Maine CDC Scientific Brief: 2024 PFOS Fish Consumption Advisory

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The Maine Center for Disease Control and Prevention (Maine CDC) is responsible for regularly assessing whether any health threats exist for persons consuming freshwater and anadromous fish caught in state waters by noncommercial anglers and issuing a consumption advisory if threats to public health are identified (MRSA 22 § 1696 I). This document discusses recent analyses and recommendations regarding freshwater fish consumption in Maine. Specifically, it describes proposed waterbody-specific advisories based on data collected during the 2023 fishing season showing elevated levels of PFOS in fish tissue.

I. Approach to Fish Consumption Advisories

Maine CDC derives and uses chemical-specific fish tissue action levels (FTALs) as a guide to determine the need to develop a fish consumption advisory. These FTALs are derived following the U.S. Environmental Protection Agency (EPA) Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories (EPA 1996; EPA 2000a; EPA 2000b). FTALs are concentrations of a contaminant, in this case perfluorooctane sulfonic acid (PFOS) [1], in fish tissue below which there should be negligible risk of toxicity at a high rate of fish consumption intended to be protective of most recreational anglers. Measured concentrations of PFOS in fish tissue are compared to the FTAL. When fish tissue concentrations exceed an FTAL, the development of a fish consumption advisory is considered. Fish consumption advisories are presented as an allowable fish consumption rate that is not expected to exceed the toxicity value of PFOS, which is a measure of daily dose that results in a minimal risk of any adverse health outcome. In 2022, Maine CDC updated the PFOS FTAL to 3.5 nanograms per gram (ng/g) to reflect the U.S. Agency for Toxic Substances and Disease Registry (ATSDR) 2021 toxicity value (*see* 2023 Scientific Brief[2] for full derivation of the PFOS FTAL). Maine CDC typically relies on toxicity values developed by federal agencies such as the U.S. EPA or ATSDR. On April 10, 2024 the U.S. EPA published updated toxicity values for PFOS (and PFOA) used in the development of their finalized national drinking water standards. These toxicity values are considerably lower than ATSDR's 2021 toxicity value for PFOS (0.1 ng/kg/day vs 2 ng/kg/day, respectively). Maine CDC is reviewing EPA's updated toxicity values and their suitability for use in developing fish consumption advisories, as well as awaiting EPA guidance on the use of these toxicity values in the development of fish consumption advisories. In the interim Maine CDC is continuing to rely on ATSDR's toxicity value of 2 ng/kg/day for PFOS.

Using ATSDR's toxicity value of 2 ng/kg/day for PFOS and an 8 oz fish meal size for adults, Maine CDC calculates fish tissue PFOS concentrations that correspond to specified meal frequencies (Table 1).

[1] For PFAS action levels, Maine CDC follows the PFAS naming convention indicated by ATSDR, which follows the U.S. CDC's PFAS terminology in using the acid form when listing the compounds full name, e.g., perfluorooctane sulfonic acid versus perfluorooctane sulfonate (ATSDR 2021).

[2] https://www.maine.gov/dhhs/mecdc/environmental-health/eohp/fish/documents/pfas-fish-scientific-brief-04202023.pdf

Table 1. Levels of PFOS in fish and corresponding 8-ounce meal advice categories.

PFOS in fish (ng/g)	Meal advice
3.5	One meal per week
7.5	Two meals per month
15	One meal per month
30	Six meals per year
60	Three meals per year
> 60	Do Not Eat

Maine CDC considers issuing a fish consumption advisory if fish cannot be safely consumed at a rate of at least one meal per week. Thresholds for issuing a Do Not Eat (DNE) advisory are evaluated on a contaminant-specific basis. For PFOS, Maine CDC will issue a DNE advisory when fish cannot be safely consumed at a rate of at least three meals per year because at lower consumption rates (and the associated higher fish tissue levels), the impact on exposure to PFOS of eating just one additional fish meal per year becomes increasingly large. Maine CDC is aware of other states using 12 meals per year (New Jersey), six meals per year (Michigan), and one meal per year (Massachusetts) as the threshold for a DNE advisory for PFOS.

In considering whether to issue an advisory, Maine CDC also evaluates whether the resulting advisory would be more restrictive than any existing advisories[3], such as the statewide mercury fish consumption advisory (Table 2). The FTAL of 3.5 ng/g for PFOS allows for consumption of 8-ounces per week of any sport caught fish of any species for adults. However, the existing statewide mercury fish consumption advisory recommends anglers eat no more than two fish meals per month for most fish species and consumption of up to a meal per week is restricted to brook trout and landlocked salmon. For sensitive populations (children less than 8 years of age and women who are or who may become pregnant), the statewide mercury advisory is even more restrictive and recommends no consumption of freshwater fish from Maine's inland waters except for landlocked salmon and brook trout which can be consumed at a rate of one meal per month (Table 2). Thus, in determining whether a PFOS-specific advisory needs to be issued, Maine CDC will evaluate whether the concentrations of PFOS in fish tissue warrant an advisory that is more restrictive than the current statewide mercury advisory or any other waterbody-specific advisories.

[3] Current fish consumption advisories can be found under Maine CDC's Freshwater Fish Safe Eating Guidelines (https://www.maine.gov/dhhs/mecdc/environmental-health/eohp/fish/2kfca.htm)

Table 2. Statewide mercury fish consumption advisory.

Sensitive populations (pregnant and nursing women, women of childbearing age, children under age 8)	
Brook trout and landlocked salmon	One meal per month
All other species	Do Not Eat
General population (all other adults and children aged 8 and older)	
Brook trout and landlocked salmon	One meal per week
All other species	Two meals per month

II. Recommended Waterbody-Specific Fish Consumption Advisories

Maine CDC is issuing freshwater fish consumption advisories on seven waterbodies in Maine in response to data on PFOS levels in fish collected in 2023. Four of the advisories are for new waterbodies and three represent expansions of previously issued waterbody advisories as a result of additional sampling efforts. The new advisories come after testing of fish in these locations found elevated levels of per- and polyfluoroalkyl substances (PFAS) warranting fish consumption advisories more restrictive than the current Statewide mercury fish consumption advisory or other waterbody-specific advisories. The advisories recommend limiting consumption of all fish or certain fish species from these waterbodies.

The new and expanded advisories are summarized in Table 3 and apply to McGrath Pond and Salmon Lake in Belgrade and Oakland, Aroostook River in Caribou, Kenduskeag Stream in Kenduskeag and Bangor, Kennebec River in Waterville, Limestone Stream in Fort Fairfield, Annabessacook Lake in Monmouth and Winthrop, and Sandy and Halfmoon Streams in Unity and Thorndike. The fish tissue data and basis for the consumption advisory is described for each of these waterbodies in Section III of this report.

Table 3. Recommended waterbody-specific fish consumption advisories.

Area	Waterbody	Consumption Advisory
Belgrade and Oakland	All of McGrath Pond and Salmon Lake (Ellis Pond).	Consume no more than one meal per month of any fish species.
Caribou	Aroostook River from the Aroostook River Reservoir to Haley Island in Fort Fairfield.	Consume no more than two meals per month of brook trout.
Corinth to Bangor	Kenduskeag Stream from the Robyville covered bridge to the Penobscot River.	Consume no more than one meal per month of smallmouth bass.
Fairfield to Sidney	Kennebec River from the Carrabassett Stream inlet just North of Route 23 to the Town Farm Brook inlet in Sidney.	Consume no more than nine meals per year of smallmouth bass and no more than five meals per year of black crappie.
Limestone to Fort Fairfield	All of Durepo Pond and Limestone Stream.	Consume no more than four meals per year of brook trout and do not eat smallmouth bass.
Monmouth and Winthrop	All of Annabessacook Lake.	Consume no more than ten meals per year of black crappie.
Unity and Thorndike	Halfmoon Stream from the Shikles Road in Thorndike to Sandy Stream, and Sandy Stream from the Stevens Road in Unity to Unity Pond.	Consume no more than five meals per year of smallmouth bass. For Halfmoon Stream, consume no more than two meals per month of brook trout.

III. Basis for Waterbody-Specific Fish Consumption Advisories

A. McGrath Pond and Salmon Lake (Ellis Pond) – Belgrade and Oakland

Area: All of McGrath Pond and Salmon Lake (Ellis Pond).

Advisory: For the general population, consume no more than one meal per month of any fish species.

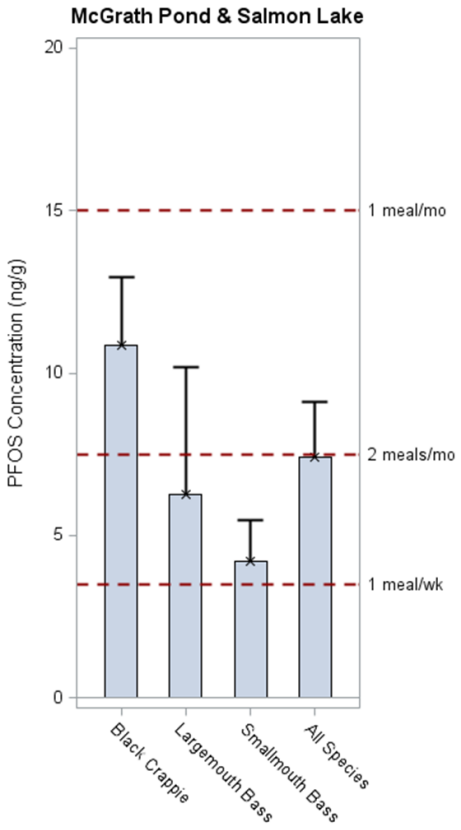


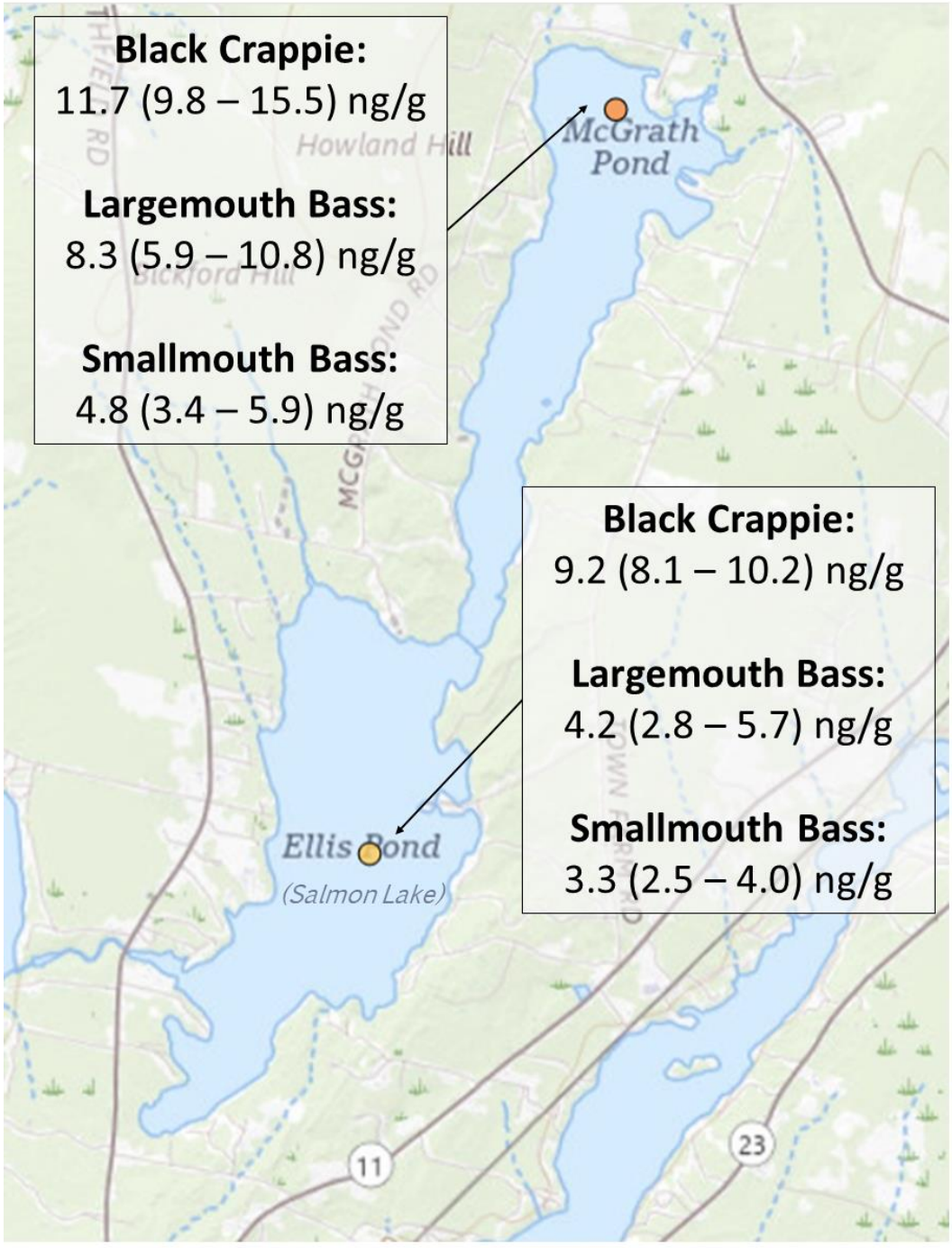
Figure 1. Fish tissue PFOS concentrations in McGrath Pond and Salmon Lake in Belgrade and Oakland. The bars correspond to the mean PFOS tissue concentration in each species, or all species combined, for both McGrath Pond and Salmon Lake. The cap of the error bar corresponds to the upper confidence limit on the mean.

Justification: Between 2022 and 2023 a total of four five-fish composite black crappie, three five-fish composite smallmouth bass, and two five-fish composite largemouth bass samples were collected from McGrath Pond in Oakland (Map 1). The black crappie samples had PFOS concentrations ranging from 9.8 to 15.5 ng/g. The smallmouth bass samples had PFOS concentrations ranging from 3.4 to 5.9 ng/g. The largemouth bass samples had PFOS concentrations ranging from 5.9 to 10.8 ng/g.

In 2023, a total of two five-fish composite black crappie, two five-fish composite smallmouth bass, and two five-fish composite largemouth bass samples were also collected from Salmon Lake (Map 1). The black crappie samples had PFOS concentrations of 8.1 and 10.2 ng/g. The smallmouth bass samples had PFOS concentrations of 2.5 and 4.0 ng/g. The largemouth bass samples had PFOS concentrations of 2.8 and 5.7 ng/g. Given that McGrath Pond and Salmon Lake are connected waterbodies, the overlapping concentration ranges between McGrath Pond and Salmon Lake, and the overlapping concentration ranges between species, the data for all species in both lakes were combined for statistical analysis.

When combined, the black crappie samples from McGrath Pond and Salmon Lake had a mean PFOS concentration of 10.8 ng/g with an upper confidence limit on the mean of 13.0 ng/g. The smallmouth bass samples had a mean PFOS concentration of 4.2 ng/g with an upper confidence limit on the mean of 5.5 ng/g. The largemouth bass samples had a mean PFOS concentration of 6.3 ng/g with an upper confidence limit on the mean of 10.2 ng/g. The mean PFOS concentration for all species in McGrath Pond and Salmon Lake was 7.4 ng/g with an upper confidence limit on the mean of 9.1 ng/g (Figure 1). The 9.1 ng/g upper confidence limit PFOS concentration corresponds to a consumption rate of less than 2 meals per month, and the 13.0 ng/g upper confidence limit for black crappie is close to the limit of one meal per month. For simplicity, an advisory to consume not more than one meal per month of any fish species is recommended for these waters.

Map 1. Approximate locations of fish sampling for PFOS from McGrath Pond and Salmon Lake in Belgrade and Oakland with mean and range of PFOS concentrations in each species sampled.



B. Aroostook River - Caribou

Area: Aroostook River from the Aroostook River Reservoir in Caribou to Haley Island in Fort Fairfield.

Advisory: For the general population, consume no more than two meals per month of brook trout.

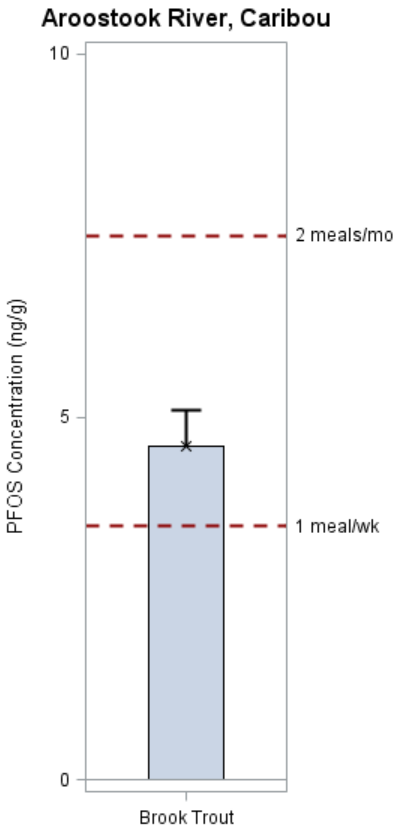
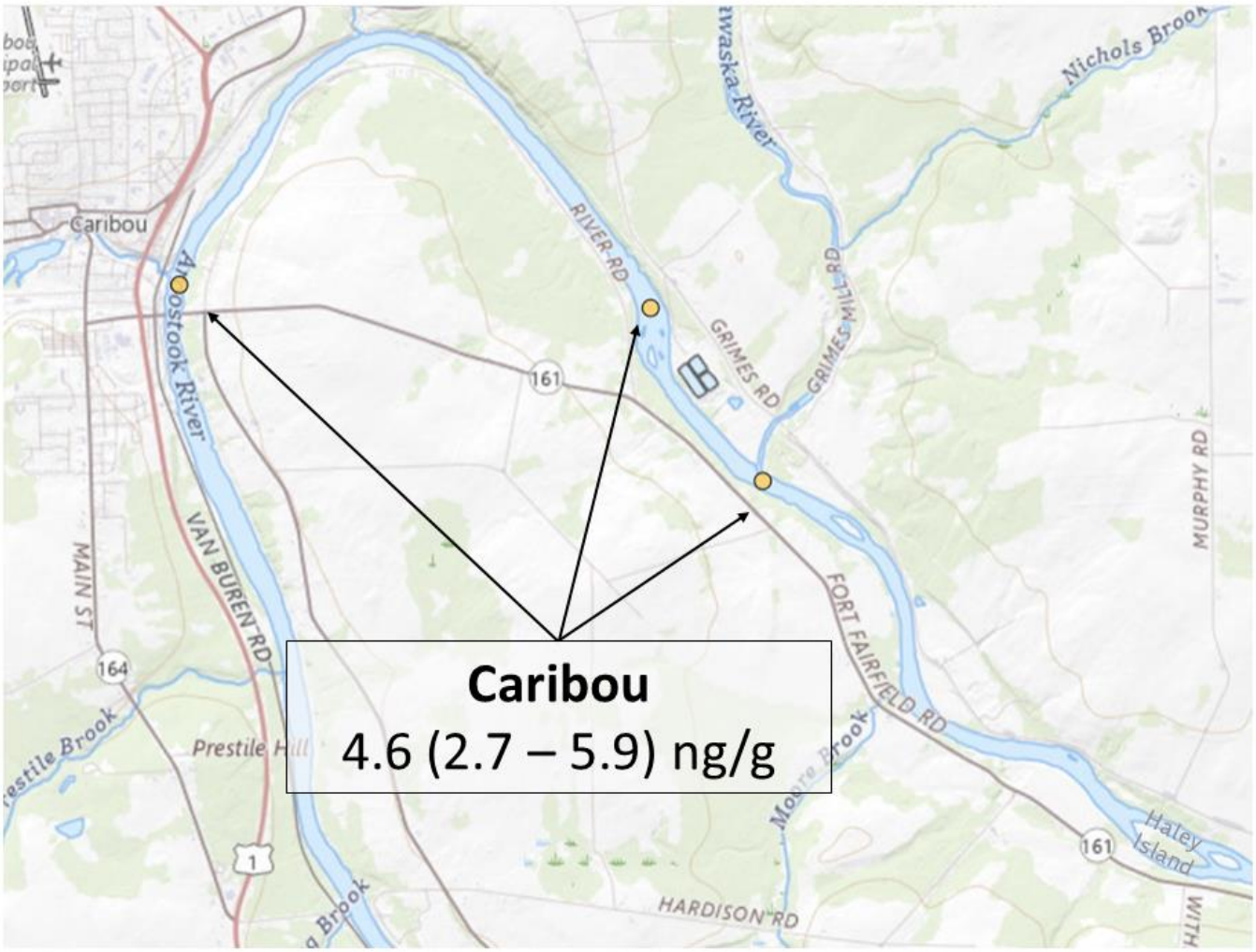


Figure 2. Fish tissue PFOS concentrations in Aroostook River in Caribou. The bar corresponds to the mean PFOS tissue concentration in brook trout for the Aroostook River in Caribou. The cap of the error bar corresponds to the upper confidence limit on the mean.

Justification: Between 2015 and 2023 a total of three single brook trout and 12 five-fish composite brook trout samples were collected along the Aroostook River from Oxbow Plantation to Fort Fairfield. PFOS levels in fish tissue are low (i.e., <3.5 ng/g) at Presque Isle and upstream. PFOS levels in fish tissue become elevated above 3.5 ng/g at Caribou. A total of three single brook trout and six five-fish composite brook trout samples have been collected from the Aroostook River in Caribou (Map 2). PFOS concentrations in these brook trout range from 2.7 to 5.9 ng/g, with a mean concentration, weighted by the number of fish per composite, of 4.6 ng/g. The upper confidence limit on the mean is 5.9 ng/g, which corresponds to a consumption rate of no more than two meals per month (Figure 2).

The nearest downstream samples from Caribou were collected in Fort Fairfield near where Route 1A crosses the Aroostook River. Two five-fish composite brook trout samples were collected from Fort Fairfield with PFOS concentrations of 2.2 and 4.0 ng/g. Given that the mean PFOS concentrations of these two composites was 3.1 ng/g, which is slightly less than the one meal per week FTAL of 3.5 ng/g, the downstream boundary for the advisory was set upstream of Fort Fairfield. Haley Island was selected as the downstream boundary because it is between where the Caribou and Fort Fairfield brook trout samples were collected and is an easily recognizable river feature.

Map 2. Approximate location of fish sampling for PFOS from Aroostook River in Caribou with mean and range of PFOS concentrations in brook trout at each location sampled.



C. Kenduskeag Stream – Corinth to Bangor

Area: Kenduskeag Stream from the Robyville Bridge to the Penobscot River.

Advisory: Consume no more than one meal per month of smallmouth bass.

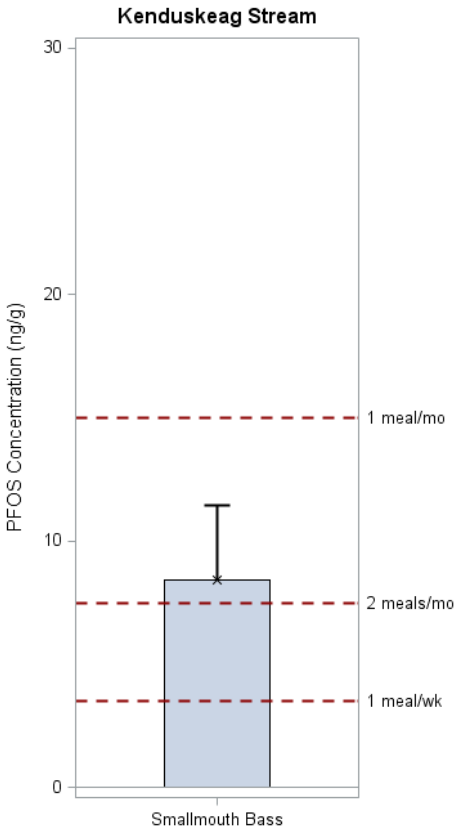
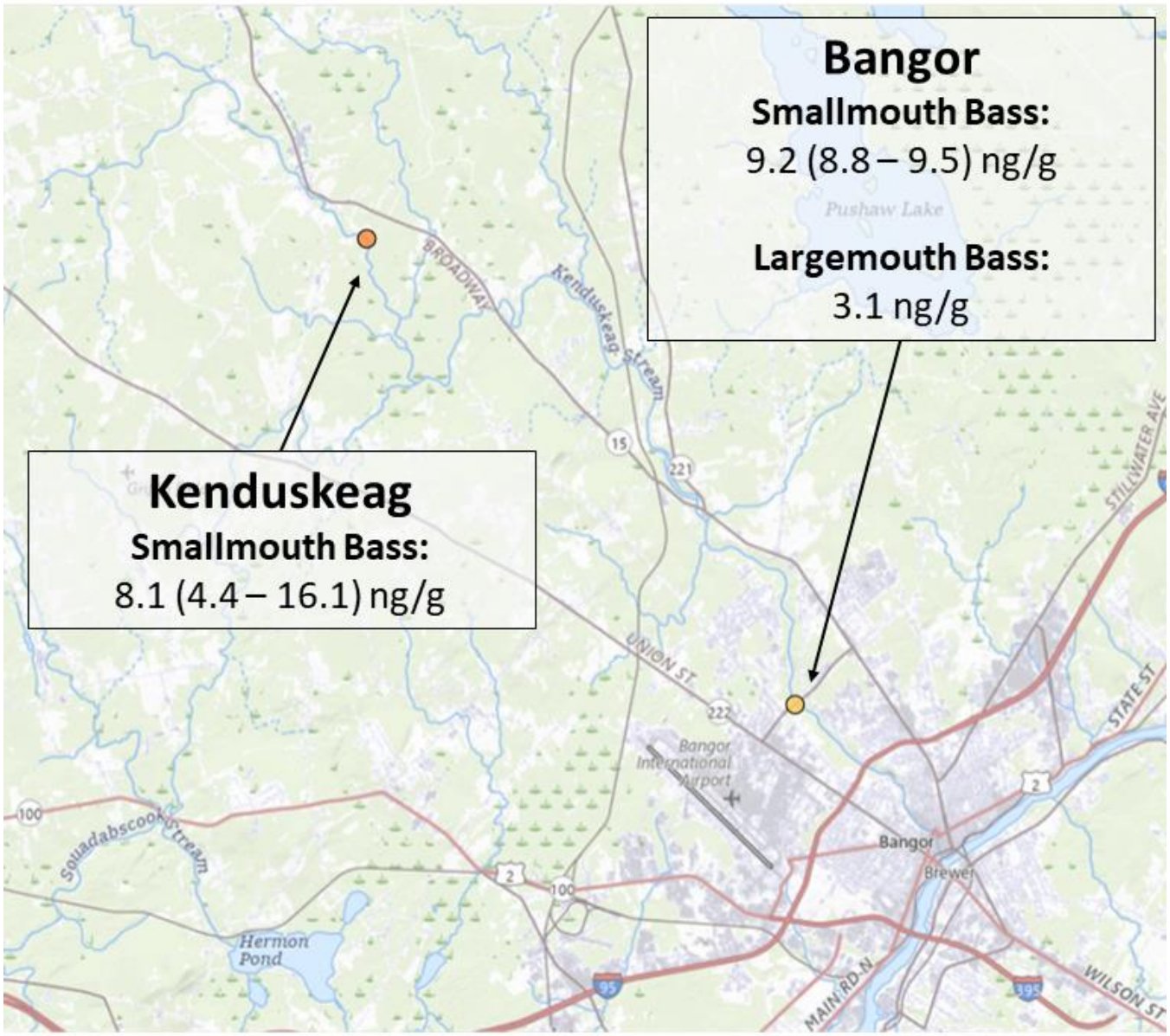


Figure 3. Fish tissue PFOS concentrations in Kenduskeag Stream from Corinth to Bangor. The bar corresponds to the mean PFOS tissue concentration in smallmouth bass. The cap of the error bar corresponds to the upper confidence limit on the mean.

Justification: In 2020 and 2023 a total of five five-fish composite smallmouth bass samples were collected from the Kenduskeag Stream in Kenduskeag, and in 2023 two five-fish composite smallmouth bass and one five-fish composite largemouth bass sample were collected from the Kenduskeag Stream in Bangor (Map 3). The smallmouth bass samples from Kenduskeag had PFOS concentrations ranging from 4.4 to 16.1 ng/g with a mean concentration of 8.1 ng/g. The two smallmouth bass samples from Bangor had PFOS concentrations of 8.8 and 9.5 ng/g. The largemouth bass sample from Bangor had a PFOS concentration of 3.1 ng/g, which is below the one meal per week FTAL of 3.4 ng/g (data not shown).

Given the overlapping concentration ranges of the smallmouth bass samples from Kenduskeag and Bangor, the data were combined for calculation of summary statistics. For the smallmouth bass in the Kenduskeag Stream between Kenduskeag and Bangor, the mean PFOS concentration was 8.4 ng/g with an upper confidence limit on the mean of 11.5 ng/g (Figure 3). The upper confidence limit of 11.5 ng/g corresponds to a consumption rate of no more than one meal per month. The advisory begins at the Robyville Bridge, which is where the furthest upstream smallmouth bass sample was collected, and ends at the confluence of the Kenduskeag Stream and the Penobscot River.

Map 3. Approximate location of fish sampling for PFOS from Kenduskeag Stream from Corinth to Bangor with mean and range of PFOS concentrations in each species sampled.



D. Kennebec River - Fairfield

Area: Kennebec River from the Carrabassett Stream just North of Route 23 to the Town Farm Brook inlet in Sidney.

Advisory: For the general population, consume no more than nine meals per year of smallmouth bass and no more than five meals per year of black crappie.

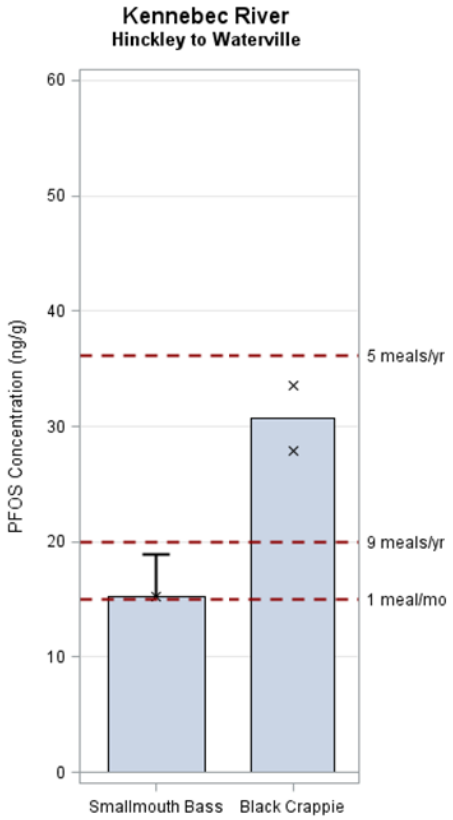


Figure 4. Fish tissue PFOS concentrations in the Kennebec River from Hinckley to Waterville. The bar corresponds to the mean PFOS tissue concentration for each species. The Xs correspond to the PFOS concentration of each composite sample. The cap of the error bar corresponds to the upper confidence limit on the mean.

Justification: In 2022, a fish consumption advisory of no more than nine meals per year of smallmouth bass was issued in the Kennebec River from the Carrabassett Stream to the Lockwood Dam in Waterville. The upstream and downstream boundaries for the advisory were based on lower PFOS levels in smallmouth bass at Skowhegan and Sidney, respectively. In 2023, additional smallmouth bass samples were collected directly above and below the upstream and downstream boundaries for the existing advisory to help determine whether the advisory needed to be extended in either direction. Additionally, sampling within the advisory area was extended to black crappie.

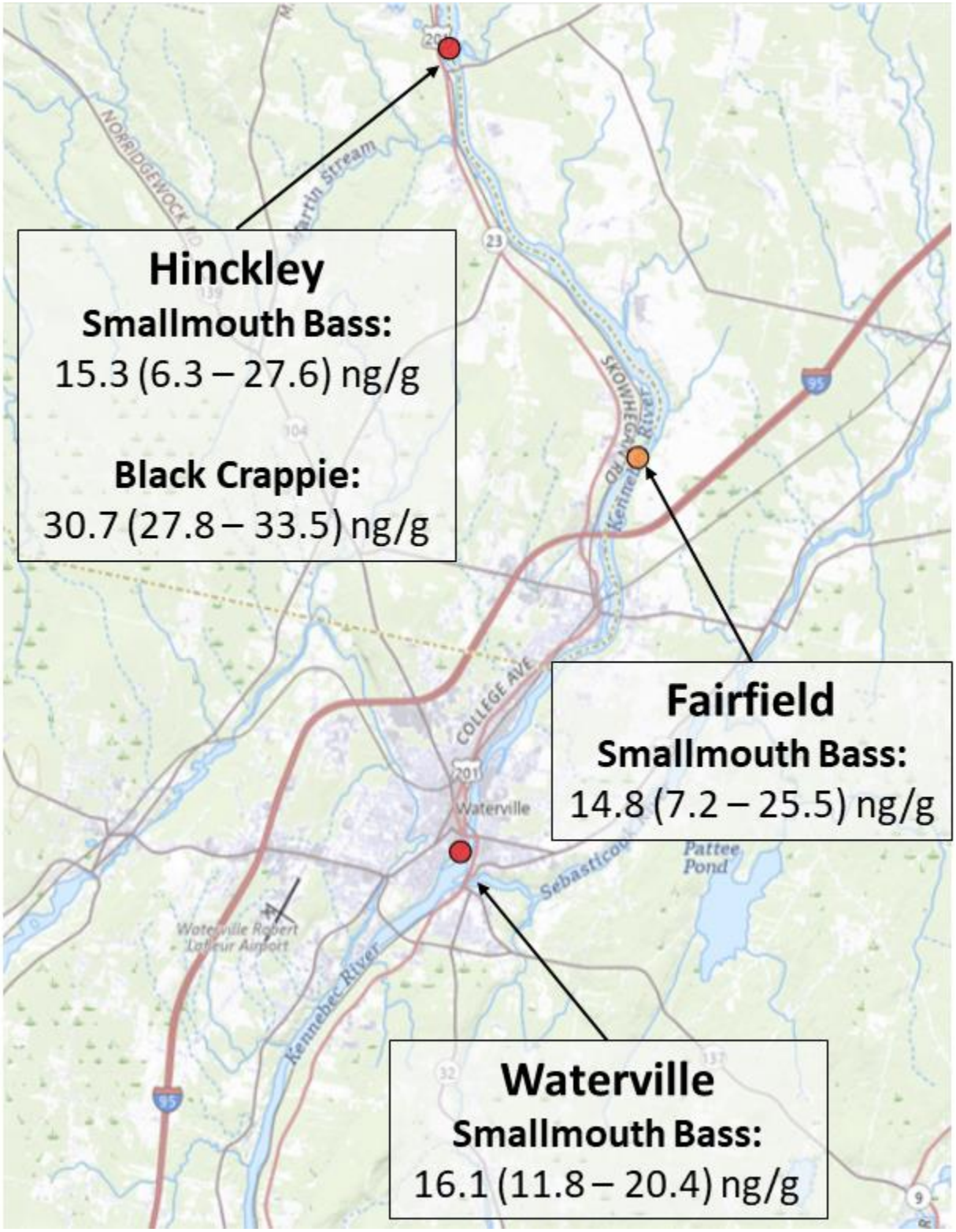
Two five-fish composite smallmouth bass samples were collected at Hinckley above the upstream boundary for the existing advisory. The PFOS concentrations in these two smallmouth bass composite samples were 2.4 and 6.3 ng/g. The maximum PFOS concentration in these two smallmouth bass composite samples of 6.3 ng/g corresponds to a consumption rate of no more than two meals per month (24 meals per year), which falls within the existing 12 to 24 meals per year advisory on this upstream section of the Kennebec due to the historical presence of PCBs and dioxins. Thus, it was determined that the upstream boundary of the existing advisory did not need to be extended.

Two five-fish composite smallmouth bass samples were collected below the Lockwood Dam in Waterville below the downstream boundary for the existing advisory (Map 4). The PFOS concentrations in these two smallmouth bass composite samples were 11.8 and 20.4 ng/g. The PFOS concentrations are within the range of PFOS results from smallmouth bass collected above the Lockwood Dam (6.3 to 27.6 ng/g). Therefore, the new additional smallmouth bass samples were combined with the prior data from Hinckley to the Lockwood Dam for calculating summary statistics for an extended advisory. The mean PFOS concentration in smallmouth bass from Hinckley through Waterville was 15.2 ng/g with an upper confidence limit on the mean of 18.9 ng/g. The upper confidence limit of 18.9 ng/g corresponds to a consumption rate of no more than nine meals per year (Figure 4), resulting in an extension of the

previous advisory through Waterville. In 2019, two five-fish composite smallmouth bass samples were collected from the Kennebec River in Sidney that had PFOS concentrations of 6.2 and 7.3 ng/g. These PFOS concentrations correspond to a consumption rate of roughly two meals per month, which is less restrictive than the existing advisory on the Kennebec River due to the presence of PCBs. Given these lower concentrations in Sidney, the Town Farm Brook inlet in Sidney just upstream of where the Sidney smallmouth bass samples were collected will serve as the downstream boundary for the advisory.

In 2023, black crappie were sampled for the first time from the Kennebec River. Two five-fish composite black crappie samples were collected at Hinckley. The PFOS concentrations in these two black crappie composite samples were 27.8 and 33.5 ng/g. Given the limited data on black crappie, the maximum PFOS concentration of 33.5 ng/g was used as a conservative estimate of fish tissue concentrations. This corresponds to a consumption rate of no more than five meals per year. In the Kennebec River and several other waterbodies throughout the state, black crappie tend to have higher PFOS concentrations in tissue than other species such as smallmouth bass. Thus, in the absence of additional downstream black crappie samples, the advisory will cover the same stretch of river as the smallmouth bass advisory.

Map 4. Approximate location of fish sampling for PFOS from Kennebec River from Hinckley to Waterville with mean and range of PFOS concentrations in each species sampled.



E. Durepo Pond and Limestone Stream – Limestone to Fort Fairfield

Area: All of Durepo Pond and Limestone Stream.

Advisory: Consume no more than four meals per year of brook trout and Do Not Eat smallmouth bass.

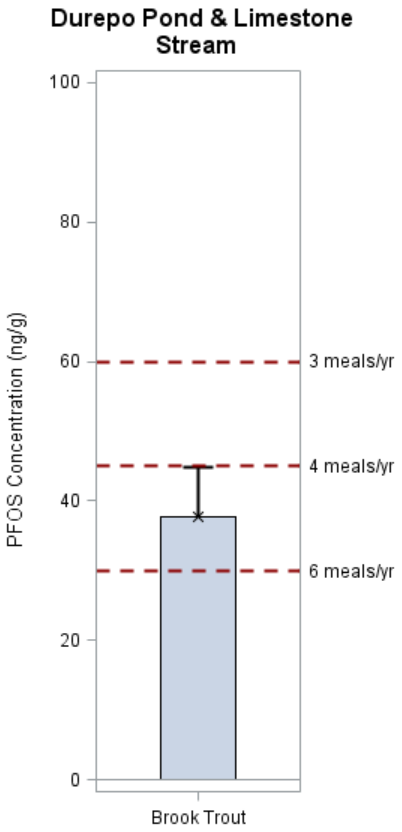
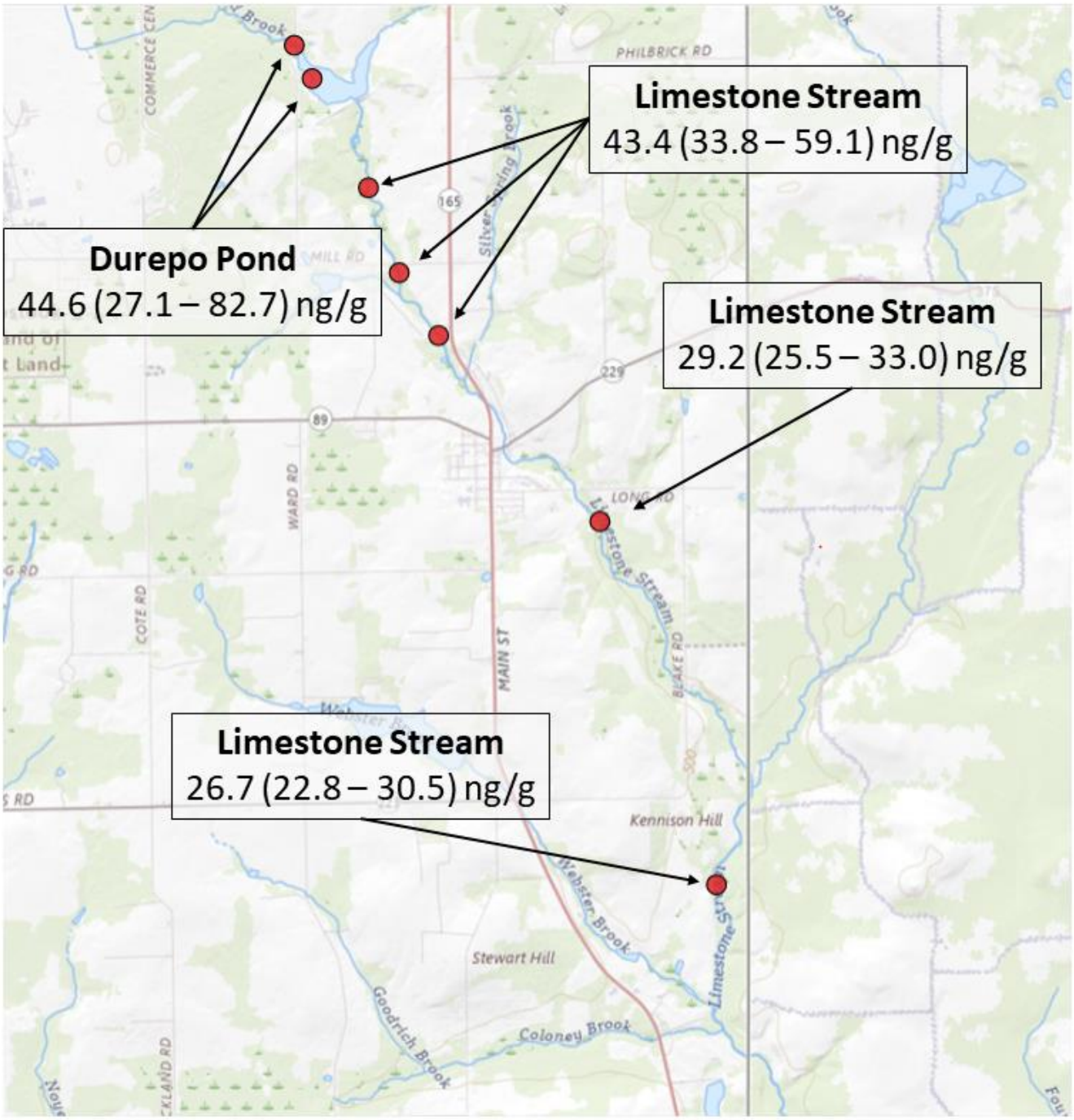


Figure 5. Fish tissue PFOS concentrations in Durepo Pond and Limestone Stream from Limestone to Fort Fairfield. The Bar corresponds to the mean PFOS tissue concentration in brook trout, with the cap of the error bar corresponding to the upper confidence limit on the mean.

Justification: In 2023 a fish consumption advisory of no more than four meals per year of brook trout and a do not eat advisory for smallmouth bass was issued for all of Durepo Pond and Limestone Stream from Durepo Pond to the Canadian border. At the time there was no data available further downstream where Limestone Stream reenters the United States from Canada. During the summer of 2023, two additional five-fish composite brook trout samples were collected from Limestone Stream in Fort Fairfield after it reenters the United States to determine whether a further extension of the existing advisory was warranted (Map 5). The PFOS concentrations in these two brook trout samples were 22.8 and 30.5 ng/g. The concentration of these brook trout samples are generally within the same range as the samples collected from Durepo Pond and further upstream in Limestone Stream (25.5 to 82.7 ng/g). Therefore, the new additional brook trout samples were combined with the prior data from Durepo and Limestone Stream for calculating summary statistics as one waterbody. The mean brook trout PFOS concentration for Durepo Pond and all of Limestone Stream, weighted by the number of fish in each composite sample, was 37.6 ng/g with an upper confidence limit on the mean of 44.9 ng/g (Figure 5). Using the upper confidence limit on the mean as a conservative estimate for fish tissue PFOS concentrations results in a corresponding fish consumption advisory of no more than four meals per year.

Map 5. Approximate location of fish sampling for PFOS from Durepo Pond and Limestone Stream from Limestone to Fort Fairfield with mean and range of PFOS concentrations in brook trout.



F. Annabessacook Lake – Monmouth & Winthrop

Area: All of Annabessacook Lake.

Advisory: For the general population, consume no more than ten black crappie meals per year.

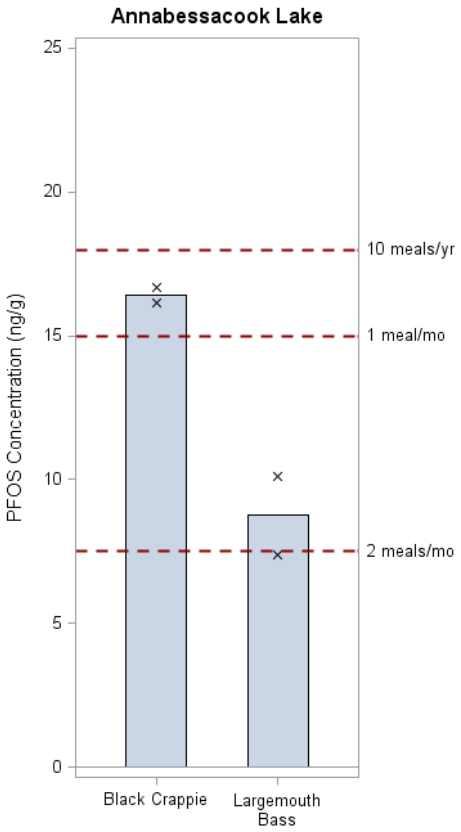


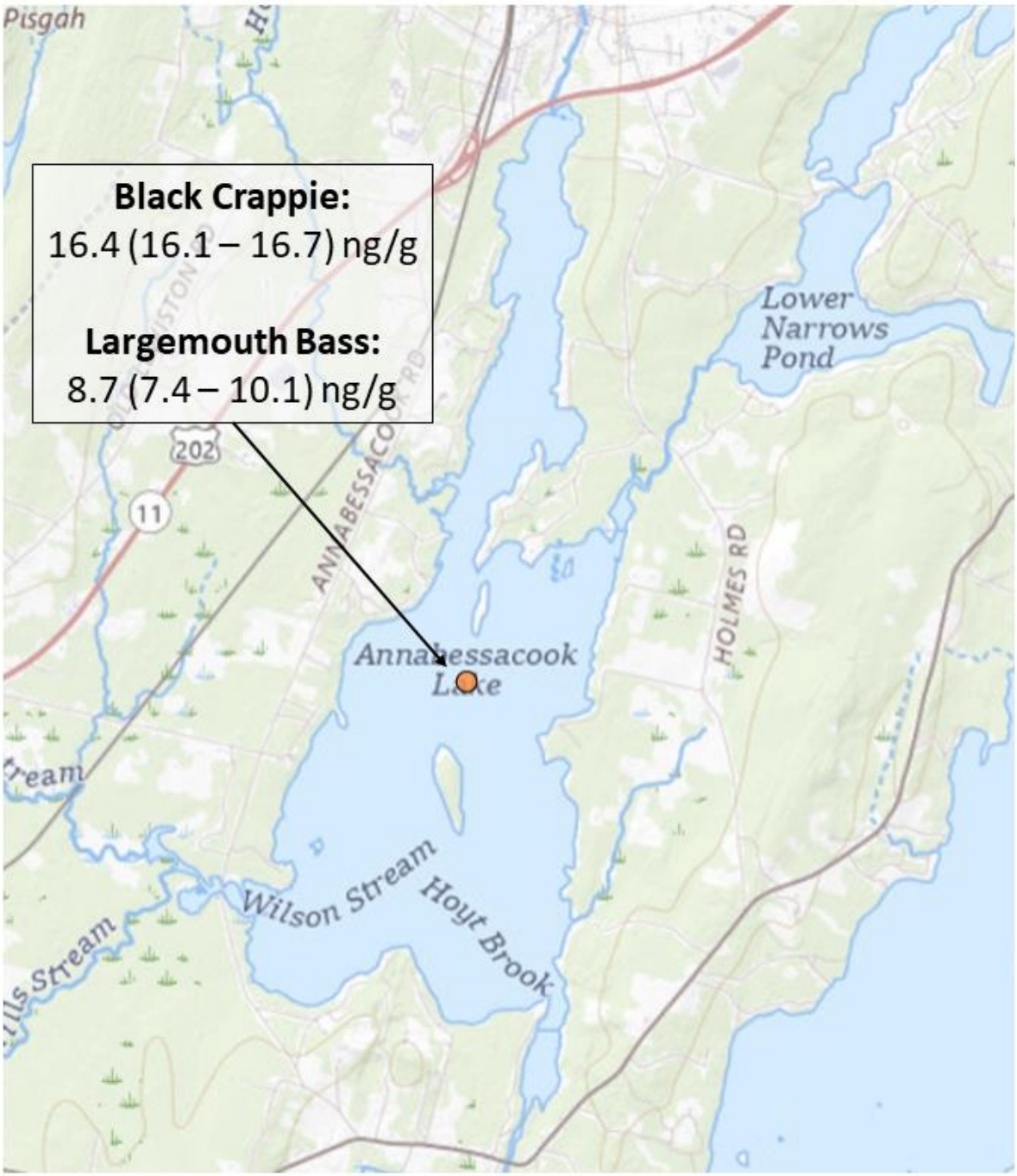
Figure 6. Fish tissue PFOS concentrations in Annabessacook Lake. The bars correspond to the mean PFOS tissue concentration for each species. The Xs correspond to the PFOS concentration in individual composite samples.

Justification: In 2023, a total of two five-fish composite black crappie samples and two five-fish composite largemouth bass samples were collected from Annabessacook Lake (Map 6). The PFOS concentrations in the two black crappie composite samples were 16.1 and 16.7 ng/g, and the PFOS concentrations in the largemouth bass samples were 7.4 and 10.1 ng/g (Figure 6).

Although Maine CDC has a preference for a total of five five-fish composites per species before issuing a fish consumption advisory, the PFOS concentrations in black crappie are high enough to warrant a consumption advisory of fewer than 12 meals per year. Maine CDC has consistently encountered waterbodies where black crappie have higher levels of PFOS relative to other fish species, which adds further confidence to the results in Annabesacook Lake. Black crappie are also a species targeted for consumption by anglers. Thus, Maine CDC felt it pertinent to issue a consumption advisory based on fewer results than the usual minimum of five five-fish composite samples.

Given the limited data, the maximum detected PFOS concentration in black crappie of 16.7 ng/g was used as a conservative estimate of fish tissue concentrations. This corresponds to a consumption rate of no more than ten meals per year. For largemouth bass, the PFOS concentrations for the two five-fish composites are much closer to two meals per month, which is the current limit for largemouth bass for the general population due to the presence of methylmercury in fish. For sensitive populations, the recommendation is to not eat largemouth bass. Therefore, at this time, the fish consumption advisory for Annabessacook Lake is for black crappie only, but additional data will be collected on largemouth bass and other species to determine if further consumption advice is warranted.

Map 6. Approximate location of fish sampling for PFOS from Annabessacook Lake in Monmouth and Winthrop with mean and range of PFOS concentrations in each species sampled.



G. Halfmoon Stream and Sandy Stream – Unity and Thorndike

Area: Halfmoon Stream from the Shikles Road in Thorndike to Sandy Stream and Sandy Stream from the Stevens Road in Unity to Unity Pond.

Advisory: Consume no more than five smallmouth bass meals per year. For the general population, consume no more than two brook trout meals per month from Halfmoon Stream.

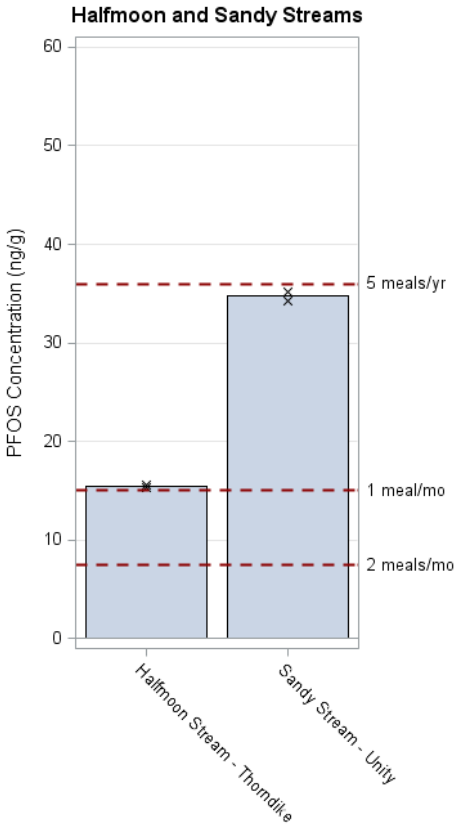


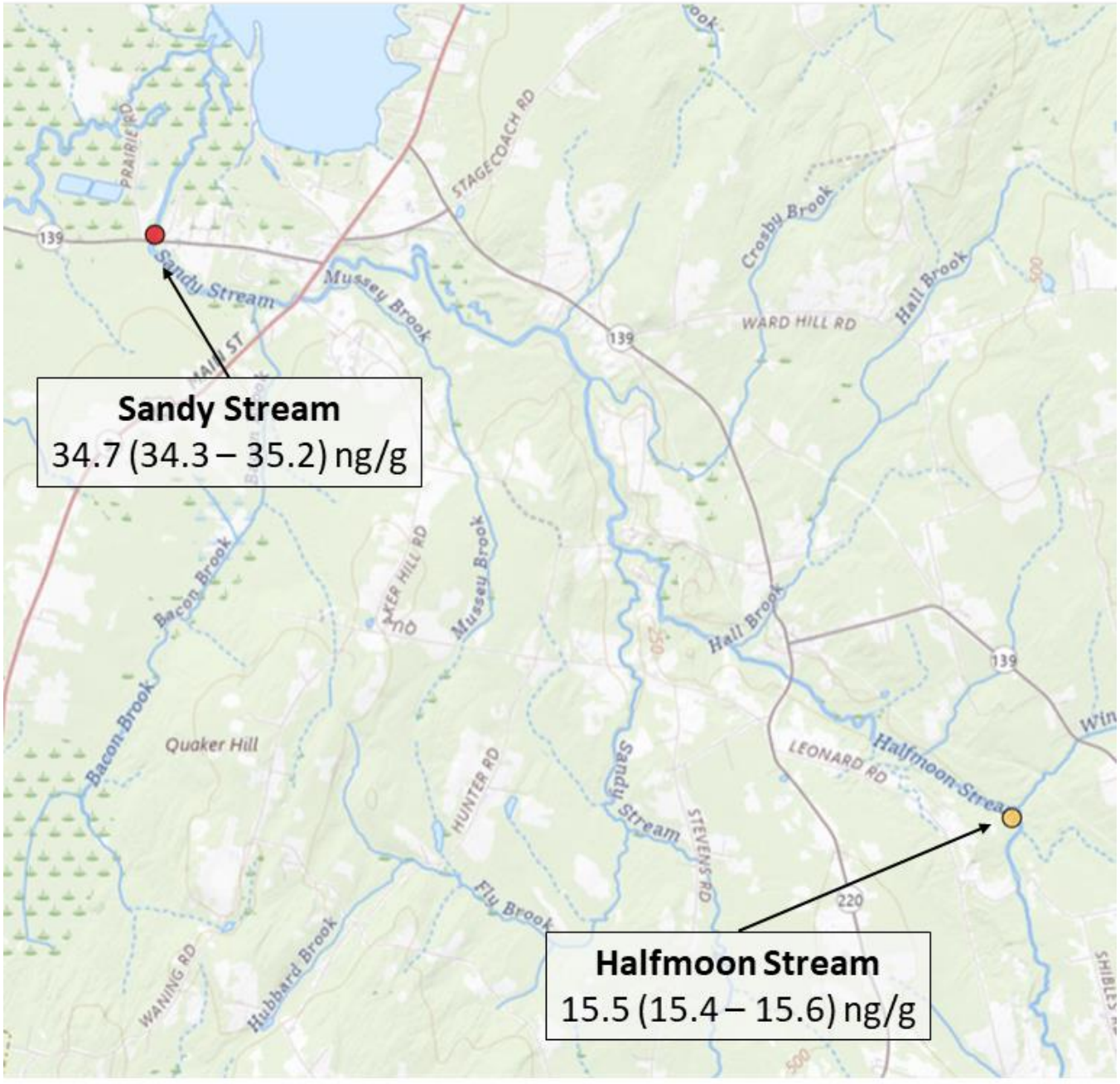
Figure 7. Fish tissue PFOS concentrations in Halfmoon and Sandy Streams in Thorndike and Unity. The bars correspond to the mean PFOS tissue concentration for smallmouth bass at each location specified. The Xs correspond to the PFOS concentration in individual composite samples.

Justification: In 2023, a fish consumption advisory was issued for brook trout in Halfmoon Stream from the Shikles Road in Thorndike to the Berry Road in Unity. Halfmoon Stream flows into Sandy Stream, but at the time of the 2023 advisory, there were no available data for Sandy Stream. In the summer of 2023, a total of two five-fish composite smallmouth bass samples were collected from Sandy Stream in Unity (Map 7). The PFOS concentration of these two smallmouth bass samples were 34.3 and 35.2 ng/g (Figure 7). Given the limited data, the maximum detected PFOS concentration of 35.2 ng/g was used as a conservative estimate of fish tissue concentrations. This corresponds to a consumption rate of no more than five meals per year.

Additionally, two five-fish composite smallmouth bass samples were collected from Halfmoon Stream in Thorndike (Map 7). In previous years, there were no smallmouth bass present in Halfmoon Stream. The PFOS concentration of the smallmouth bass samples from Halfmoon Stream were 15.4 and 15.6 ng/g (Figure 7).

The areas on Halfmoon Stream and Sandy Stream with smallmouth bass data are fairly limited, with the Sandy Stream data being between Route 139 and Unity Pond, and the Halfmoon Stream data being between the Shikels Road and Route 220 (Map 7). There is a stretch of Sandy Stream that flows through Unity where no fish samples have been collected. This stretch of Sandy Stream flows adjacent to several farm fields with elevated soil PFOS levels ranging from 82 to 350 ng/g. There are also several groundwater wells in the area that have PFOS levels ranging from 29 to greater than 4,000 ng/L. Given these potential sources of PFOS and the elevated PFOS concentrations in smallmouth bass collected further downstream, the upstream boundary for the advisory was set just upstream where the Stevens Road crosses Sandy Stream. To simplify the advisory, the more conservative five meals per year consumption guidance based on the downstream data in Sandy Stream will apply to both Sandy Stream and Halfmoon Stream. The brook trout advisory issued for Halfmoon Stream in 2023 will remain unchanged.

Map 7. Approximate location of fish sampling for PFOS from Halfmoon Stream and Sandy Stream in Thorndike and Unity with mean and range of PFOS concentrations in smallmouth bass.



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