**Extending east from the Maynard well access road behind Fowler School, the cut through the 64-acre tract of town forest was created in the past year to make way for water lines and electrical conduit that will service Well 4A, set for completion this fall.**

# Maynard Works to Find Ways to Secure Enough, Safe Drinking Water

**By Vicki Brown Stevens**
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I'm sure I'm not the only Maynard resident to walk or bike the dirt access road behind Fowler School and be surprised by the sight of a wide clear cut extending into the woods.

The logging, it turns out, was to make way for a new ground water wellfield, known as Well 4A, which will be capable of adding more than a quarter million gallons each day to Maynard's water supply once it goes online at the end of this year.

But according to Maynard's Department of Public Works Director Justin DeMarco, the new well is just the beginning of a four-phase plan to secure enough safe drinking water for the town's present needs and expected growth. At a current cost of $8.4 million dollars, Well 4A, including the water and electric lines that service it and the major improvements to the well's water treatment plant, will be the least expensive of several upcoming water projects.

Although there are many unknowns, costs of proposed water projects range up to $100 million. Maynard property owners bear steadily rising water bills each year and the hope is the costs continue to rise incrementally rather than drastically, DeMarco says.

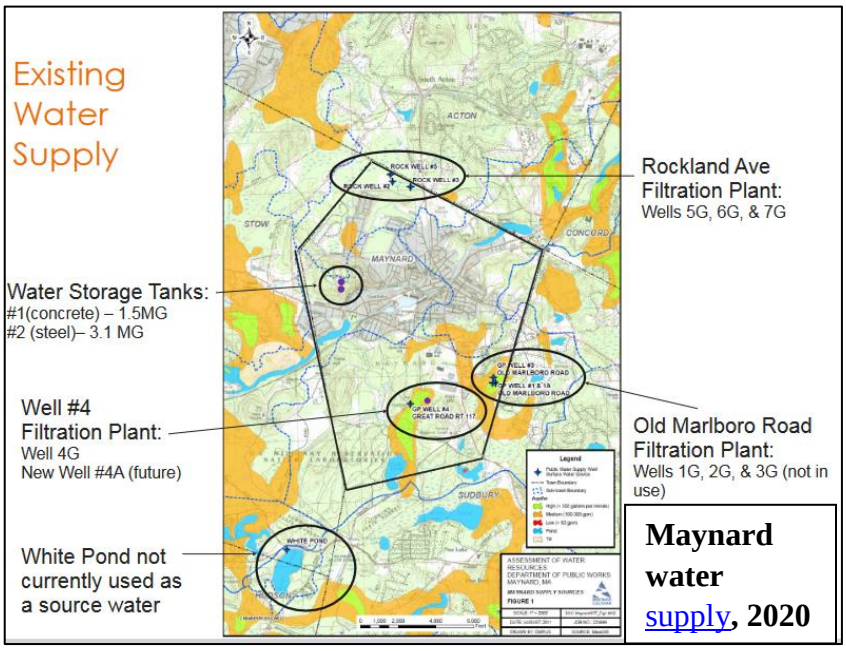
“Water is Maynard’s highest concern and priority,” DeMarco told me during two discussions with him in his Town Hall office. The concerns are twofold: production capacity and water quality.

First, the town’s aging water system, based on three groundwater wellfields, each with its own filtration plant, can mechanically supply about a million gallons of water per day (1 MGD), meeting 2022 needs of about 0.75 MGD, according to DeMarco’s Feb. 28 memo to the Maynard Select Board. However, the system cannot meet maximum needs, or peak days, when demand rises above a million gallons a day. Then, water stored in the town’s water tanks atop Summer Hill makes up the difference.

In addition, Maynard is only permitted to draw 1.13 MGD from its three groundwater wellfields, according to the same memo. Mass. Department of Environmental Protection sets the withdrawal rate to assure underground aquifers can be sustained and not sucked dry, DeMarco explained.

Due to evolving information, White Pond, Maynard’s primary water supply for more than 100 years until it was discontinued in the 1990s, is now drastically diminished as an additional town water source. DeMarco cites lack of a legal easement for piping the water here and high contaminant levels in the water. (More on this later)

Production limitations mean the town’s water system cannot “support economic growth opportunities throughout the community,” DeMarco flatly states in his memo.



**Maynard water supply, 2020**

Water quality is the second major issue. The water Maynard pumps out of the ground is steadily deteriorating in quality and requires more and more treatment before it goes to the town’s 4,300 households, businesses, and organizations, DeMarco said.

Maynard is a stand-alone utility. “We are not connected to other communities,” DeMarco said. “Our system lives and dies by how well we treat it. If we can’t afford [improvements paid for primarily by taxes and steadily rising water bills], your faucet might not turn on.”

DeMarco, who has headed the DPW for about four years and has degrees in landscape architecture and environmental science and a master's in public administration, says Maynard is functioning like "an independent nation" when it comes to water. "There's no pipe running to other water sources should we suddenly need water."

DeMarco doesn't think Maynard should go it alone in the water business any longer. The town is in talks now to join a coalition of communities that include Wayland, Sudbury, Acton, Lincoln, Concord, Littleton, and Bedford to hook up, in a coordinated effort, with the Massachusetts Water Resources Authority (MWRA), the huge public utility that provides water to 53 mostly eastern Mass. cities and towns, including Boston.

In joining the MWRA, DeMarco said, "We would solve our water capacity issue as well as our treatability issue." Connecting to MWRA could occur by 2030, reports show.

MWRA is willing to provide Maynard 1.7 MGD of clean, safe water, DeMarco said, exceeding even the 1.13 MGD the town is permitted to pump out of its own wells. MWRA water would cover current peak demands and allow for projected population growth. Although talks have been going forward for a year and a report will soon be presented to Maynard, joining MWRA is not a certainty, DeMarco said.

The price is unknown but since it is a regional project, involving many towns, Demarco suspects federal and state funding will help. Maynard's costs will be negotiated with the MWRA. The choice for the town "will be a matter of our (water) production costs vs. buying a commodity," DeMarco says.

MWRA chiefly draws its water from the Quabbin Reservoir in western Massachusetts and the Wachusett Reservoir by Clinton, which are mostly surrounded by protected forests and wetlands. According to the MWRA, its water quality is significantly better than the water Maynard draws from its three groundwater sources.

**PFAS**

A major and increasingly troubling concern is PFAS. PFAS is a category of manufactured chemicals used in all kinds of consumer and industrial products and proven to be harmful to people. Right now, PFAS is in Maynard's treated drinking water at levels that will exceed the federal Environmental Protection Agency's new standards expected to be set later this year. MWRA water has only trace amounts of the chemicals, the authority states.

Per- and polyfluoroalkyl substances, known as PFAS, were first discovered by DuPont researchers in the 1930s. There are now thousands of variations of PFAS chemicals that have thousands more applications. PFAS is in waterproof clothing, stain-resistant fabrics, and non-stick pots. It has been found in carpets, furniture, shampoo, dental floss, pizza boxes, sneakers and aerospace products.

PFAS chemicals are durable; they break down very slowly in the environment, which is why they are called the "forever chemicals." PFAS can therefore accumulate in the environment, in animals, and in people, according to an EPA fact sheet.

"PFAS can cause serious health problems…even at low levels – over a long period of time," the EPA says. Health risks include some cancers, developmental effects or delays in children, liver damage, increased cholesterol levels, and reduced ability of the immune system to fight infection. According to an Aug. 16 New York Times article, the Centers for Disease Control and Prevention in 1999 found that PFAS chemicals were present in virtually every person in the U.S.

The EPA proposed in March that the Maximum Contaminant Level for two kinds of PFAS - PFOA and PFOS – be set at 4 parts per trillion (4.0 nanograms/Liter). They also placed limits on four other PFAS chemicals. Together this subset is known as PFAS6. Once the new regulations are fully implemented to limit PFAS6 in public water supplies, "the rule will reduce tens of thousands of PFAS-attributable illnesses or deaths," the EPA fact sheet claims.

Last year, the PFAS6 detected in Maynard water was at 19.9 parts per trillion (ppt), according to the town's Annual Water Quality Report for 2022. That's just beneath the current Mass. Department of Environmental Protection regulation of 20 ppt, which was only established in 2020. But it's way above the proposed EPA rule of 4 ppt.

Once the rule is set, Maynard and every other American water utility will have three years to comply with the new EPA mandate. DeMarco estimates it will cost Maynard $10 to $15 million to retrofit each of its three water treatment plants to filter out PFAS6. ($30-$45 million)

He expects some of the money to come from a class action lawsuit Maynard joined that's aimed at large PFAS producers such as 3M. "Maynard is taking a very proactive approach," DeMarco said. In June, 3M agreed to pay $10.3 billion and DuPont will pay $1.19 billion for testing and cleaning up public water supplies, according to the above New York Times story.

It's unclear how much Maynard will get but it won't cover all the town's expenses. Some funding could come from the state, such as a $200,000 grant that State Representative Kate Hogan ushered in that will pay for the design and schematic work on the town's water treatment plants, DeMarco said.

If the town joins MWRA, PFAS6 may not be the issue that is now. And if it becomes a problem, then the giant MWRA can wrestle with it rather than tiny Maynard, the reasoning goes.

**How did we get here? A brief history**

According to DeMarco and public documents, in 1888, the Commonwealth granted Maynard water rights to White Pond, a 58-acre kettle pond that's just a few acres smaller than Walden Pond. Although White Pond is actually half in Hudson and half in Stow, Maynard owns it and

the grounds around it to this day. A three-mile pipe brought untreated water from White Pond to Maynard residents for more than 100 years.

Spurred by population growth in the 1970s, the town built the Old Marlboro Road groundwater wellfield - three gravel-packed wells that together could pump up to a million gallons of water per day. Later, in the early 1980s, Well 4 was built to handle summer's peak demands. That well is south of Fowler School, right on the edge of what is now the Assabet River National Wildlife Refuge. Well 4 preceded both the school and the refuge.

The Safe Drinking Water Act of the 1980s mandated treatment for public drinking water, mostly to regulate naturally occurring manganese and iron, DeMarco said. In the mid-90s, Maynard Town Meeting voters were presented with articles to treat both White Pond and Old Marlboro Road to meet the new federal mandate. Voters chose to only pursue treatment of Old Marlboro, denying treatment to White Pond. The action resulted in decommissioning White Pond and the construction of a water treatment plant for Old Marlboro Road.

Without White Pond, Maynard needed another water source. The town voted to approve the Rockland Avenue wellfield – four wells and a treatment plant that went online in 2000 and was capable of producing up to a million gallons per day. Rockland was one of the first bedrock source wells allowed in the Commonwealth, DeMarco said. "Bedrock hydrology is hard to predict," DeMarco said, because it "can easily close up with one shift in the environment and then close the water off." Nevertheless, Mass. Department of Environmental Protection permitted the well for Maynard, because "we needed it for water capacity" and there are few wellfield option sites within the town.

Finally, in the early 2000s, Town Meeting voters approved a water treatment plant for Well 4. The plant, also behind Fowler School, is undergoing improvements so it can handle the addition of Well 4A water.

**Maynard's Current Water Production**

Rather than a million gallons, the Rockland wellfield can now produce only half to three-quarters of a million gallons each day, DeMarco said. One of its wells was lost due to well and mechanical failure that could not be restored, resulting in 30% to 40% diminished well pumping capacity, DeMarco said.

Well 4, behind Fowler School and beside the refuge, produced only 0.113 MGD in 2018, according to a report by Stantec, Maynard's hired water consultants of Burlington, Mass., in a document presented to the Maynard Select Board on Feb. 4, 2020. The report notes that the well requires annual major cleanings due to high iron and manganese levels.

The Old Marlboro Road well is "not even close" to the million gallons per day it once was capable of producing, DeMarco said. Its output is about 200,000 gallons per day. One of its three

wells was decommissioned more than ten years ago due to E. coli and other water quality issues, DeMarco said. According to the Stantec report, the problem arose after a subdivision of new homes was built in Sudbury, just uphill from the Old Marlboro wellfield. It "drastically impacted the hydrology of that location," DeMarco said. A seasonal stream that once flowed into the wetland next to the wellfield disappeared, the Stantec report says.

DeMarco said that Maynard's water treatment plants are "designed to handle variables but not drastic ones" such as the E.coli intrusion at Old Marlboro. He estimates it will cost $50 to $70 million in upgrades to enable the Old Marlboro Road treatment plant to once again be capable of a million gallons of safe drinking water per day.

If Maynard joins MWRA, DeMarco thinks he'd advise the town to close the Old Marlboro Road wellfield.

**Maynard's Water Needs**

Maynard's three groundwater wellfields can now produce 1.05 million gallons per day (MGD) of treated water, according to another Stantec report presented to the Maynard Select Board in June.

The town's average daily demand for water in 2022 was 0.748 MGD with a maximum daily demand of 1.13 MGD, according to Stantec in June. (Remember, Maynard keeps a store of water in the tanks atop Summer Hill to assure the town doesn't go without.)

As long as all the treatment plants and wells hum along smoothly, Maynard is fine, mostly. The big problem will come when something breaks down.

Stantec's report found that the town wouldn't be able to meet daily demand should its largest treatment plant, at Rockland, go offline, and would barely make daily demand should the Rockland well stop producing. Another problem is the steady rise of contaminants in the groundwater require that the treatment plant filters be frequently flushed, interrupting their production, DeMarco explained.

**What about Future Water Demands?**

In the same June report, Stantec estimates Maynard's average water demands by 2045 will be nearly 1.2 million gallons of water per day with a maximum day demand of almost 2 million gallons. These estimates are based on potential population growth and assume the development of several properties, including the completion and occupations of Maynard Crossing residences and businesses, the Beijing Royal School with its proposed 800 students and the construction of some 500 units in the downtown mill buildings. There are other properties, too, that could support new housing.

But given the water system's current limitations and above all Maynard's legal permit to draw only 1.13 MGD from its groundwater, DeMarco said he wouldn't recommend significant future development in Maynard. Not unless there are changes.

**The Four-Phase Plan to Secure Enough Safe Water**

**Phase 1: Well 4A -** If you stand beside the new 4A wellfield you can hear the industrial drone of air conditioning cooling the 323 residential units recently built at Maynard Crossing. Well 4A and the nearby treatment plant improvements now underway are actually a catch-up fix, DeMarco says, to assure that there is enough water for the 58-acre development, which, in addition to the residences, includes Market Basket and 17 other businesses and restaurants.

**Looking north along the DPW access road behind Fowler School, electrical conduit lies in a trench extending to the treatment plant.**

To make that clear, DeMarco said, Maynard had to take a "reactionary approach" to developing 4A. "The development (Maynard Crossing) was allowed and we didn't have the water capacity," he said.

The 4A well is actually six wells, all within a stone's throw to the 2,000-acre Assabet River National Wildlife Refuge and about 100 yards from Maynard Crossing's southwest corner. In combination with the existing Well 4 behind Fowler School, 4A and the improved treatment plant will be able to produce more than 700,000 gallons per day, according to the Stantec report presented to the Maynard Select Board in June.

The treatment plant's improvements include "backwash waste recycling," meaning that the water used to flush and clean the plant's long, nine-foot diameter filters will be captured and then filtered through the system, producing 10 percent more treated water than current methods, DeMarco explained. PFAS removal isn't yet included in the plant's upgrade.

Since beginning work last fall, contractors drilled underground passages for water and electrical lines that head west from the wellfield, dip under wetlands and a stream that flows into the wildlife refuge and then drive farther west by another 300 yards to the access road behind Fowler before turning north to the treatment plant.

The work was done in consultation with wildlife refuge officials and looked over by the town conservation agent/assistant town planner Julia Flanary. In addition to permitting, she has walked the site to assure that endangered Blanding's turtles didn't wander through web fencing and into the construction zone, she said. (She reported retrieving only a snapping turtle that chewed through the web fence.)

All built on a few acres of  a 64-acre tract of Department of Public Works land behind the three public schools, and not to be confused with conservation land, Well 4A required a stark open cut through the woodland to assure that the water lines remain free of root intrusion, DeMarco said. The wide cut winds a few hundred yards into the woods. It will be mowed once a year and become an "edge habitat," he said, a woodland meadow that is expected to attract wildflowers. So while a swath of woodlands was lost, another habitat was gained, he suggested.

And the cost?  The current cost of 4A, after a couple of change orders during construction which started last fall, is about $8.4 million. Voters at Town Meetings in 2021 and 2022 approved $7.5 million in borrowing to be paid back over 30 years through water bills. An accounting given to the Select Board on Dec. 6, 2022, also shows the helpful $3,134,500 secured from the American Rescue Plan Act that Maynard received in March 2022 which is earmarked for Maynard water projects, DeMarco explained.

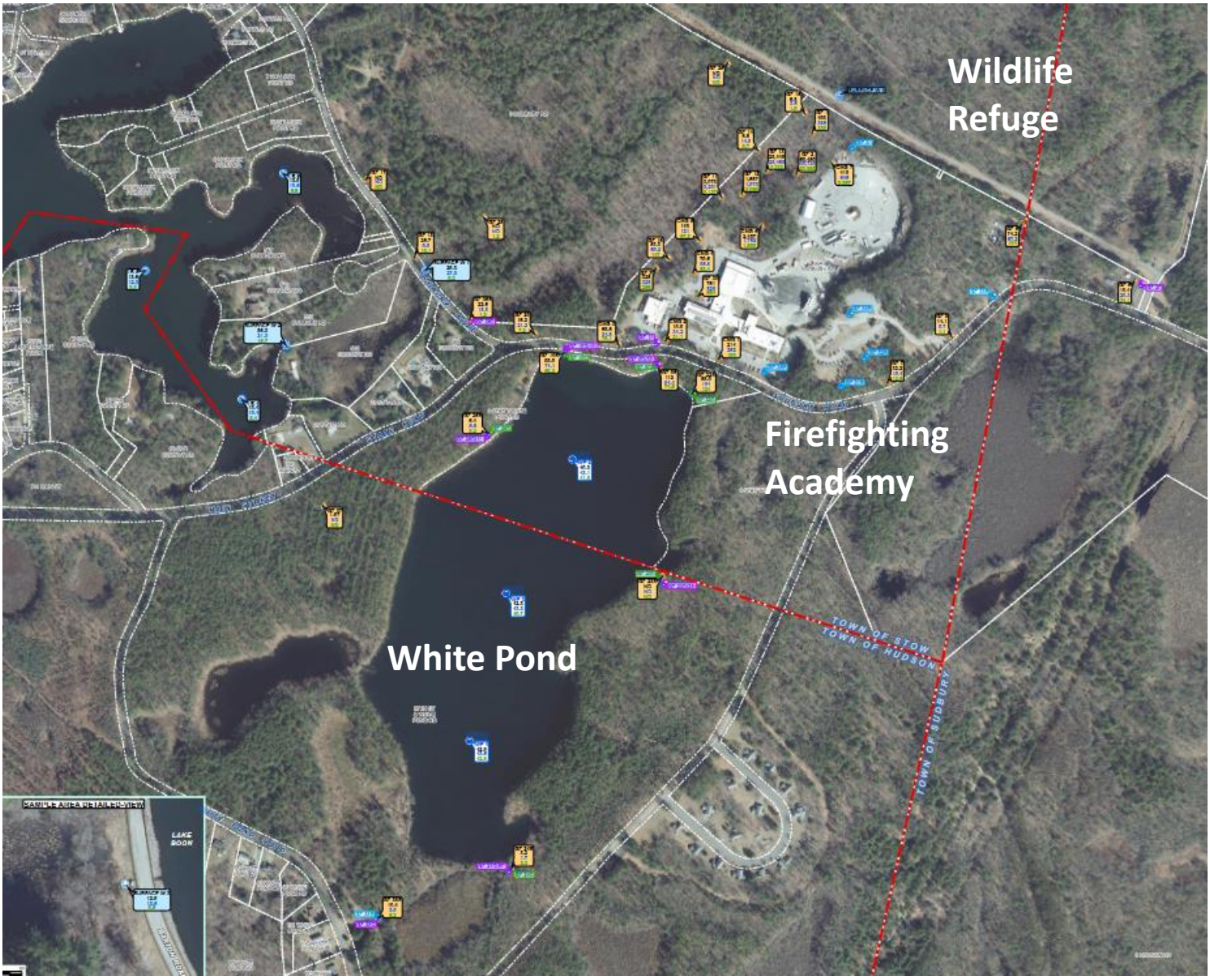
**Phase 2 – Rockland Avenue –** Water production would be increased with a new well and an upgrade to the treatment plant. As at Well 4, the treatment plant would incorporate backwash waste recycling to conserve water. Rockland could then produce up to 742,000 gallons each day, according to Stantec, which proposes construction and completion by 2024. Records didn't show an estimated price.

**Phase 3 – Old Marlboro Road** – The site would be by far the most expensive to upgrade, costing $50 to $70 million, DeMarco said. If completed, it could possibly produce 900,000 gallons per day. Stantec proposes completion by 2026. Should Maynard decide to connect to MWRA, this phase would likely be cancelled, DeMarco said.  The well might then be decommissioned and the property sold.

**Phase 4** –**MWRA –** DeMarco clearly favors this option. "It's a once in a lifetime opportunity," he says, to secure Maynard's water future. The huge project would involve connecting towns from Wayland north through Maynard and on to Acton, Concord and Bedford. Stantec proposes a 2030 completion.

**Whatever Happened to White Pond?**

Ever since it was turned off in the 1990s, many of us thought that if Maynard ever needed more water we could again tap into White Pond. In fact, in a 2019 report by Stantec, cited earlier, the




**The aerial photo details PFAS6 levels found in wells and sediment in and around White Pond and the Mass. Firefighting Academy in Stow. Water samples taken in the last year found PFAS6 levels at about 40 parts per trillion in White Pond. Well samples from right around the firefighting academy were as high as 39,700 ppt. The federal EPA is expected to set 4 ppt as a maximum level of PFAS in drinking water. This photo is on page 79 in a status report released Aug. 16, 2023, by GZA Geoenvironmental of Norwood for Mass. DEP.**

consultants recommended just that. White Pond's raw water could be pumped through new lines using the old, 1888 pipeline route and then be cleaned at a new treatment plant built near Well 4 at a total cost of about $40 million, the report proposes.

But now that Maynard has the possible option to connect to MWRA, DeMarco thinks White Pond should no longer be considered. Not only is there no legal easement for a three-mile pipeline from White Pond to Maynard, but the pond is "riddled with PFAS," DeMarco said. He estimates a project connecting to White Pond and filtering its water to federal clean water levels would cost $80 to $100 million.

The 1888 pipeline route from White Pond goes through what is now the Assabet River National Wildlife Refuge to reach Maynard. There is no legal easement permitting it, DeMarco says. Before 2000, the U.S. Army owned the refuge land and allowed Maynard to maintain its pipeline with a "handshake deal," DeMarco said. He doesn't think a legal easement will easily be obtained from the federal government nor would it be politically feasible since it would require cutting down thousands of trees to satisfy current water line standards.

As for PFAS, White Pond is on the south side of Sudbury Road in Stow, directly across the street from the Mass. Department of Fire Services Firefighting Academy at 664 Sudbury Road. For many years the academy used Aqueous Film Forming Foam (AFFF), a fire suppressant used to extinguish flammable liquid fires. AFFF is made with PFAS and although records show the academy stopped using AFFF in training more than 10 years ago, the academy's grounds are severely contaminated. Records show that remediation and well monitoring overseen by Mass. Dept. of Environmental Protection (MDEP) has been ongoing since 2019. The complete log of MDEP oversight of the academy and White Pond can be seen here.

White Pond, reports show, is downhill from the academy. In 2019, when MDEP began monitoring the site, a sample liter of water from the pond contained 62.9 ppt of PFAS6 while a monitoring well at the academy found almost 330 ppt. In the past year, PFAS6 levels in White Pond ranged from 39.6 to 42.8 ppt in three samples taken over a span of six months, according to a report dated Aug. 16 by GZA Geo Environmental of Norwood, the firm hired by the firefighting academy to monitor and remediate the site. The new EPA standards call for a maximum level of 4 ppt of PFAS6.

For more information on Maynard's water issues see the Water and Sewer section on the town's website.