

Trinity College

Trinity College Digital Repository

The Trinity Papers (2011 - present)

Trinity Publications (Newspapers, Yearbooks,
Catalogs, etc.)

2023

Forever Chemicals and Politics in Westfield, Massachusetts

Aiden Chisholm

Follow this and additional works at: <https://digitalrepository.trincoll.edu/trinitypapers>

Recommended Citation

Chisholm, Aiden, "Forever Chemicals and Politics in Westfield, Massachusetts". *The Trinity Papers (2011 - present) (2023)*.

Trinity College Digital Repository, Hartford, CT. <https://digitalrepository.trincoll.edu/trinitypapers/122>

Forever Chemicals and Politics in Westfield, Massachusetts¹

1. Introduction

Westfield, Massachusetts is unremarkable. Halfway between the Berkshires and Springfield, MA, it is a confused combination of a small New England town and medium-sized metropolitan area: traffic and potholes with no significant cultural and economic center, spread-out without any cozy rural landscapes. Despite its ordinariness, since the 1970s, Westfield has been exposed to perfluoroalkyl and polyfluoroalkyl substances (PFAS). Sometimes called ‘forever chemicals,’ PFAS continues to contaminate drinking water and threaten residents of Westfield and several surrounding municipalities. The water contamination originated from Westfield-Barnes Regional Airport, which holds a prominent role in the identity of the town, through their use aqueous film forming foam (AFFF) during firefighter training. Along with shutting down water wells, the City has implemented measures to mitigate the levels of PFAS by constructing granular activated carbon (GAC) filters. At the state level, Westfield is represented on the PFAS Interagency Task Force, and both its congressional members have submitted a bill related to PFAS, *An Act studying the effect of per- and polyfluoroalkyl substances in commercial products* (S.624 and H.985). Yet these initiatives fail to meet the demands of the community, as represented by Westfield Residents Advocating For Themselves (WRAFT), by either focusing on band-aid solutions or gathering information while people and the environment are still being affected.

¹ Special thanks to Professor Fernández Milmanda for her feedback on previous assignments related to this paper; Christopher Clark, Ethan Flaherty, Marissa Otero for providing resources and connections related to the topic; and Kristen Mello for answering my many questions as the spokesperson for WRAFT.

2. Background

Per- and polyfluoroalkyl substances are the name for a wide range of human-made chemicals present in consumer and industrial products; they are known for their extremely tough bonds making them ideal in the manufacturing of “stain- and water-resistant fabrics and carpeting, cleaning products, paints” and “limited use in cookware, food packaging, and food processing equipment.”² This same durability is what allows PFAS to accumulate in the human body and nature (or water wells) and can pose health effects based off of the dose, duration, and route of exposure.³ These negative health effects have been recorded and observed by numerous organizations throughout PFAS’ history. Since the 1970s the toxic and bioaccumulative properties of AFFF and PFAS have been known by the Department of Defense (DoD).⁴ The US Environmental Protection Agency (EPA) currently lists decreased fertility; developmental effects or delays in children; and increased risk of prostate, kidney, and testicular cancers as having links to PFAS exposure.⁵ In 2015 the Agency for Toxic Substances and Disease Registry (ATSDR) also reported high levels of PFAS may cause high blood pressure, liver damage, and cancers.⁶ Just recently in November, 2021 ATSDR released a study where they found “that past drinking water exposure contributed to the elevated blood levels of PFHxS, PFOS, and PFOA observed in the Westfield EA participants,” or at least those whose blood was tested.⁷ There is

² Center for Food Safety and Applied Nutrition, “Per- and Polyfluoroalkyl Substances (PFAS),” *FDA*, October 19, 2021.

³ “PUBLIC HEALTH STATEMENT Perfluoroalkyls” (Agency for toxic substances and disease registry), accessed October 11, 2021, 1.

⁴ Environmental Working Group, “For Decades, The Department of Defense Knew Fire Fighting Foams With PFAS Chemicals Were Dangerous But Continued Their Use,” accessed December 17, 2021.

⁵ US EPA, “Our Current Understanding of the Human Health and Environmental Risks of PFAS,” *Overviews and Factsheets*, October 14, 2021.

⁶ “PUBLIC HEALTH STATEMENT Perfluoroalkyls”, 4-5.

⁷ “Per- and Polyfluoroalkyl Substances (PFAS) Exposure Assessment: Westfield Hampden County, Massachusetts” (Agency for Toxic Substances and Disease Registry, November 18, 2021), 40.

also evidence suggesting PFAS impairs the immune system and effectiveness of the COVID-19 vaccine.⁸

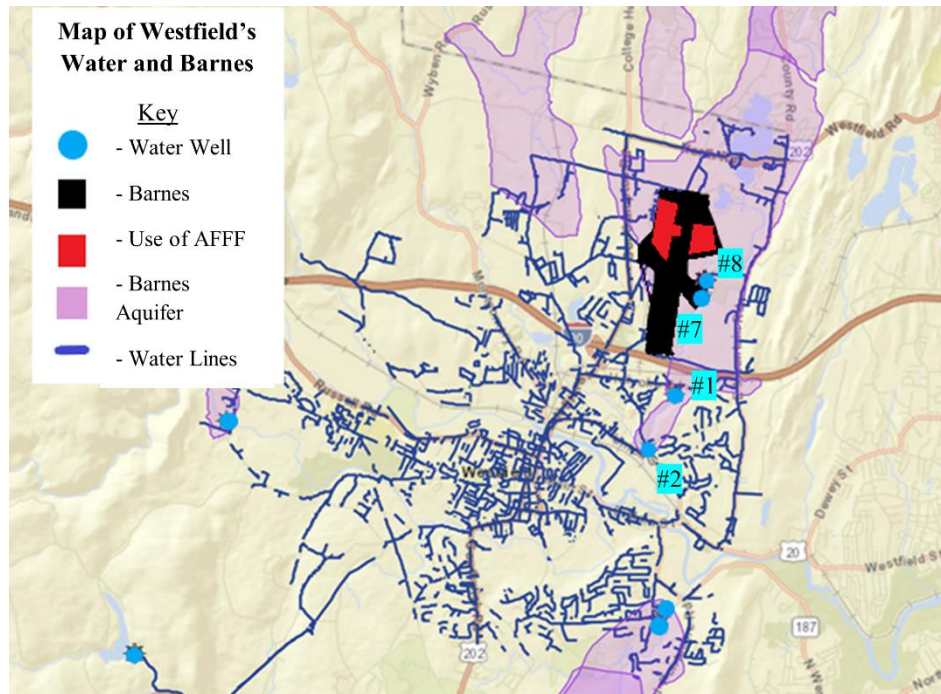


Fig 1. Map of Westfield's Water and Barnes. Author's Map. AFFF use locations by Christopher Clark in Clark Christopher, *Exposed: Living in a Contaminated Landscape*, n.d., infographic, thirteen images, figure 4. Aquifer and Water Lines by "Area Maps," City of Westfield, accessed December 17, 2021.

PFAS contamination in Westfield's water supply was first found in 2013 in water wells #7 and #8, the two closest to Barnes, and only after three years were they shut down; later in 2018 high levels of PFAS were found in wells #1 and #2 and then were closed that same year.⁹ In 2017, Barnes' use of AFFF was determined to be the cause of PFAS in Westfield's water by the Massachusetts Department of Environmental Protection (MassDEP).¹⁰ Along with affecting the water wells, Barnes sits on top of the Barnes Aquifer, underground deposits created by

⁸ Carolyn Beans, "News Feature: How 'Forever Chemicals' Might Impair the Immune System," *Proceedings of the National Academy of Sciences* 118, no. 15 (April 13, 2021).

⁹ Trowbridge and Abramson, "New Documents Examine Possible Origin for Westfield Water Issues."

¹⁰ Ryan Trowbridge and Samara Abramson, "New Documents Examine Possible Origin for Westfield Water Issues," *WesternMassNews*, accessed October 10, 2021.

glacial drifts that supply water to the surrounding municipalities of Easthampton, Southampton, and Holyoke along with Westfield.¹¹

3. Stakeholders

(a) *The community*

For the past decade, the city of Westfield's population has remained around 40,000 residents with the median age of 38.3 years and a median household income of \$53,772.¹² In response to the contamination and frustration with the City's efforts, WRAFT was founded in 2017 and quickly began to represent the community in front of city hall, the state house, and governmental agencies. Due to their lack of significant financial resources, they seek to influence policy creation through informal means such as holding informational meetings at members' houses or public schools, operating an active and prominent Facebook page, sign holding downtown and speaking at city council meetings. An example of this informal power was when WRAFT helped organize a PFAS Health Study in collaboration with the School of Public Health at the University of Massachusetts, in order to gather participants, they held a meeting in the basement of the local library.¹³ Unlike grassroots movements at the federal level, WRAFT has not been blocked by a rising conservative influence, partisan polarization and gridlock, and money in the legislature.¹⁴ This can be explained by the nature of municipal politics that WRAFT operates in — the latter two hurdles are absent from the political culture, and, while

¹¹ "Barnes Aquifer Protection Advisory Committee," accessed November 6, 2021.

¹² "Demographics | Westfield, MA - Official Website".

¹³ Amy Porter, "WRAFT Is Seeking Participants for PFAS Health Study," *The Westfield News*, December 13, 2018.

¹⁴ Doug McAdam, "Social Movement Theory and the Prospects for Climate Change Activism in the United States," *Annual Review of Political Science* 20, no. 1 (May 11, 2017): 195-197.

Westfield is uniquely Republican for Massachusetts, its views are far more liberal than the conservative interests from the Deep South or Texas that operate at the federal level.

Kristen Mello, one of WRAFT's co-founders, became the de-facto spokesperson for WRAFT and has since been elected to a seat on the city council. For Mello, PFAS in Westfield's water is a very clear-cut situation: "With the legal responsibility for the contamination being local, state, and federal, you can see how this has been a game of 'hot potato' for everyone except the residents who drank these chemicals for years without being warned, and are now left to lobby for themselves to get any assistance."¹⁵ During her time with WRAFT, she has advocated for obtaining clean water for Westfield as quickly as possible and to start long-term blood analysis of Westfield residents.¹⁶ Along with being focused on the community, Mello and WRAFT are very conscious of the fact that Westfield's problem is not a one off occurrence in the modern world and any effective solutions must also look towards the future. When asked what the community hopes to achieve, she responded "We hope to achieve policies that prevent such a global, slow-motion unfolding, environmental and public health disaster from ever happening again."¹⁷

(b) *The government*

There are several distinct actors that operate within the government grouping. The largest are the EPA and MassDEP who are the main bodies studying and publishing information on the health effects of PFAS and setting the minimum values for detection. In the Massachusetts Legislature, Westfield is represented by Senator John Velis and Representative Kelly Pease, both

¹⁵ Author's personal communication with Kristen Mello, WRAFT co-founder, November 7, 2021.

¹⁶ Westfield NewsRoom, "Kristen Mello: Westfield's Water Warrior | The Westfield News," *The Westfield News*, May 7, 2018.

¹⁷ Author's personal communication with Mello.

elected during the 2020 election cycle. Rep. Pease is member of the PFAS Interagency Task Force which was formed to “agree on the best approach to prevent and mitigate contamination statewide” and will be submitting a report to the State House on December 31st of this year.¹⁸ Both have submitted S.624 and H.985 which have currently been referred to the Joint Committee on Environment, Natural Resources and Agriculture.

At the local level Westfield has a mayor-council government structure with an open and weak political opportunity structure. The openness of a political input structure is determined by (1) the number of political parties, (2) the independence of the legislative and executive branch, (3) the ease of access interest groups have with the executive and (4) the amount of ways for demands to be aggregated; the power of a political output structure is determined by whether (1) the governing body is centralized, (2) the government’s control over the market, and (3) the independence and authority of the judiciary in political conflict.¹⁹ Westfield is open due to there only being the Republican and Democratic parties, the executive mayor and legislative city-council being separate branches, and the ability for the public to speak at all city-council meetings where the mayor is present or even around town. This ability for the public to participate in meetings also allows them to be present at all stages of policy formation. Westfield can be considered weak despite the centralization of the mayor-council system because of the government has very limited control of the market, the municipal court not being involved in policy formation, and because its limited jurisdiction as a municipal body. Because of this it can

¹⁸ Lillian Eden, “New State Task Force Meets to Discuss Ways to Mitigate Presence of PFAS,” *MetroWest Daily News*, accessed December 17, 2021.

¹⁹ Herbert P. Kitschelt, “Political Opportunity Structures and Political Protest: Anti-Nuclear Movements in Four Democracies,” *British Journal of Political Science* 16, no. 1 (January 1986): 63-64.

be expected that assimilative movement strategies are the most effective, change to come procedurally, and medium-low policy innovation.²⁰

Part of Barnes regional airport is partly owned and operated by the City. It consists of 1,200 acres and two asphalt runways which run numerous corporate, private, and commercial flights regionally that also connect to major air-travel hubs; “Revenues from airport fees and property taxes on its aviation facilities total a little over \$1 million, annually, with operating expenses less than \$800,000.”²¹

(c) *The military*

The other part of Barnes is operated by the 104th Fighter Wing of the Air National Guard. Part of the difficulty when discussing the National Guard’s role is they are at different times employees of the state or under the authority of the DoD. While practicing putting out fires they are considered state employees, yet they are required to use AFFF under federal regulations.²²

Currently the 104th website contains information related to their environmental policy and PFAS response. According to the base’s environmental policy, “protecting the environment is one of [their] highest priorities and will be a major factor in decision-making” and they will comply with all “Federal, State, and local environmental laws and regulations.”²³ Along with stating their commitment, there is a section titled “Your Commitment” where the 104th lists the various responsibilities the public should have such as “Include environmental aspects and impacts into the decision-making process,” “Know how to respond to environmental

²⁰ Kitschelt, “Political Opportunity Structures and Political Protest”, 68.

²¹ “Westfield-Barnes Regional Airport - A Diverse Aviation Community,” *Business View Magazine*, September 16, 2020.

²² Author’s personal communication with Mello.

²³ “Environmental,” 104th Fighter Wing, accessed December 18, 2021.

emergencies like spills,” and of course “reduce, reuse, recycle.”²⁴ Recently the 104th has created a Restoration Advisory Board (RAB) that will meet on a regular basis to discuss the clean-up process of PFAS in the town’s water supply.²⁵

Along with being an important economic feature, Barnes is equally if not more important to Westfield’s culture. The base hosts a popular annual air show, the local high school’s mascot is a bomber jet, and watching passing jets is a common shared experience in Westfield. It is very unlikely the removal of Barnes, in its military or public capacity, would ever be realized let alone considered.

4. Current Policy

The response to PFAS contamination has been focused on wells #1, #2, #7 and #8. In 2018 the city council approved a \$13 million bond for the construction of two permanent water treatment plants with GAC filters on wells #7 and #8, the plants have since been constructed and there was a leftover \$5 million.²⁶ A temporary GAC treatment system was also approved for well #2 in 2018. In March of 2021, Mayor Don Humason requested an additional \$12.3 million bond for the construction of permanent GAC facilities on wells #1 and #2, this has since been approved and construction is currently underway.²⁷ The construction of the treatment plants has been contracted out to CDM Smith, a construction engineering company that has previously worked with Westfield’s sewer and water systems.²⁸ GAC filters are most effective in removing

²⁴ “104th Environmental Commitment,” accessed December 18, 2021.

²⁵ Pater Currier, “Residents Sought to Serve on Contamination Restoration Board | The Westfield News | January 21, 2020,” *The Westfield News*, January 21, 2020.

²⁶ Amy Porter, “Westfield Mayor Requests \$12.3 Million Water Treatment Bond,” *Reminder Publications*, March 24, 2021.

²⁷ Ibid.

²⁸ “Westfield PFAS Emergency Response,” *Water & Wastes Digest*, December 16, 2019.

PFAS with greater chain lengths, such as PFOA and PFOS, than those with shorter chain lengths, PFBS and PFBA.²⁹ Both kinds of PFAS are present in Westfield's water.³⁰ However, because of the durability of PFAS, they are extremely difficult to completely remove from a water supply, even if the GAC filter is properly maintained and dealing with only long chain PFAS.

Meanwhile at the state level, Senator Velis and Rep. Pease's efforts have been focused solely on the study of PFAS. The proposed bills of S.624 and H.985 both state "The Massachusetts Department of Environmental Protection shall procure or otherwise employ an external research organization, which has the capacity to study per- and polyfluoroalkyl substances and the effect PFAS has on agricultural products and other food products."^{31 32}

5. Conclusion

The current approaches at both the municipal and state level fail to address the most pressing concerns of the Westfield community, the ongoing health effects and making sure this situation will never happen again. GAC filters are unable to completely remove PFAS from the drinking water and are costly to build and maintain; out of the about \$31 million spent only \$1.35 million has been reimbursed by the Air Force.³³ While the bills submitted by Senator Velis and Rep. Pease are concerned with studying the effects of PFAS on "agricultural products and other food products", they do nothing to immediately assist their community's suffering from contamination of drinking water.

²⁹ Nicholas J. Herkert et al., "Assessing the Effectiveness of Point-of-Use Residential Drinking Water Filters for Perfluoroalkyl Substances (PFASs)," *Environmental Science & Technology Letters* 7, no. 3 (March 10, 2020): 181.

³⁰ "Westfield Water Sample Results" (con-test analytical laboratory, November 23, 2020).

³¹ "Bill S.624," The 192nd General Court of the Commonwealth of Massachusetts, accessed December 18, 2021.

³² "Bill H.985," The 192nd General Court of the Commonwealth of Massachusetts, accessed December 18, 2021.

³³ Jim Kinnery, "Westfield Receives \$1.35M for Water Contamination," *Masslive*, December 5, 2019, sec. News.

As of December 9th, Massachusetts has approved the addition of PFAS to the state's list of "Toxic or Hazardous Substances," under an amendment to the Toxics Use Reduction Act (TURA), requiring manufacturing facilities to start tracking their use of PFAS in 2022.³⁴ Instead, an outright ban of PFAS in consumer products and the use of AFFF containing PFAS is needed within Massachusetts; this has already happened in politically similar states such as California, Maine, and Washington.³⁵ This policy implementation would serve to benefit people already exposed to high levels of PFAS through drinking water while also limiting the frequent low exposure of the chemical experience everyday through consumer goods. The banning of PFAS will also open possibilities of legal action by individuals exposed to the chemical after the policy's implementation. A ban on PFAS in the state of Massachusetts has a strong possibility of occurring due to precedents in other states suffering from exposure; however, like many environmental issues it is difficult to establish a direct relationship between a specific aspect of environmental damage and human health which may impact the success of the ban. By taking a general preventative approach at the state level individual communities can focus on policies concerned with clean-up and reparations. Since GAC filter plants have been built, the City should now focus on its residents' health by first implementing a policy to fund blood tests so that the community can know exactly to what extent they have been affected by PFAS. Reparations should be considered for citizens who purchased their own bottled water and home water filters due to contamination. In addition, reparations for bodily harm caused by PFAS should be considered. Funding for blood work is most likely to be successful because it aligns with WRAFT's focus on the health effects of PFAS and their previous work with UMass to

³⁴ Barbara Moran, "Toxic PFAS Chemicals Will Be Added to Mass.' Official List of Hazardous Substances," *Wbur*, December 9, 2021, sec. Local Coverage.

³⁵ *Ibid.*

accomplish a similar goal on a smaller scale. This kind of policy, procedural and with precedent, is also likely to work with Westfield's open and weak political opportunity structure. Reparations are less likely to be realized due to their potentially high cost and Westfield's conservative politics. This plan would also be working against Westfield's political opportunity structure because it attempts to accomplish a radically new goal. Despite this, any policy concerning PFAS starts out in an advantageous position due to Kristen Mello being on the city council. This is comparable to anti-fracking movements having greater success in the EU due to greater amounts advocates in positions of governmental power.³⁶ Funding for these policies could possibly come from the unused \$5 million allocated for water treatment construction, further reimbursement from the Air Force—the polluters, or even Barnes' \$200,000 annual profit.

6. Looking Forward

Climate change brings to mind pictures of melting glaciers and intense tropical storms, yet what often gets left out is the unseen changes to the environment happening in small communities all over the world. Westfield is one of these communities. It is small and unspecial, yet somehow still became swept up in the fight for our planet, health, and future. The most popular solutions to climate change are technical, but solar panels and electric cars do not stop chemicals from entering our water. Bans and regulations must be proactively taken to prevent further harm to humanity and the environment. Unfortunately, these “forever chemicals” will most likely stay in the bodies of Westfield's citizens, my body, until death. This cannot be changed, but what can be is our relationship to Earth and the rest of humanity.

³⁶ Elizabeth Bomberg, “Fracking and Framing in Transatlantic Perspective: A Comparison of Shale Politics in the US and European Union,” *Journal of Transatlantic Studies* 15, no. 2 (April 3, 2017): 11.

Note: This paper was written on November 7, 2021 and only uses information available until then.

Bibliography

- 104th Fighter Wing. “Environmental.” Accessed December 18, 2021. <https://www.104fw.af.mil/About/Environmental/>.
- “104th Environmental Commitment.” Accessed December 18, 2021. https://www.104fw.af.mil/Portals/5/104FW_Envir_CommitmentPoster.pdf.
- “Barnes Aquifer Protection Advisory Committee.” Accessed November 6, 2021. <https://bapac.pvpc.org/>.
- Beans, Carolyn. “News Feature: How ‘Forever Chemicals’ Might Impair the Immune System.” *Proceedings of the National Academy of Sciences* 118, no. 15 (April 13, 2021). <https://doi.org/10.1073/pnas.2105018118>.
- Bomberg, Elizabeth. “Fracking and Framing in Transatlantic Perspective: A Comparison of Shale Politics in the US and European Union.” *Journal of Transatlantic Studies* 15, no. 2 (April 3, 2017): 101–20. <https://doi.org/10.1080/14794012.2016.1268789>.
- Center for Food Safety and Applied Nutrition. “Per- and Polyfluoroalkyl Substances (PFAS).” *FDA*, October 19, 2021. <https://www.fda.gov/food/chemical-contaminants-food/and-polyfluoroalkyl-substances-pfas>.
- Christopher, Clark. *Exposed: Living in a Contaminated Landscape*. n.d. Infographic, thirteen images.
- City of Westfield. “Area Maps.” Accessed December 17, 2021. <https://www.cityofwestfield.org/265/Area-Maps>.
- Clean Water Action. “PFAS-Containing Firefighting Foams,” December 19, 2019. <https://www.cleanwateraction.org/features/pfas-containing-firefighting-foams>.
- Currier, Pater. “Residents Sought to Serve on Contamination Restoration Board | The Westfield News | January 21, 2020.” *The Westfield News*, January 21, 2020. <https://thewestfieldnews.com/residents-sought-to-serve-on-contamination-restoration-board/>.
- “Demographics | Westfield, MA - Official Website.” Accessed November 6, 2021. <https://www.cityofwestfield.org/242/Demographics>.
- Desrochers, Dan. “Pollutants Part of Cause of Water Ban.” *The Westfield News*, September 17, 2016. <https://thewestfieldnews.com/pollutants-part-of-cause-of-water-ban/>.
- Eden, Lillian. “New State Task Force Meets to Discuss Ways to Mitigate Presence of PFAS.” *MetroWest Daily News*. Accessed December 17, 2021. <https://www.metrowestdailynews.com/story/news/2021/06/01/mass-task-force-discusses-goals-mitigate-pfas-community-water/7492953002/>.
- Environmental Working Group. “For Decades, The Department of Defense Knew Fire Fighting Foams With PFAS Chemicals Were Dangerous But Continued Their Use.” Accessed December 17, 2021. <https://www.ewg.org/dodpfastimeline/>.
- Herkert, Nicholas J., John Merrill, Cara Peters, David Bollinger, Sharon Zhang, Kate Hoffman, P. Lee Ferguson, Detlef R. U. Knappe, and Heather M. Stapleton. “Assessing the Effectiveness of Point-of-Use Residential Drinking Water Filters for Perfluoroalkyl Substances (PFASs).” *Environmental Science & Technology Letters* 7, no. 3 (March 10, 2020): 178–84. <https://doi.org/10.1021/acs.estlett.0c00004>.

- Kinnery, Jim. "Westfield Receives \$1.35M for Water Contamination." *Masslive*, December 5, 2019, sec. News. <https://www.masslive.com/news/2019/12/westfield-receives-135m-reimbursement-from-air-force-for-water-contaminated-with-firefighting-chemicals.html>.
- Kitschelt, Herbert P. "Political Opportunity Structures and Political Protest: Anti-Nuclear Movements in Four Democracies." *British Journal of Political Science* 16, no. 1 (January 1986): 57–85. <https://doi.org/10.1017/S000712340000380X>.
- McAdam, Doug. "Social Movement Theory and the Prospects for Climate Change Activism in the United States." *Annual Review of Political Science* 20, no. 1 (May 11, 2017): 189–208. <https://doi.org/10.1146/annurev-polisci-052615-025801>.
- Moran, Barbara. "Toxic PFAS Chemicals Will Be Added to Mass.' Official List of Hazardous Substances." *Wbur*, December 9, 2021, sec. Local Coverage. <https://www.wbur.org/news/2021/12/09/pfas-list-toxic-hazardous-substances-tura-massachusetts>.
- "Per- and Polyfluoroalkyl Substances (PFAS) Exposure Assessment: Westfield Hampden County, Massachusetts." Agency for Toxic Substances and Disease Registry, November 18, 2021. <https://www.atsdr.cdc.gov/pfas/docs/hampden-county-report-508.pdf>.
- Porter, Amy. "Westfield Mayor Requests \$12.3 Million Water Treatment Bond." *Reminder Publications*. March 24, 2021. <https://www.there minder.com/localnews/westfield/westfield-mayor-requests-123-million-water-treatme/>.
- . "WRAFT Is Seeking Participants for PFAS Health Study." *The Westfield News*, December 13, 2018. <https://thewestfieldnews.com/wraft-is-seeking-participants-for-pfas-health-study/>.
- "PUBLIC HEALTH STATEMENT Perfluoroalkyls." Agency for toxic substances and disease registry. Accessed October 11, 2021. <https://www.atsdr.cdc.gov/toxprofiles/tp200-c1-b.pdf>.
- The 192nd General Court of the Commonwealth of Massachusetts. "Bill H.985." Accessed December 18, 2021. <https://malegislature.gov/Bills/192/H985>.
- The 192nd General Court of the Commonwealth of Massachusetts. "Bill S.624." Accessed December 18, 2021. <https://malegislature.gov/Bills/192/S624>.
- Trowbridge, Ryan, and Samara Abramson. "New Documents Examine Possible Origin for Westfield Water Issues." *WesternMassNews*. Accessed October 10, 2021. https://www.westernmassnews.com/news/new-documents-examine-possible-origin-for-westfield-water-issues/article_b1a96ed8-f184-5cbd-a39c-93d46c206133.html.
- US EPA. "Our Current Understanding of the Human Health and Environmental Risks of PFAS." Overviews and Factsheets, October 14, 2021. <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>.
- US EPA, ORD. "Reducing PFAS in Drinking Water with Treatment Technologies." Overviews and Factsheets, August 23, 2018. <https://www.epa.gov/sciencematters/reducing-pfas-drinking-water-treatment-technologies>.
- Westfield NewsRoom. "Kristen Mello: Westfield's Water Warrior | The Westfield News." *The Westfield News*, May 7, 2018. <https://thewestfieldnews.com/kristen-mello-westfields-water-warrior/>.
- Water & Wastes Digest. "Westfield PFAS Emergency Response," December 16, 2019. <https://www.wwdmag.com/westfield-pfas-emergency-response>.
- "Westfield Water Sample Results." con-test analytical laboratory, November 23, 2020. <https://www.cityofwestfield.org/ArchiveCenter/ViewFile/Item/585>.
- "Westfield-Barnes Regional Airport - A Diverse Aviation Community." *Business View Magazine*, September 16, 2020. <https://businessviewmagazine.com/westfield-barnes-regional-airport-diverse-aviation-community/>.

