route 32 south of downtown). When Ware adopted its first zoning map in 1987, the district locations were based largely on this existing land use pattern. In 2012 the Town adopted a revised Zoning Bylaw with significant modifications to the zoning districts. Eighty percent of the town is zoned rural, and the ten percent in the nine other districts is almost entirely along the Route 32 corridor which follows the Ware River. This indicates the extent to which the town remains rural and has kept the more compact forms of land use. Ware's Zoning Bylaw contains effective regulations that can control development in critical areas such as the floodplain, wetlands, and aquifer recharge areas, including a Floodplain Overlay District and an Aquifer Protection District. Similarly, the Massachusetts Wetlands Protection Act limits the impact of construction and alteration activities within and adjacent to floodplains and wetlands through local enforcement by the Conservation Commission.

In 2008 the Town adopted the Flexible Residential Open Space Development (FROSD) zoning provision, which requires that 50% of the development be set aside as open space. However, no developer has proposed an FROSD since 1) as written, it has no provisions for density bonuses or other incentives to use it, and 2) the housing market has been too weak to support any new residential subdivisions since the Recession in 2007/08. In addition, developers have felt the market has been stronger for homes on larger lots than for homes on smaller lots with large areas of common open space. However, with the aging population and a desire for more manageable homes, coupled with amendments to improve the FROSD provisions, it can be expected that interest in this form of development will improve.

Ware also has two overlay districts. The Floodplain Overlay District, which includes the so-called "100year" flood zones associated with the Quabbin Reservoir, Swift River, Beaver Brook, Flat Brook, Muddy Brook, and the Ware River, is intended to safeguard public safety, protect property from the hazards of periodic flooding, preserve the natural flood storage capacity of floodplains, and maintain groundwater recharge areas within the floodplain. To achieve these goals, Ware regulates the amount and type of development which can occur in these floodplains. Some of the permitted uses include agricultural, forestry and nursery use, outdoor recreation, and wildlife management areas. No structures or buildings can be built in this district without a special permit granted by the Planning Board. This regulation helps to minimize loss of property. Floodplains are nature's way of dealing with floods, which are an occasional natural occurrence. When development occurs in these areas, there are two undesirable effects. First, homes and other buildings are flooded, causing damage which can be expensive to repair. Second, this development reduces the water storage capacity of the floodplain, so that what would have been a minor flood is often worse, possibly causing damage to structures that were previously not impacted by flooding.

The Aquifer Protection Overlay District includes the Zone II Groundwater Protection Areas, Interim Wellhead Protection Areas (IWPA), and areas designated as high and medium yield aquifer areas. This district is intended to protect, preserve, and maintain present and potential sources of public and private water supplies and their recharge areas. It is important to delineate such a district to protect against contamination and to insure that the aquifer is constantly being recharged. Because aquifers are underground, it is critical that rainfall be allowed to permeate into them, in order to maintain the supply of water. Land uses permitted in the Aquifer Protection district are similar to those permitted in the floodplain district, but with residential development also permitted. However, when developing in the Aquifer Protection districtions concerning toxic and hazardous wastes and runoff. All runoff from impervious surfaces must be recharged on the site by being diverted to stormwater infiltration basins covered with natural vegetation. These restrictions protect both water quality and the amount of water available from the aquifer.

RECOMMENDATIONS

By developing and adopting more stringent stormwater control standards for upland areas akin to those adopted by communities regulated under the EPA-MassDEP MS4 permit. Such standards can integrate considerations of current and future storm flows, as well as advance best practices to ensure proper construction and long term maintenance of stormwater control facilities. Such standards should be consistent across municipal code, including subdivision regulations, zoning bylaw, and general bylaws. This too can help with avoiding future public costs to address localized flooding caused by private development and redevelopment projects.

In addition to developing stricter stormwater standards, adopting a green infrastructure policy to advance best practice in all publicly funded projects wherever possible. This policy can help build intention across municipal departments toward better stormwater control and resilience. It can also help publicly demonstrate the Town's commitment to improving neighborhoods through the use of green infrastructure for better stormwater management. Through a green infrastructure approach Ware can pursue construction projects that realize multiple benefits. Such a project might involve an enhanced streetscape that not only improves the roadway, but provides for stormwater infiltration, adds areas for walking and bikeways, and enhances aesthetic appeal. For such projects, interdepartmental cooperation is essential. Working together, departments can identify how and where stormwater investments can combine to best effect with investments in such projects as streets and sidewalks, sanitary sewers, and parks. Moreover, projects that include green infrastructure provide a more visible outcome for public investments than underground grey pipe conveyance approaches to stormwater management.

CHAPTER 9: ADDITIONAL RECOMMENDATIONS & POTENTIAL FUNDING SOURCES

INTRODUCTION

There are several ways to advance and promote low impact development and green infrastructure while minimize impervious cover and clustering development. By ensuring that there is a meaningful exploration of options to reduce impervious cover and increase tree canopy and other vegetated areas during the early design phase of publicly funded projects. This includes the Town's Capital Improvement Plan projects and Community Development Block Grant funded projects. To fully understand costs, it is important to think about the long-term ongoing public cost of allowing for substandard design, especially when it comes to impervious cover and the amount of storm runoff. There is one recent project in Ware, and several examples in other locations, where projects reportedly have increased localized flooding issues. With more attention to limiting impervious cover and improving management of storm flows, these issues could have been better addressed. Instead, it is likely that future public monies will now need to be spent to resolve these issues.

RECOMMENDATIONS

MUNICIPAL GOOD HOUSEKEEPING

Municipal good housekeeping practices include a variety of activities that help reduce nutrient and solids entering waterbodies. These include routine practices such as street sweeping, catch basin cleaning, proper collection and removal of litter, avoid plowing snow into drainage areas and wetlands, maintenance of inlet/outlet structures and minimizing fertilizers and pesticide use on park and landscaped areas. Ensure that all landscape vendors do not apply phosphorus to landscaped and lawn areas. The Town could offer leaf litter pick-up for residents, if not already offered, to ensure they do not blow leaf and landscape waste into the Brook, Snow Pond, wetlands, or tributaries.

HOMEOWNER POLLUTANT MANAGEMENT

Pollutant reduction is not just a Town obligation, every homeowner has a responsibility to ensure water leaving their property does not adversely affect other properties or our natural resources. The load reductions required to improve and protect Forest Lake and surrounding habitat cannot be accomplished without individual landowner stewardship. Shoreland property owners are in a unique position where their property can provide some of the most critical features to reduce the impact of nutrients, sediments, moderate soil and water temperatures, and maintain habitat to support native wildlife. Some strategies implementable by individual homeowners include:

• For shoreland or wetland abutting properties, create and maintain substantial buffers along the shoreline (25 feet or greater depending on slope). This provides habitat, infiltration of stormwater

and attenuation of pollutants. Encourage old growth trees and overhanging vegetation at the shoreline. This also makes properties less attractive to geese and other waterfowl that contribute TP and bacteria to the lake.

- Capture and infiltrate water around your home using rain gardens, dry wells, impervious pavers, and other techniques.
- Store, intercept and/or divert stormwater to places where pollutants can be reduced. Some examples include vegetated swales, rain barrels and water bars.
- Inspect and pump septic systems regularly. Do not use additives, do not flush bulky items and do not pour toxic materials down your drain. Substitute baking soda and borax for cleaners containing chlorine.
- Ensuring lawn care companies use non-phosphate fertilizers and minimizing use of pesticides.

EDUCATION AND OUTREACH

Watershed outreach campaigns are intended to increase resident's understanding of activities in the watershed that have the potential to harm the lake. They are also used to inform people on steps they can take to improve conditions and prevent impacts. Activities could include:

- Update & maintain the Town webpage designed for Muddy Brook Protection regularly
- Invite speakers to present topics via webinars or in person events (e.g., invasive species, responsible lake front living, controlling stormwater, septic system maintenance, etc.)
- Produce handouts and flyers to include with tax bill or other Town-wide mailings
- Establish a Watershed Association or increase collaboration with the Chicopee 4 Rivers Watershed Council for future watershed monitoring efforts
- Request that the Water Department, Cemetery Commission and Parks Department post educational materials on signs or kiosks in parking areas. Insist that they place signage to educated residents on proper dog waste disposal, littering.

Furthermore, working with neighborhood organizations to help local property owners understand the benefits of on-site stormwater management. This will help build a knowledgeable constituency that can advocate for such "resiliency" expenditures on local public projects, as well as get property owners thinking about how they can manage problems with better stormwater management. For example, many homes and businesses have been developed so that gutter downspouts deliver flows from roof tops to driveways that slope to the streets. Water ultimately drains to the street and moves along the curb to nearby catch basin drains. With the cold of winter, these flows can create icy conditions on driveways. As people recognize the personal benefits of such stormwater improvements on their properties, including rehanging gutters so that flows move to an area of the property where rainfall can soak into soils, there is a greater likelihood of improvements. Offering a mini grants program to homeowners for stormwater retrofits can be a great way to advance both learning and engagement on stormwater management.

LAND USE PROTECTION AND ZONING REGULATIONS

A large amount of land in the upper watershed is owned by the State and is in forested, undeveloped condition. It is important to preserve this space as any development will increase the nutrient loading the Brook, even low impact development will have some affect. If properties identified in chapter 5 come up for sale, the Town should consider purchasing the property to reduce the risk of the land being developed and generating pollutants. Also, putting lands under conservation easements is a recommended protective measure. A strong relationship exists between land use type and pollutant generation, with developed impervious lands being the most destructive. Preserving undeveloped lands is the highest priority to ensure long-term protection and resilience against climate changes. Appropriate Town-wide ordinances could include tree or vegetation cutting limitations, requirements to establish buffer zones, increase set back requirements, septic system ordinances for maintenance and inspections. Vermont's Shoreland Protection Act is a very good example.

FUNDING SOURCES

Assessing conditions and implementing BMPs will require financial and technical assistance. Watershed management is viewed favorably in funding circles, especially if it involves non-point source controls, environmental justice communities and climate adaptation. Some funding sources include:

- Section 319 Non-Point Source Control Program for prevention, control, and abatement of nonpoint source pollution <u>https://www.mass.gov/info-details/grants-financialassistance-watersheds-water-quality</u>
- Local Acquisitions for Natural Diversity (LAND) Grant offers funding to acquire interests in land that will be used for conservation and passive recreation purposes https://www.mass.gov/how-to/apply-for-a-local-acquisitions-for-natural-diversity-land-grant
- Culvert Replacement Municipal Assistance Grant Program offers assistance to replace undersized, degraded or poorly placed culverts for ecological improvements <u>https://www.mass.gov/how-to/culvert-replacement-municipal-assistance-grant-program</u>
- MVP Action Grants offers assistance to advance priority climate adaptation actions to address climate change impacts resulting from extreme weather, sea level rise, inland and coastal flooding, severe heat, and other climate impacts <u>https://www.mass.gov/service-details/mvpaction-grant</u>
- MVP 2.0 Grant helps communities to build off of and fill in gaps from the original MVP Planning Grant (1.0) process. In particular, MVP 2.0 focuses on addressing root causes of social vulnerability and moving from planning to implementation https://www.mass.gov/info-details/mvp-20
- Drinking Water Supply Protection Grant offers funding to protect and conserve the quality and quantity of public drinking water supply sources in the Commonwealth. It can also be used for the acquisition of land in DEP approved drinking water supply protection areas or, if a planned future wells or intakes, estimated protection areas <u>https://www.mass.gov/how-to/apply-to-thedrinking-water-supply-protection-grant-program</u>
- Massachusetts Land and Water Conservation Fund Grant offers funding for acquiring land for conservation or recreation purposes, building a new park, renovating an existing park, or doing trail work <u>https://www.mass.gov/how-to/apply-to-the-massachusetts-land-and-waterconservation-fund-grant-program</u>
- Landscape Partnership Grant offers funds to protect contiguous, large-scale landscapes necessary to sustain the integrity and resiliency of ecosystems and viability of local farms and

forest economies, to enable projects that stretch beyond the scope of other state grant programs, standard spheres of operation, and involve cooperation of multiple actors and to support the Executive Order 569, which calls for state government to adapt to climate change and build a more resilient Commonwealth. For Hampshire County the minimum acreage required is 250 acres https://www.mass.gov/how-to/apply-for-a-landscape-partnership-grant

- Parkland Acquisitions and Renovations for Communities (PARC) Grant can be used by municipalities to acquire parkland, build a new park, or to renovate an existing park <u>https://www.mass.gov/how-to/apply-to-the-parkland-acquisitions-and-renovations-for-</u> <u>communities-parc-grant-program</u>
- Massachusetts Environmental Trust Grants offers funding for protection and conservation projects https://www.mass.gov/met-projects-and-grant-awards
- **Surface Transportation Program** under the Interstate Transportation Efficiency Act offered for roadway improvements, including environmental enhancements. <u>https://www.mass.gov/service-details/funding-considerations</u>
- US Department of Agriculture Programs such as **the Resource Conservation and Development Program** and the **Wildlife Habitat Incentives Program** <u>https://www.nrcs.usda.gov/programs-initiatives/eqip-environmental-quality-incentives</u>
- **Community Septic Management Program** offers financial assistance and incentives to communities and system owners. <u>https://www.mass.gov/info-details/water-resources-grants-financial-assistance#the-community-septic-management-program</u>

August 8, 2023

Mr. Malcolm Harper MassDEP Central Regional Office 8 New Bond Street Worcester, MA 01606

Dear Mr. Harper,

The Town of Ware is writing to support the Pioneer Valley Planning Commission's S. 319 FFY20 grant for the Regional Nonpoint Source Coordinator Initiative by committing a cash match of \$42,740 from the FY23/FY24 MVP Action Grant award to the Town of Ware for the development of a Resiliency Master Plan for the Muddy Brok watershed.

The Muddy Brook Resiliency Master Plan will identify current and future threats to Muddy Brook and assess strategies for mitigation of existing risks to water quality and prevention of future degradation. Mitigation strategies to be assessed are anticipated to include:

- making improvements to municipal code and evaluating potential for developer incentives to support green infrastructure and reduce impervious cover creation,
- identifying Town-owned parcels for green infrastructure projects,
- defining opportunities to connect resilience to community development, including reduction of impervious cover associated with abandoned houses, improvement of Muddy Brook and Snow Pond recreational opportunities, identification of strategies to improve flood control levee system effectiveness while protecting Muddy Brook's water quality and habitat,
- identifying opportunities for land acquisition and conservation in floodplains and wetlands, and coordination with other potential grant funding programs.

The Muddy Brook Resiliency Master Plan also includes a strong public outreach and engagement component to obtain local resident input on current and future threats to the quality of Muddy Brook and potential mitigation strategies, and to increase awareness of the importance of protecting the high quality of the Muddy Brook sub watershed.

Information gathered from the Muddy Brook Resiliency Master Plan will directly contribute to the development of a watershed based plan funded under the current S. 319 FFY20 grant and will lead to a future 319 Grant to implement much needed green infrastructure BMP's in our environmental justice and urbanized area.

Sincerely,

Stuart Beckly, Town Manager



Muddy Brook Subwatershed Resiliency Public Presentation #1

PLANNING BOARD



AUGUST 17, 2023

Thank you to the Core Team

Pastor Carole	Pastor, United Church of Ware, subwatershed area liaison
Dan Flynn	President, Ware Business and Civic Association (WBCA), subwatershed area liaison
SK Robinson	Muddy Brook subwatershed resident, subwatershed area liaison
Stuart Beckley	Town Manager, Town of Ware
Chris Gagnon	Fire Chief, Director of Emergency Management, Town of Ware
Rob Watchilla	Director of Planning & Community Development, Town of Ware
Anna Marques	Building Commissioner, Town of Ware
Geoff McAlmond	Director of Public Works, Town of Ware
Jay Mooney	Grants Coordinator, Town of Ware



Review Draft Muddy Brook Subwatershed



Review Year 1 Deliverables



Discuss Year 2 Work Plan & Timeline



Next Steps

MVP Action Grant (2022)

In 2022, the Town applied for and was awarded an MVP Action Grant to develop a *Subwatershed Resiliency Master Plan* for the *Muddy Brook subwatershed*



Muddy Brook Subwatershed Resiliency Master Plan: Project Goals

- 1. Create a Muddy Brook Subwatershed Resiliency Plan
 - a) Characterize current and future threats to the subwatershed and associated drinking water supplies from climate change and development
 - b) Create a roadmap for increasing resiliency through identified areas of focus for improvements
- 2. Engage in robust public engagement
 - a) Develop relationships with EJ communities
 - b) Assist with identification of vulnerabilities and future actions
 - c) Increase awareness of the importance of maintaining the health of the subwatershed
- 3. Tee-up priority projects
 - 1. Identify gaps and needs in subwatershed
 - 2. Identify potential funding sources (e.g., 319 grant program, Drinking Water Supply Protection program, Culvert Replacement Municipal Assistance Grant program)



Muddy Brook Subwatershed Resiliency Master Plan Working Group



Muddy Brook Subwatershed Resiliency Master Plan: Year 1 Tasks

Tasks 1 and 5: Project Management and Reporting

- Kick-off meetings
- Regular coordination between project team and MVP Coordinator
- Monthly progress reports
- Project summary

Task 2: Public Involvement FY23

- Town webpage
- Non-point Source Pollution Prevention Outreach Materials
- Stakeholder Interview(s) on Local Cable Access TV

Task 3: Draft Subwatershed Resiliency Master Plan FY23

- Identification and analysis of current and future threats to the subwatershed
- Identification of Townowned parcels for installation of green infrastructure
- Identification of opportunities to connect resilience to community development and reduction of impervious area
- Identification of opportunities for land acquisition and conservation in floodplains and wetlands

Task 4: Culvert Assessments

- DER training of Pathfinder Technical School students on road-stream crossing assessments
- Pathfinder student fieldwork assessing roadstream crossings in subwatershed
- Memo summarizing results of fieldwork and prioritized recommendations for repair or replacement



Current Draft Plan Chapters

Chapter 1: The Muddy Brook Watershed

Chapter 2: Current and Future Threats to the Muddy Brook Watershed

Chapter 3: Public Involvement & Community Engagement

Chapter 4: Opportunities for Installation of Green Infrastructure on Town-Owned Parcels

Chapter 5: Opportunities for Redevelopment Projects

Chapter 6: Opportunities for Land Conservation and Acquisition



Chapter 1: The Muddy Brook Watershed



Chapter 2: Current & Future Threats to Muddy Brook Watershed

1. Land Use

- Current & Potential Future Development within the Muddy Brook Watershed
- Agricultural Activities
- Hazardous Materials Storage
- Transportation Corridors
- Public Water Supplies & Aquifers
- Significant Hazard Dams

2. Point & Non-Point Source Pollution

- Point Source Pollution
- Stormwater Runoff
- Nutrient Pollution
- Pesticide/herbicide/fertilizer Use
- Sewer and Septic System Failure

3. Habitat Loss

- Coldwater Fisheries Resource
- Climate Change
- Invasive Species
- Riverbank Erosion/Loss of Riparian Buffer

Chapter 3: Public Involvement & Community Engagement

Public Involvement
Working Group
Community Liaisons
Environmental Justice Populations
Community Engagement
Stakeholder Identification & Interviews
Public Education & Outreach
Youth Engagement & NAACC Culvert Assessments
Public Celebration & Watershed Walk
Ideas for further public education, outreach and participation

Chapter 4: **Opportunities** for Installation of Green Infrastructure on Town-Owned Parcels

Mt. Carmel Cemetery

Aspen Grove Cemetery

Water Department Pump House

Water Department Facility

Beauregard Memorial Playground

Kubinski Field

Old St. Williams Cemetery

Sheehy Road Landfill

Snow Pond

Greenwich Road

Chapter 5: Opportunities for Redevelopment Projects **McDonalds**

Taco Bell

O'Reilly Auto Parts Plaza

Car Wash

Country Bank

CVS

Apex Automotive

Kippy's Auto Repair

R & K Auto Repair

Chapter 6: Opportunities for Land Conservation and Acquisition



Muddy Brook Subwatershed Resiliency Master Plan: Year 2 Tasks

Task 6: Public Involvement and Community Engagement FY24

- Keep website up to date
- Watershed walk/celebration public event
- Stakeholder Interview(s) on Local Cable Access TV

Task 7: Regulatory Code Improvements for Resiliency

- Review existing code relative to water supply zone II uses and protections, stormwater
- Draft recommendations for revisions to improve resiliency, use of green infrastructure
- Draft report on developer incentives to decrease impervious cover creation and encourage green infrastructure
- Meet with Town board representatives to discuss revisions and incentive recommendations

Task 8: Draft Subwatershed Resiliency Master Plan FY24

- Analyze needed improvements to recreational opportunities
- Identification of strategies to improve effectiveness of flood control levee system at confluence with Ware River
- Identification and prioritization of projects to address concerns
Next: Regulatory Code Review for Resiliency



Questions / Comments

ANGELA PANACCIONE, SENIOR PLANNER AT PVPC APANACCIONE@PVPC.ORG

- 3.3.2 Parcels transected by one or more zoning district boundaries.
 - A. The use regulations for the less restricted portion of such parcel may extend not more than 30 feet into the more restricted portion, or, by special permit, not more than 100 feet into the more restricted portion. In such applications, the Special Permit Granting Authority shall first determine that the proposed use will have no detrimental impact on abutting properties and uses. This provision does not apply to overlay districts.
 - B. The area, frontage, and setback requirements of §5.1 shall be determined based on the requirements of the district where at least 50% of the proposed structure will be located.

3.4 Overlay Districts

- 3.4.1 *FP Floodplain*. The purposes of the floodplain district are to protect the public health, safety, and general welfare, to protect human life and property from the hazards of periodic flooding, to preserve the natural flood control characteristics and the flood storage capacity of the floodplain, and to preserve and maintain the groundwater table and water recharge areas within the floodplain.
- 3.4.2 AP Aquifer Protection. The purposes of the aquifer protection district are to protect, preserve and maintain present and potential sources of public and private water supplies including their recharge areas, conserve the natural resources of the town, and prevent temporary and permanent contamination of the environment due to adverse land use practices.
- 3.4.3 *RRB Rural Business.* The purpose of the rural business overlay district is to preserve the scenic rural character of the route 9 corridor, while allowing for commercial development that is in keeping with adjoining uses and in harmony with the natural environment. This district allows for the potential of economic development while minimizing the impacts to the rural character of the corridor.

4.9 Overlay District Regulations

- 4.9.1 Floodplain
- 4.9.2 Aquifer Protection
- 4.9.3 Rural Business
 - A. Purpose. The purposes of the Rural Business District are to:
 - 1. Allow for commercial development that is in keeping with adjoining uses and in harmony with the natural environment.
 - 2. Preserve the scenic rural character of the route 9 corridor.
 - 3. **Promote economic development along a heavily traveled state highway.**

B. District Delineation

1. The general boundaries of the Rural Business Overlay District are shown on the "Rural Business Overlay District" Map dated (Month of STM Approval), 2022.

C. Use Regulations

- The Rural Business District is established as an overlay district over the Rural Residential (RR) district. Any uses permitted in the RR district by right or by special permit shall continue to be permitted by right or by special permit.
- Reference to Existing Regulations. All development in the Rural Business Overlay District, including structural and non-structural activities, must be in compliance with the dimensional and parking requirements as required in the RR district, unless otherwise specified for each permitted use in this section.
- 3. Permitted Uses. The following uses are allowed by right in the Rural Business Overlay District:
 - a) All uses allowed by right (Y) in the Rural Residential (RR) District. (refer to section 4.2 Use Table)
- 4. Uses Permitted by Special Permit and Site Plan Review. The following uses are allowed by Special Permit and Site Plan Review (see section 7.4.2) in the Rural Business District:
 - a) All uses allowed by special permit (SP) in the Rural Residential (RR) District. (see section
 4.2 Use Table)
 - b) Business, Finance, or Other Professional Offices
 - c) Office or clinic for health services
 - d) Self-service Storage Facility
 - e) Light Industry (see section 2.2 Definitions)
 - f) Tank Farm
 - Limited only to the storage of gases including natural gases, propane, methane, butane, and ethane.
 - Tank farms shall adhere to a setback requirement of 125 feet from the nearest residential property line and 200 feet from the nearest residential structure in order to protect the welfare and safety of abutting neighbors.
- 5. Prohibited Uses. The following uses are prohibited in the Rural Business Overlay District:
 a) Auto Salvage Yards (see section 2.2)
 - b) Junkyards/Automobile Graveyards (as defined in MGL c. 140B section 1)
- 6. All uses permitted by Special Permit in the Rural Business Overlay District shall have a 50-

foot buffer and shall include a 20-foot vegetated buffer that screens the use

- D. Special Permit Approval Criteria. The SPGA may grant a special permit after a duly noticed public hearing in accordance with §7.2 of this Zoning Bylaw provided it finds that the proposed use:
 - 1. Will be designed to avoid substantial disturbance to the natural environment to include (but not limited to) soils, topography, drainage, vegetation, and ground water;
 - 2. Is in harmony with the purpose and intent of this ordinance and will promote the purposes of
 - 3. the Rural Business Overlay District; and
 - 4. Is consistent with the existing and probable future development of surrounding area.



Legend

Proposed Rural Business Overlay District

District Approved TBD

Proposed Rural	The Rural Business Overlay District encompasses areas along the Route
Business District	9 Corridor that makes up half of the former "Residential Business 2
Parcels 2021	(RB2)" Zoning District (prior to 2012), as well as areas that have current commercial and mixed-uses. The underlying reason for creating the
—— Rt 9	overlay district are to allow for economic development along this historic commercial corridor by limiting the size and type of
—— Local Roads	commercial/industrial uses allowed. This will help to preserve the open
Prime Farmland	(See Section 4.***** of the Zoning Bylaw.)



Planning Department 126 Main Street, Suite G Ware, MA 01082

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