

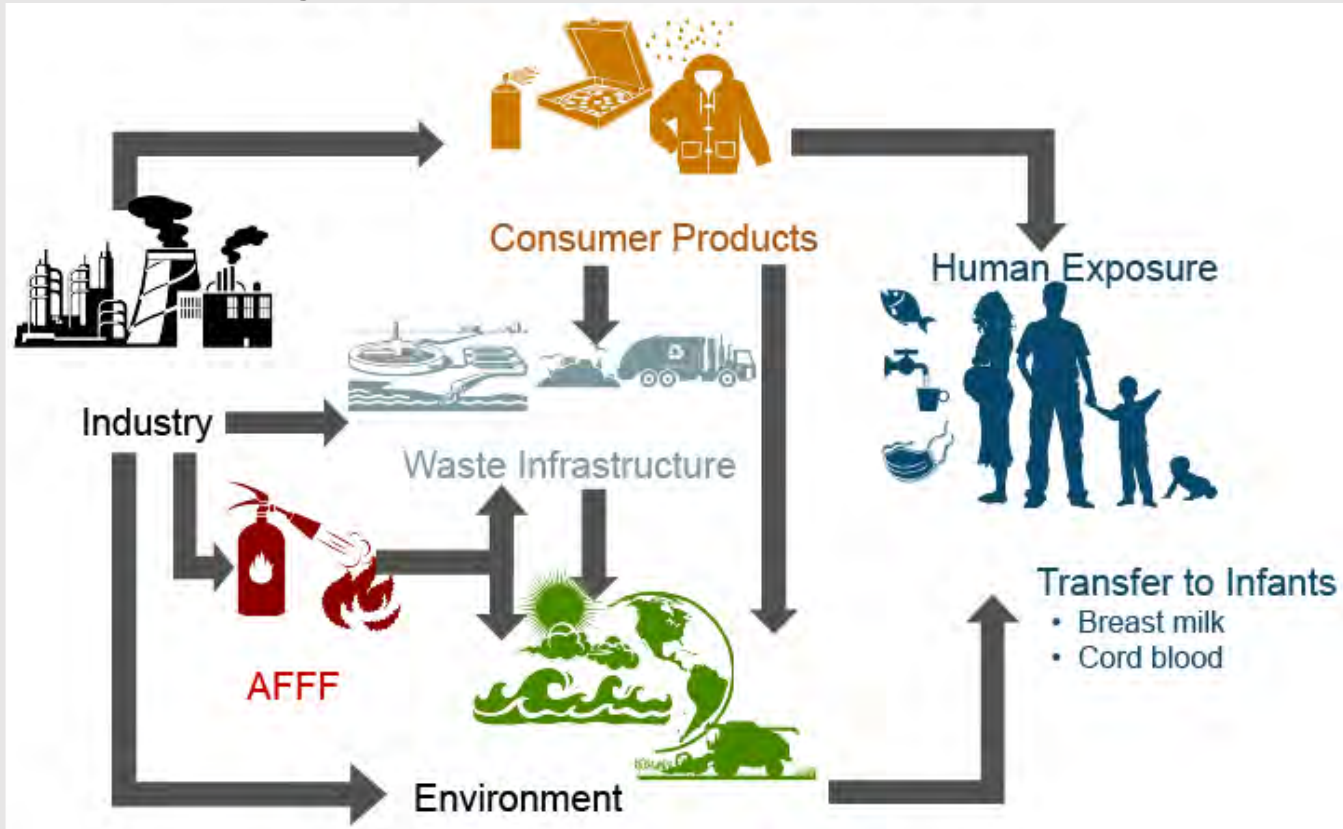
Ongoing PFAS Research in the Cape Cod Region

Heidi Pickard, Bridger Ruyle, Andrea Tokranov, Denis LeBlanc, Larry Barber,

Chad Vecitis, & Elsie Sunderland

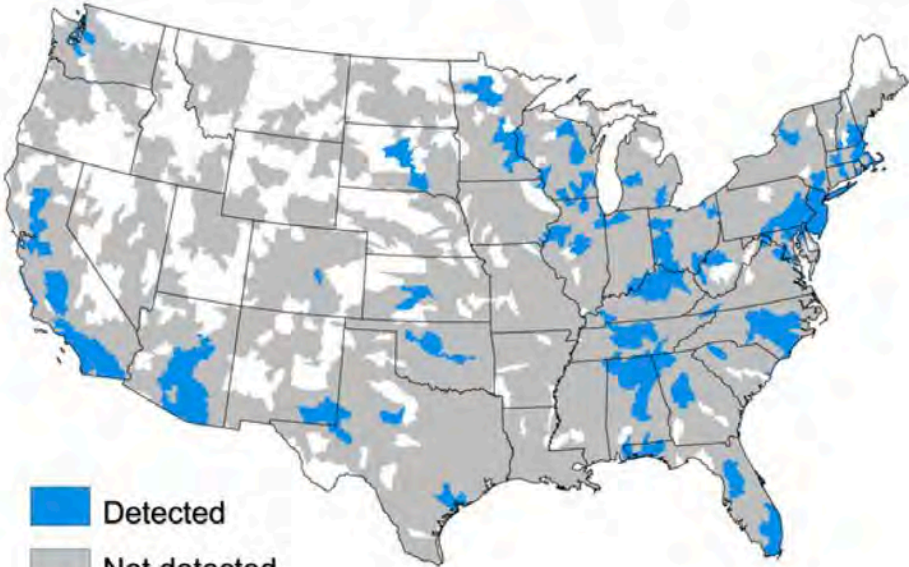


Diverse exposure pathways for PFAS: Our project is focused on water and fish

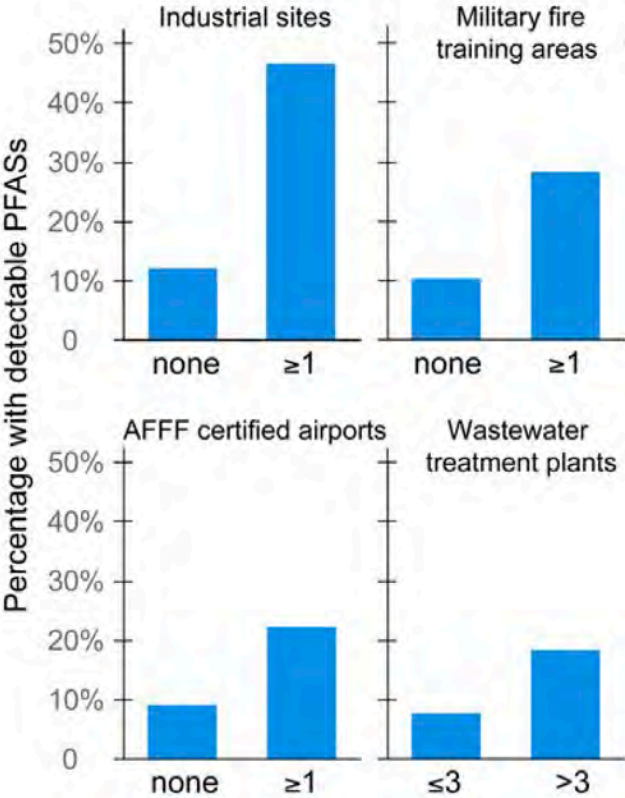


Drinking water is an important PFAS exposure pathway

Hydrological units with detectable PFASs



Hu et al., 2016



Aqueous Film-Forming Foam (AFFF) is an important PFAS Point Source in the Cape Region



Aqueous Film-Forming Foam (AFFF)

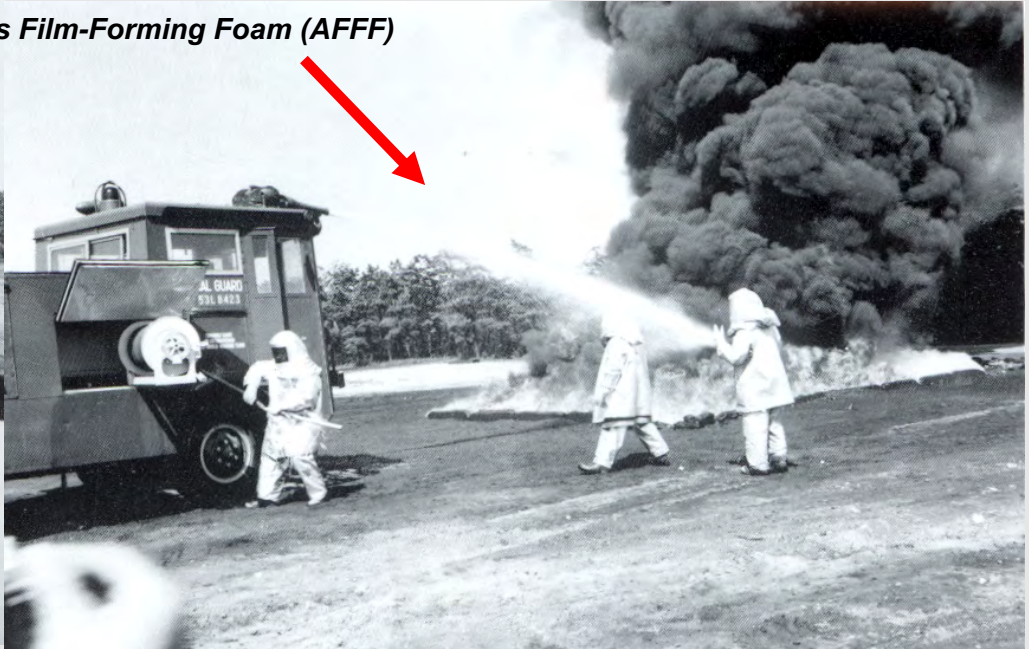
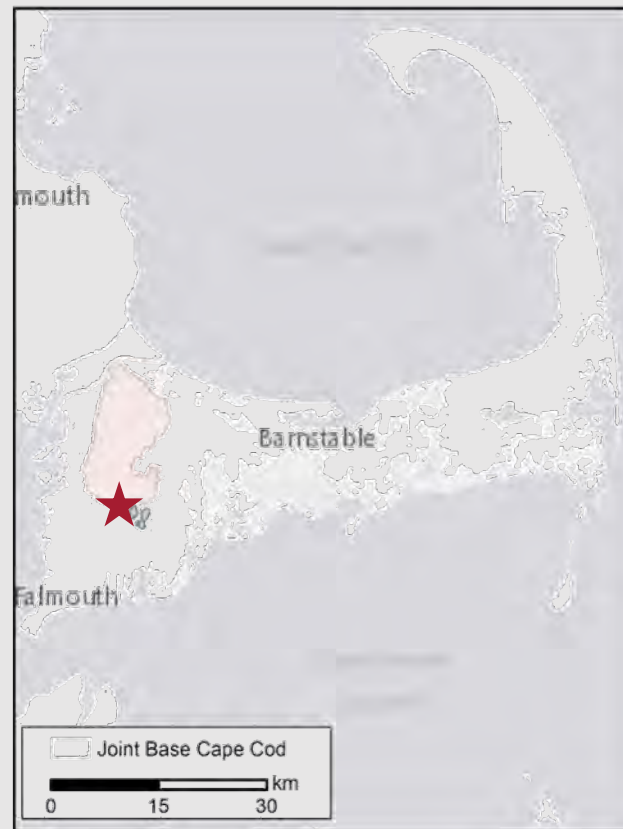


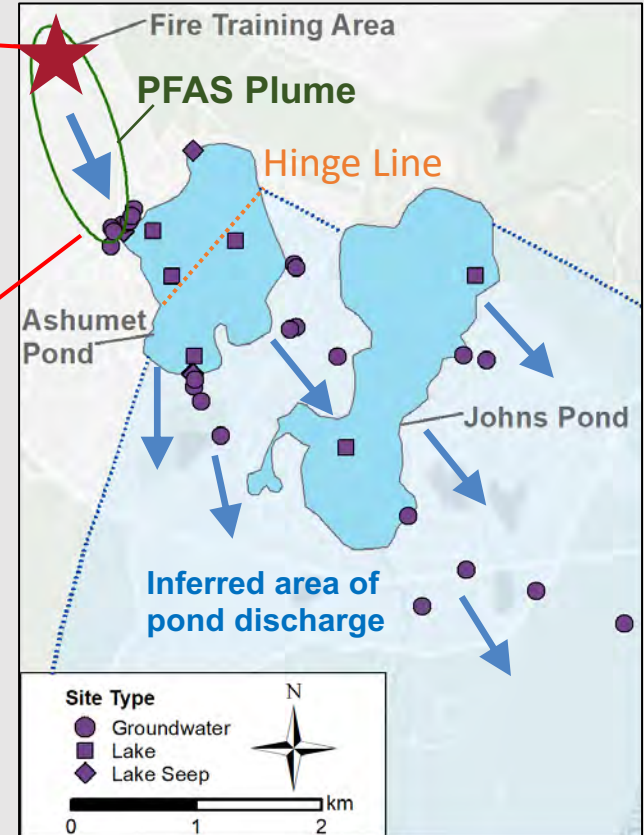
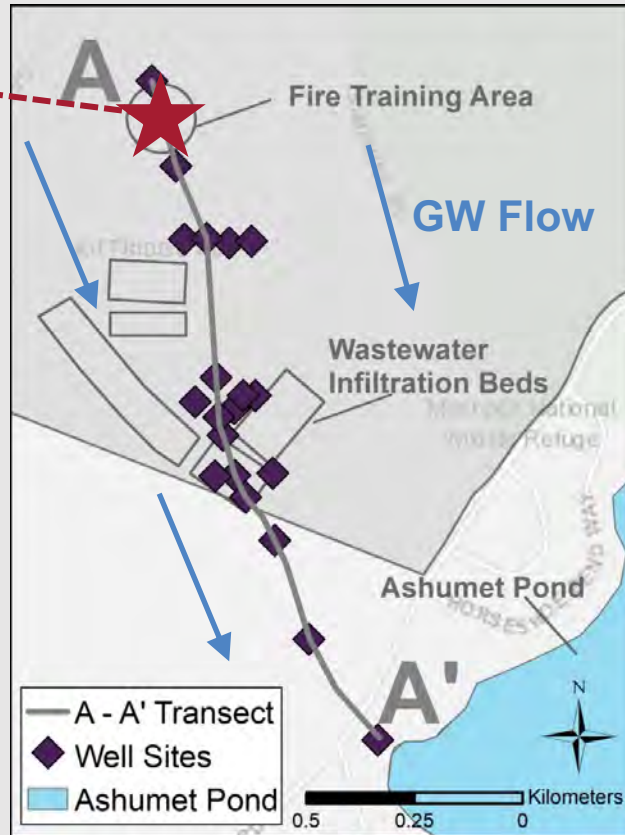
Photo courtesy of Otis Air National Guard Base

Cape Cod Field Site: Essential for Understanding Groundwater Transport



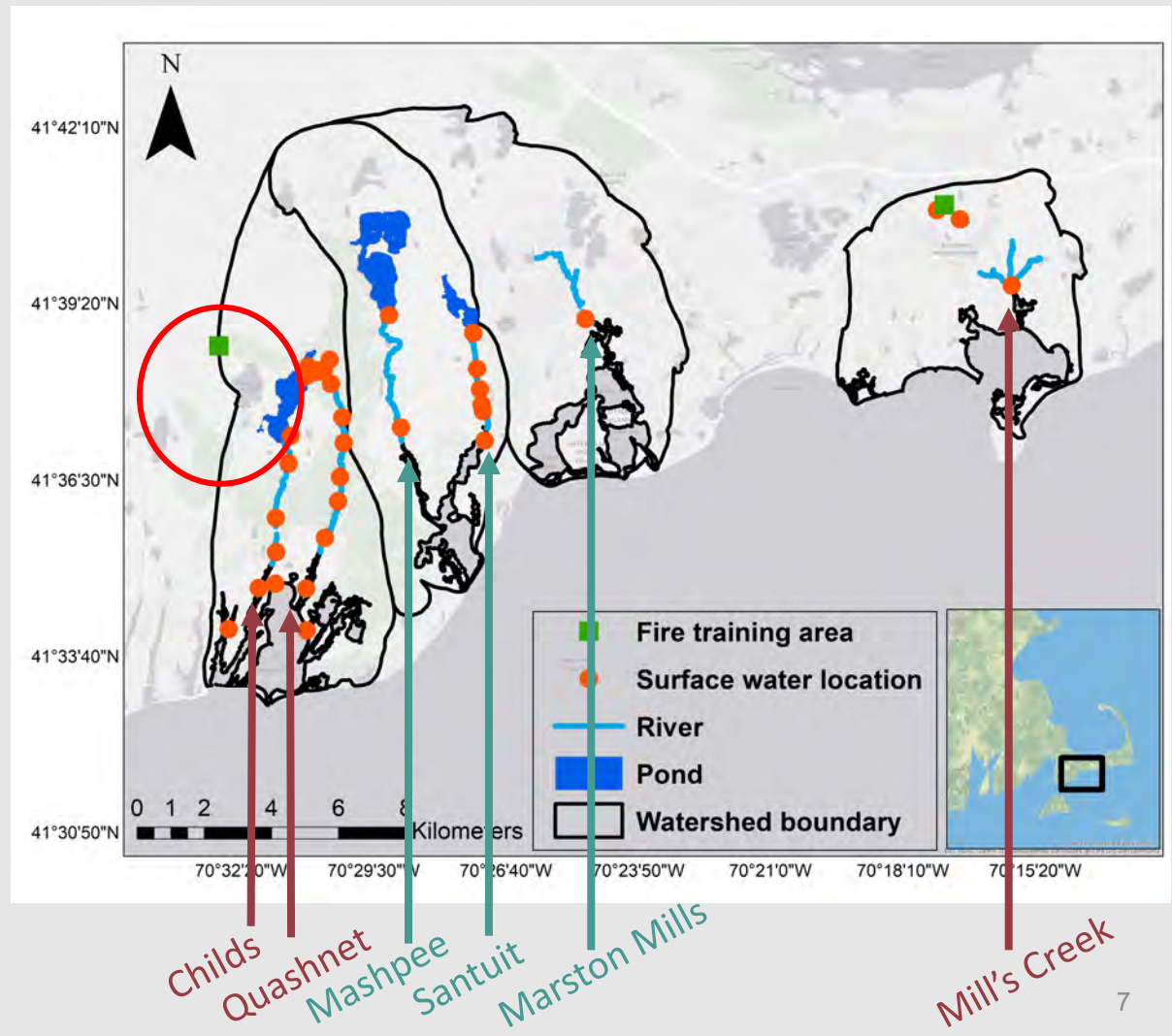
Field Site

From Groundwater to Surface Water

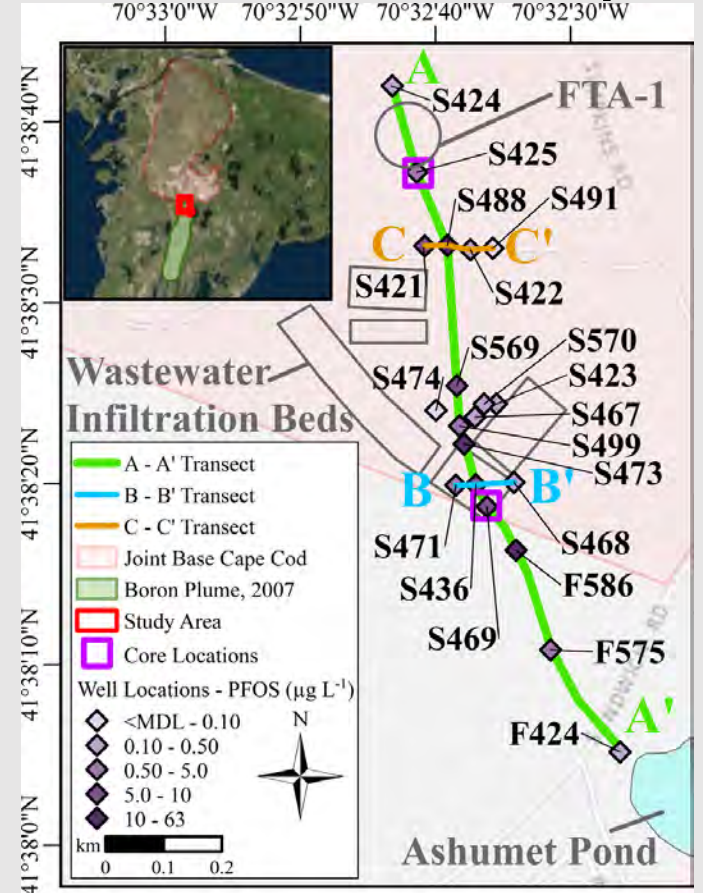
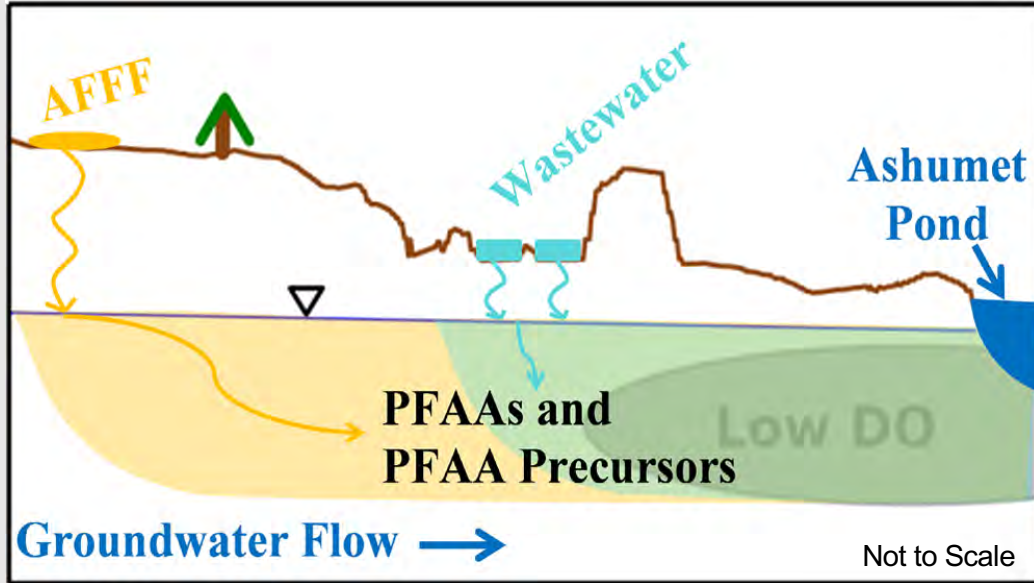


Surface water fed
by groundwater:

Both ponds and
rivers

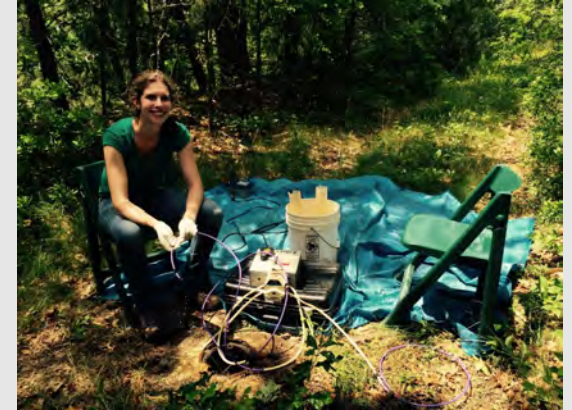
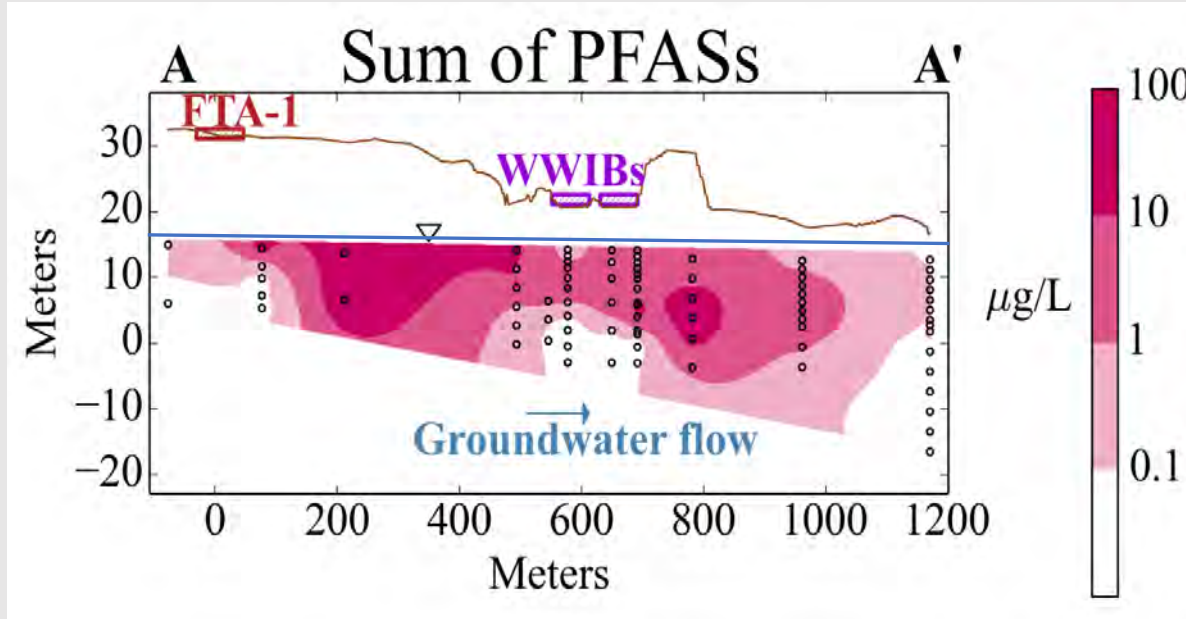


1: How the environment affects PFAS transport

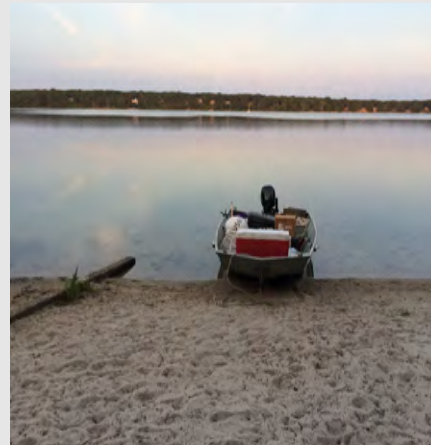
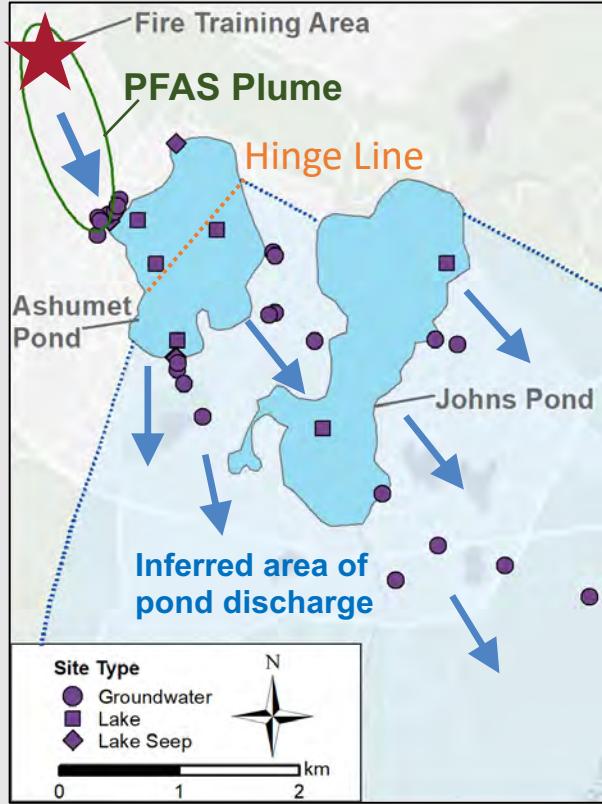


Weber et al. 2017

1. Source zone: Domestic wastewater effluent infiltration beds (WWIBs) and AFFF use site

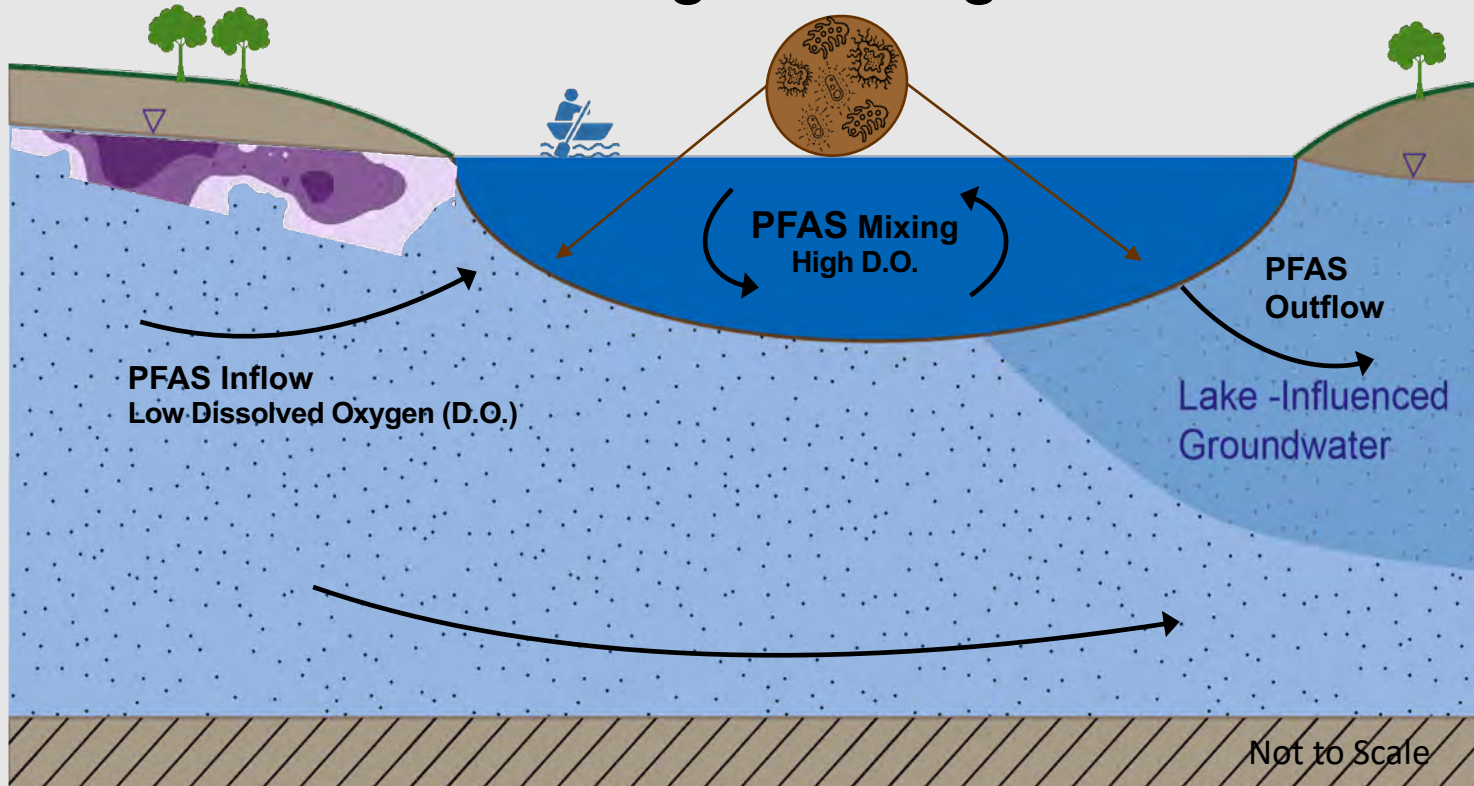


2: Downgradient environment: Ashumet & John's Pond

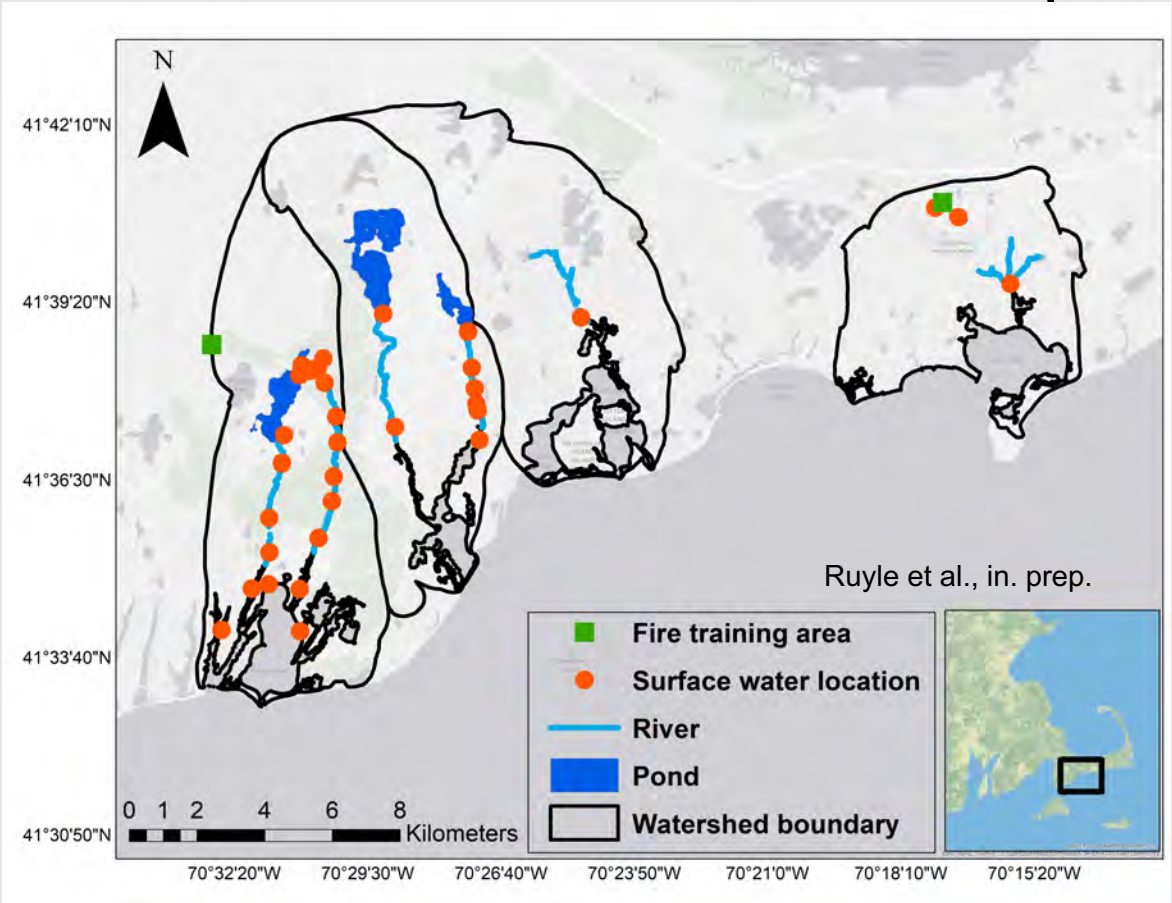


Tokranov et al., in. prep.

2. Pond PFAS concentrations well-mixed, PFAS fluctuations in downgradient groundwater



3: We are monitoring PFAS composition and concentrations in several rivers in the Cape Region



3. Preliminary Results



- Concentrations exceed EPA Provisional Advisory for Drinking Water in all locations in Quashnet River and Mill Creek
- At least one third of the total PFAS are precursor compounds
- Detectable levels of PFAS at all sampling locations but concentrations 10-100x lower in Mashpee, Santuit, and Marston Mills Rivers

Take Home Messages

- PFAS from AFFF are persistent in the groundwater and surface water even after 20+ years of inactivity with different zones acting as extra sources.
- Precursor chemicals to PFAS are persistent in this environment.
- Rivers on Cape Cod are impacted by a number of PFAS sources but AFFF is the most severe cause of contamination.
- PFAS in rivers are quickly transported into estuaries and the ocean where they may enter marine food webs.

Thank you!



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