



MANCHESTER ESSEX CONSERVATION TRUST

PERMANENTLY PRESERVING NATURAL BEAUTY, WILDLIFE HABITAT AND RESOURCES
FALL INTO WINTER 2024

Next Up: Fire Tower Road parcels in Essex

MECT is poised to protect 12 acres off Southern Avenue in Essex, including portions of the gated fire tower road. We are pleased to conserve this area, while securing access to many miles of trails connecting multiple towns. This forested land includes vernal pools, intermittent streams, and stretches into an area known as Wise Swamp. This conservation effort is in addition to the 12 acres to the north at 'Tiltin Rock', preserved this past spring, also in Essex.

Ferns, sphagnum moss bog, bald ledges and challenging trails make this a place to experience. We are grateful to the sellers for this opportunity to protect this land forever after many years of discussions. The parcels are a key piece to extending our conservation of a wilderness corridor stretching from the Gloucester border to the Beverly line. The state has designated this land as "BioMap Vernal Pool Core and BioMap Local Vernal Pool". See www.mect.org/firetower for more information.



Shingle Place Hill

Dressed in fall colors, and morning mist, Shingle Place Hill catches the sun's rays in the early morning. This is the view visitors see as they walk from the parking lot and kiosk to the Founders Boardwalk at the Wilderness Conservation Area in Manchester, just off School Street, to embark on a hike, a run, or a meditative journey.

Yes, we can see Shingle Place Hill, and we plan to see it through the continuing threat to blast and clearcut this jewel adjacent to so much beautiful, delicate and peaceful conservation land. The developer proposing to replace this natural beauty with 3 courses of concrete block walls totaling over 42 feet tall, topped with steel fences, and an enormous building, believes the surrounding land is not any more special than any other real estate. We know differently. We have assembled conservation land, together with the towns of Manchester and Essex, and other conservation groups, into a wildlife corridor for the past 60 years, and continue to expand it today. Come visit and appreciate the conservation space we have created. See why this is worth fighting for. Want a tour? Reach out to us at conserve@mect.org.

MECT Community Response to PFAS By Michael Carvalho, Esq., MECT Trustee

Introduction

This article explores the historical use of Per- and Polyfluoroalkyl substances (PFAS), the health concerns associated with them, and the responses at local, state, and federal levels. Significantly, this article describes how the conservation of land plays a crucial role in protecting drinking water supplies from the impacts of PFAS by establishing important buffers that can mitigate, though not eliminate, the effects of these toxic chemicals. It will also provide actionable steps homeowners and residents can take to reduce their exposure to PFAS and the health risks they pose.

Overview of PFAS

In recent years, PFAS have garnered significant attention. These chemicals, known for their stain-resistant, water-resistant, and non-stick properties, have been utilized since the 1950s in various applications, including certain types of firefighting foams historically employed by the U.S. military, local fire departments, and airports. PFAS can also be found in cosmetics and consumer food packaging.

The presence of PFAS in drinking water has become a pressing issue nationwide. Being water-soluble, PFAS can migrate from manufacturing sites, landfills, and spills into surface soils, subsequently leaching into groundwater or surface water and contaminating drinking water sources. They have been detected in rivers, lakes, fish, and wildlife. Their persistence in the environment has earned them the nickname "Forever Chemicals," as they do not easily break down and are found in soil, water, air, and food. Health Concerns Related to PFAS

PFAS accumulate in the body and environment over time, leading to various health concerns. In Massachusetts, approximately 126 public drinking water systems have reported significant levels of PFAS, with 86 communities facing severe concentrations. Exposure can occur through various means—using products containing PFAS, consuming contaminated food, or drinking contaminated water. These chemicals are toxic even at low levels, potentially increasing the risk of cancer, liver disease, immunosuppression, and other health issues.

Studies have shown that exposure to elevated levels of certain PFAS may result in developmental effects in fetuses and infants, as well as adverse effects on the thyroid, liver, kidneys, hormones, and immune system. Research continues to evolve, with organizations like the CDC noting that around 97% of the U.S. population has detectable levels of PFAS in their blood.

Despite their moniker, efforts to reduce PFAS sources have led to positive health outcomes. According to the Agency for Toxic Substances and Disease Registry, since 2002, the production and use of PFAS in the U.S. has declined. For instance, blood levels of PFOS and PFOA have decreased significantly over the years, though new PFAS replacements may still pose risks.

State & Federal Response to PFAS

In Massachusetts, at least 171 public water systems across 96 cities and towns, along with numerous private wells, have surpassed the state's legal PFAS limits. On April 10, 2024, the U.S. Environmental Protection Agency (EPA) issued National Primary Drinking Water Regulations (NPDWR) for PFAS, establishing Maximum Contaminant Levels (MCLs) for six PFAS chemicals. These new standards are lower than Massachusetts' previous guidelines and require the state to adopt the federal regulations. The EPA anticipates that these regulations will significantly reduce PFAS exposure for around 100 million people over the

coming years, potentially preventing thousands of deaths and serious illnesses. The requirements for public water systems include:

Initial monitoring for PFAS within three years, followed by ongoing compliance monitoring.

Implementation of solutions to reduce PFAS levels by 2029 if initial monitoring indicates levels exceed MCLs.

Public notification of violations concerning PFAS levels in drinking water.

Manchester/Essex Response to PFAS

In October 2021, Manchester initiated regular PFAS testing at municipal wells and subsequently formed a Water Resources Protection Task Force to examine the quality and quantity of town water resources. After 18 months, the task force produced a report emphasizing PFAS mitigation as a critical issue.



This flooded intermittent stream in Essex is a tributary to Sawmill Brook in Manchester.

Initially, the U.S. EPA's acceptable PFAS level was set at 70 parts per trillion (ppt), while Massachusetts' stricter standard was 20 ppt. Testing revealed that Manchester's Lincoln Street well consistently registered between 10 ppt and 20 ppt, while Gravelly Pond was below 10 ppt. However, the EPA's recent reduction of the acceptable level to just 4 ppt means that Manchester will need to implement industrial-grade carbon filter systems by 2027.

Manchester's Department of Public Works (DPW) is already exploring treatment options for both the Lincoln Street Well and Gravelly Pond. Their strategy includes piloting various filter media and treatment technologies to finalize design requirements for construction. According to Manchester DPW Director Chuck Dam, Manchester's PFAS mitigation plan will cost an estimated \$25 million. Funding from leftover federal ARPA funds is being utilized for these initial phases, with future construction estimated to cost tens of millions of dollars that will need to be raised from state grants and local tax initiatives, likely necessitating tax overrides under Proposition 2.5.

Michael Carvalho is an environmental attorney whose practice includes advising clients on the risk of environmental and legal liability associated with the purchase, acquisition and development of environmental impaired property throughout the United States. Mike was a member of Manchester's Groundwater Protection Task Force. He has practiced law for over 30 years and formerly worked as an environmental consultant specializing in the assessment and remediation of hazardous and toxic waste sites. He can be reached at (678) 354-0066 or via email at mpc@carvalholawfirm.com



Inosculation By Victoria Esser, MECT Trustee

Inosculation is a naturally occurring process whereby two trees naturally join and grow together. The process starts when two trees are growing in close proximity. As their trunks, branches, or roots ‘kiss into’ each other, the outer bark is worn away over time. As that happens, the cambium or inner bark of the two trees touch, which can result in a natural grafting of the two trees. The result is often sweetly termed ‘marriage trees’ or ‘husband and wife’ trees.

Unlike the horticultural technique of grafting plants or flowers, inosculation is a naturally occurring phenomenon. This remarkable development in nature reminds us of our mission at MECT, where we have patiently woven together a tapestry of more than 1700 acres of trees, wildlife and other natural gifts that we protect in Manchester and Essex. This

wilderness corridor, which we continue to add to, extends from our Essex border with Gloucester to the east, to our Manchester borders with Hamilton, Wenham, and Beverly to the west. Share photos with us of inosculation that you see on the trails to conserve@mect.org or to our Instagram [@mect_yourconservationtrust](https://www.instagram.com/mect_yourconservationtrust) accounts!

(Response to PFAS continued)

Separately, conservation organizations like MECT have committed to protecting wilderness locations from development pressure in and around groundwater recharge areas. For example, MECT protects over 1,500 acres of woodlands and wetlands in Essex and Manchester, while making them available for public enjoyment. MECT also oversees 275 acres of land under conservation restrictions. MECT’s efforts, combined with those of its local partners, towns and the Commonwealth of Massachusetts are at the forefront of responding to protect drinking water supplies.

Legal Actions Taken

PFAS-related lawsuits have surged in recent years. According to Bloomberg Law, there were 40 lawsuits from 2005 to 2011, but by 2022, this number exceeded 6,400. The 3M Corporation and DuPont are prominent targets of these lawsuits due to their historical production of PFAS-containing firefighting foams.

In May 2022, Massachusetts Attorney General Maura Healey filed a lawsuit against 13 PFAS manufacturers, alleging they knowingly contaminated drinking water sources. Towns like Manchester and Essex have joined national class action lawsuits against these manufacturers to address the anticipated costs of PFAS remediation.

Responding to PFAS Contamination

In light of the new EPA standards, Manchester’s DPW has developed a PFAS mitigation strategy. This plan includes enhancing the Gravelly Pond water treatment plant with new carbon filters and transporting water from Lincoln Street to Gravelly Pond for treatment. The estimated cost of this mitigation plan is around \$25 million, encompassing the installation of the carbon system, necessary piping, and treatment at both facilities.

The demand for PFAS mitigation equipment is expected to rise nationally, potentially affecting costs for municipalities. Communities in Massachusetts will face increased water rates as they comply with the new regulations, highlighting the urgent need for federal funding to support these initiatives.

If your home drinking water supply contains PFAS you should consider installing a filtration system in your home to effectively

reduce PFAS contamination. In home PFAS filtration systems can range in cost from \$20 to over \$1,000 (exclusive of maintenance costs) depending on whether you select pitcher filters installed on your faucet or supply line filters for your entire home. At a minimum, home filtration systems should be granular activated carbon, which are the most cost effective. Alternatively, Reverse Osmosis Systems and Ion Exchange Resins can be considered. Whichever filtration system you chose, check the product packaging system for certification “NSF/ANSI 58” to ensure it will reduce PFAS in your water.

Summary

As municipalities grapple with the financial implications of complying with the EPA’s new regulations, many are forced to consider increasing local property taxes or cutting existing programs. The burden of these unfunded mandates often falls on residents who are not responsible for the contamination.

In conclusion, while PFAS contamination presents significant challenges, proactive community responses including land conservation and regulatory actions can mitigate risks and protect public health. Investing in infrastructure, securing funding, and holding manufacturers accountable are essential steps toward ensuring safe drinking water for all. In the interim, PFAS home filtration will reduce exposure from contaminated drinking water.

Notes:

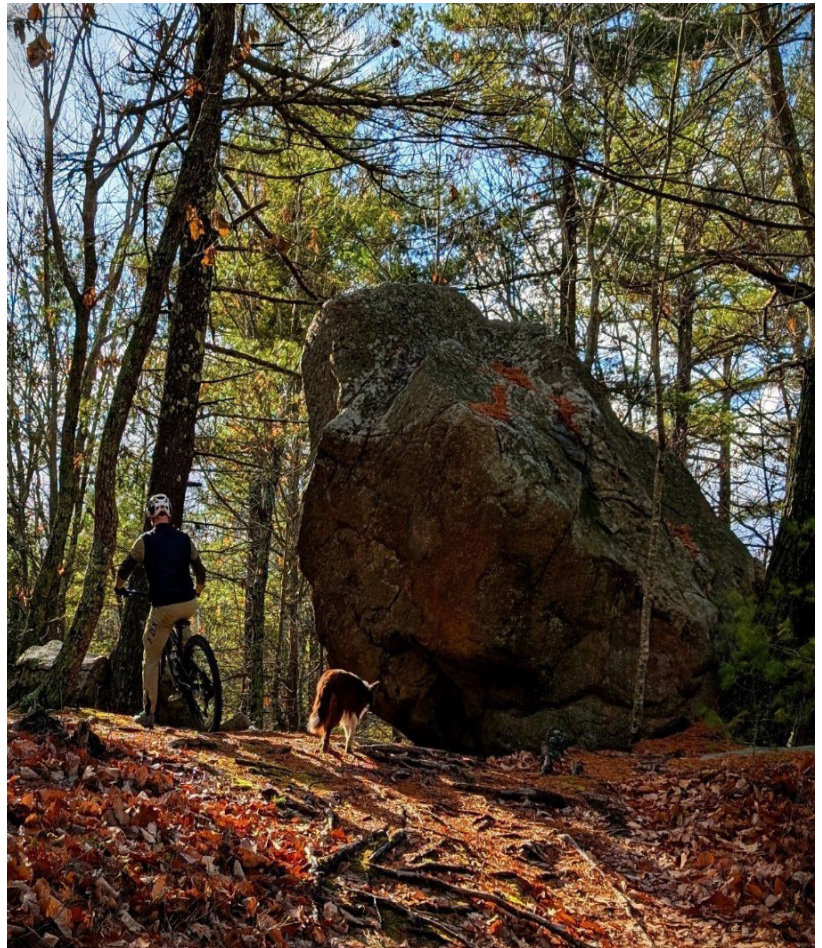
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- 4.[https://manchester.ma.us/DocumentCenter/View/6950/04-18-24-DPW-PFAS-Letter.](https://manchester.ma.us/DocumentCenter/View/6950/04-18-24-DPW-PFAS-Letter)
- 5.<https://cleanwater.org/releases/time-protect-public-health-toxic-pfas-now>
- 6.<https://www.thecricket.com/stories/manchester-essex-and-hamilton-seek-mitigation-monies-in-pfas-class-action,3808>
- 7.<http://www.atsdr.cdc.gov/pfas/health-effects/us-population.html>



“No barefooted, tree climbing, frog holding, mud pie baking, cloud spotting, puddle stomping, bird calling, wild foraging, moon gazing, fort building, creek following, rock hunting moment with Mother Nature is ever wasted.” *Nicolette Sowder, The Wilder Child*



Fully engaged fall hikers in the Western Woods, Manchester and at Firetower Road, Essex.



Enjoying the newly conserved trails at ‘Tiltin Rock’, and a portion of Tombstone trail after the rains finally came this fall.

Photo credit: @roastbeefcountry

Help us continue to Save Our Woods. Who knows which opportunity will present itself next.

www.mect.org/SaveOurWoods

Legacy Giving: Protecting What You Love for Future Generations

By Norm Strahle, MECT Development Manager

Legacy giving to MECT allows you to make a lasting impact on the land and communities you cherish. There are many ways to include MECT in your estate plans, from adding us as a beneficiary in your will, 401(k), IRA, or life insurance policy, to making a charitable donation through other financial vehicles.

Legacy gifts come in all shapes and sizes, and each offers unique benefits. Some may provide tax advantages for you or your heirs, while others may generate a steady income stream. No matter your financial situation, there are options to suit your needs. We recommend speaking with a financial planner to determine the best approach for you.

You can designate your legacy gift to support specific initiatives such as land acquisition, our operational budget, stewardship or contribute to our general funds. Gifts can be made in various forms, including cash, securities, or land.

At MECT, we are deeply grateful for the generosity of our supporters. Legacy gifts play a critical role in ensuring the long-term preservation of the lands and resources we protect. Your contribution will help safeguard these treasures for future generations to enjoy.

Would you like to include MECT in your estate plans? Please reach out to us at conserve@mect.org with any questions or to discuss your options further. And be sure to consult with your financial advisor to learn more about your particular situation.

Have you already included MECT in your plans? We'd love to hear from you and learn about your story!



Honoring Those We Have Lost

This past year, we have been deeply touched to receive several memorial gifts, including donations in memory of Merrit Miller and Patricia Pierce, both of Manchester. We are truly honored by the families who chose to recommend donations to MECT in lieu of traditional gifts. We would also like to express our heartfelt thanks to all who have contributed in memory of their loved ones.

These generous gifts are a meaningful tribute, and we hope they bring comfort, knowing they support a cause that was cherished by those they honor. In memoriam gifts included those in memory of Donald Comb, Jonathan Hodges, and gifts honoring our founders George "Gid" Loring, and Frances "Quitsey" Burnett.

In December 2023, we received a most generous bequest gift from the Mary Waters and Hugh Shepley estate. Mary and Hugh were very active in conservation in our area during their life, and again in their legacy.

Bioluminescence in our backyards

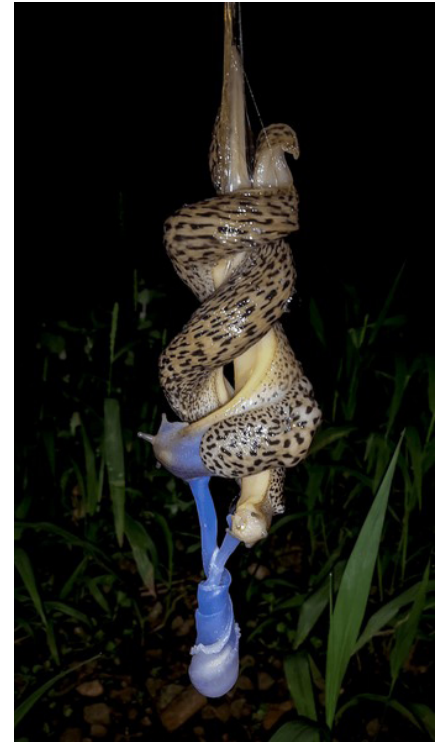
By Francie Caudill, MECT Trustee

Bioluminescence is seen in the flash of light from fireflies, or the glow from microscopic marine algae as a wave breaks at night. This phenomenon is simply light energy produced by living organisms. An organic compound called luciferin is changed by the enzyme luciferase, releasing energy in the form of visible light waves. Millions of years of evolution have resulted in the development of this chemical reaction which has survival value for communication between members of the same species, or to attract mates. In some species, the light is used to warn or evade predators, or to lure or detect prey. You have surely seen pictures of exotic deep-sea fish which dangle what looks like a small glowing light bulb in front of a gaping mouth with teeth. However, some of our local species exhibit bioluminescence.

There are about 70 species of fungus which glow around the clock, but are only visible at night, and most of them are in the tropics. One fairly common local fungus is the Jack-O-Lantern mushroom (*Omphalotus illudens*) which is also called the pumpkin mushroom. It is orange and the gills under the cap glow in the dark. They may be mistaken for edible chanterelles, but are toxic. They are usually found at the base of trees and stumps, especially oak trees, in late summer or fall. A chemical compound in them is being studied as it shows promise for use as an antibiotic, and also to fight certain cancers. Some small species of fungi that live on moist rotting wood also emit light at night, and are called “fox fire”.

In other parts of the world you may have seen caves where “glow worms” live and light up their world; they are actually the larvae of beetles. Our own bioluminescent insects, the fireflies, or “lightning bugs”, which are less common than in past decades, were the subject of our speaker at MECT’s annual meeting on

Nov. 3. We have several species here, each of which has a different pattern of flashing to communicate with potential mates. Their numbers have been declining dramatically, and some species face extinction from habitat loss, pesticide and herbicide use, climate change (drought) and invasive species. If you walk in the undisturbed edges of woodlands on a warm summer evening, you may see their magic.



Leopard slugs, locally found, are bio-fluorescent

When organisms absorb light but then transform and eject it as a different color, it is called biofluorescence. This phenomenon is found in many amphibians, particularly frogs and salamanders. They can absorb high energy wavelengths of light, such as UV or blue, and then radiate back at lower wavelengths. Several of our local species glow green or yellow under blue light.

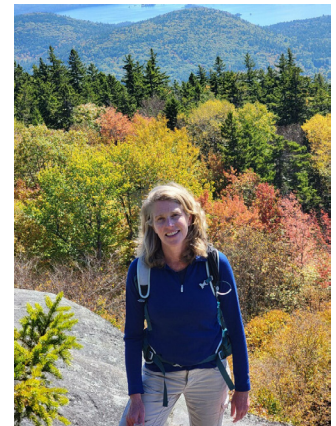
A giant slug species has been seen on our conservation land in Manchester’s “Western Woods”: it is called the leopard slug (*Limax Maximus*). Originating in Europe, it has become fairly common in the eastern U.S. The reproductive organ of this hermaphrodite species glows bright blue under ultraviolet light.

Join Us in Welcoming Our Newest MECT Staff and Board of Directors

Sean Beausoleil is a New Hampshire native with a deep passion for the outdoors. Growing up, he spent countless hours exploring the surrounding woods, playing sports like soccer and hockey, and engaging in activities like skiing, mountain biking, fishing, and hiking. After completing his graduate studies in Boston, Sean moved to Essex to pursue his career at Cell Signaling Technology. While he now enjoys watching his children participate in sports, he continues to prioritize spending time in nature, especially with his family. At Cell Signaling Technology, Sean is Vice President of Research - a pivotal role in upholding the company's commitment to scientific excellence. His academic background includes a Bachelor of Arts in Biochemistry from Saint Anselm College and a Doctor of Philosophy in Cellular and Molecular Biology from Harvard University. He was elected to the MECT Board of Directors at our Annual Meeting. Sean resides in Essex with his wife Mandy and their three children, Caleb, Joel, and Bridget.



Leslie Waldorf is at her happiest outdoors. Fifteen years ago she moved with her family to Manchester, and soon after arriving they were walking the MECT trails and knew they had landed in the right place. The outdoors and conservation have always been an important part of her life. Before having children, she worked at the Wildlife Conservation Society, Microsoft, and National Geographic magazine, where the common thread was developing, writing and editing stories. Since moving to the North Shore Leslie has been on boards and committees at The Trustees, Citizens Initiative for Affordable Housing (CIMA), Shore Country Day School, Manchester Historical Museum, Friends of Manchester Trees, The Women's Fund, Manchester Conservation Commission, Friends of Manchester Trees, and started a Girl Scout troop she led for four years. She looks forward to being part of MECT's important work.



Alec Woolf grew up exploring the woods in southeastern Massachusetts. From a young age he had a passion for the outdoors and learning about the different plant and animal species that live around him. Alec attended the University of Vermont where he obtained a Bachelor of Science in Wildlife & Fisheries Biology. During his undergraduate career, he worked on a number of different projects with the Vermont Fish & Wildlife studying turtle and bat species of conservation concern. Following his completion at the University of Vermont, Alec gained field experience studying threatened and endangered bird species. Alec attended Antioch University, pursuing a Master of Science in environmental studies with a Conservation Biology concentration. His graduate research was on the Brown Thrasher, an avian species in decline in the northeast. Alec honed his GIS skills on several projects involving his focal species. During his free-time he can be found outside hiking, kayaking, or fishing. He joined us in September as our GIS and Conservation Data Manager.





MANCHESTER ESSEX CONSERVATION TRUST

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Support our Annual Appeal to contribute to our local impact

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Norm Strahle, Development Manager
Alec Woolf, GIS and Conservation Data Manager

Your gift to our Annual Appeal matters

Your gift is vital to our mission. With a small staff and a keen focus on land conservation, your gift to MECT has tremendous impact right here at home in Manchester and Essex.

So much. So Close.

Double the Impact of Your Donation!

In support of our mission, our Board of Directors have pledged a \$50,000 match this season!.

Donations of \$500 or more will be matched 100%, up to \$5,000 per donor, doubling the impact of your generosity.

Supporting us will accelerate our permanent protection of land in our communities before it's too late.

Use the enclosed envelope or make a secure transaction at www.mect.org/annual-appeal



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