# Maine CDC Scientific Brief: 2026 PFOS Fish Consumption Advisories

June 3, 2026

Maine Center for Disease Control and Prevention

Augusta, ME

Contact:

PFAS.MECDC@maine.gov

# Maine CDC Scientific Brief: 2026 PFOS Fish Consumption Advisory

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 for issuing a consumption advisory if threats to public health are identified (MRSA 22 § 1696-I). This document presents recent analyses and recommendations regarding freshwater fish consumption in Maine. Specifically, it describes new and expanded waterbody-specific advisories based on data collected during the 2025 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. 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 adverse health effects at a set fish consumption rate (e.g., one 8-ounce (oz) meal per week, one 8-oz meal per month). 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 calculated using the following equation:

$$FTAL = \frac{(RfD \times BW)}{FC} X\ RSC \qquad (Eq.1)$$

Where,

FTAL = Fish Tissue Action Level in nanograms per gram (ng/g)

RfD = Reference Dose in nanograms per kilogram body weight per day (ng/kg/day)

BW = Body Weight in kilograms (kg)

FC = Fish Consumption Rate in grams per day (g/day)

RSC = Relative Source Contribution (unitless)

The FTAL is a concentration of PFOS in fish tissue. The RfD is a toxicity value, or a measure of a daily dose of PFOS that results in minimal risk of any adverse health outcome. The body weight is an average adult body weight for the U.S. population. The fish consumption rate can be varied to compute an FTAL for different fish meal consumption frequencies, assuming a meal size of 8 oz, and expressed as a daily average consumption rate in grams per day (e.g., one 8-oz meal per week is 32.4 g/day, one 8-oz meal per month is 7.4 g/day). The RSC accounts for average background exposure to PFOS from sources

[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).

other than fish consumption in the U.S. population. A detailed description of the derivation of each input in the FTAL equation can be found in the 2022 Scientific Brief (Maine CDC 2022).

Maine CDC typically relies on toxicity values developed by federal agencies such as the U.S. EPA or the U.S. Agency for Toxic Substances and Disease Registry (ATSDR). In 2022, Maine CDC began using the 2021 ATSDR toxicity value of 2 ng/kg/day for PFOS (ATSDR 2021). Previously, Maine CDC had been using a U.S. EPA Office of Water toxicity value of 20 ng/kg/day derived in 2016. In March 2024, California's Office of Environmental Health Hazard Assessment (OEHHA) published a toxicity value of 0.6 ng/kg/day for PFOS in support of their Public Health Goals for drinking water (OEHHA 2024). On April 10, 2024, the U.S. EPA published an updated toxicity value for PFOS of 0.1 ng/kg/day used in the development of their finalized national drinking water standards (USEPA 2024). These toxicity values of 0.6 ng/kg/day and 0.1 ng/kg/day are based on human epidemiological data rather than laboratory animal data, which was the basis for the ATSDR 2021 toxicity value. Maine CDC is reviewing the toxicity values from U.S. EPA and OHHEA and their suitability for use in developing fish consumption advisories. In the interim, Maine CDC is continuing to rely on the ATSDR toxicity value of 2 ng/kg/day for PFOS. Maine CDC is not aware of any other states that are currently using the U.S. EPA 2024 PFOS toxicity value of 0.1 ng/kg/day for fish consumption advisories.

Using the ATSDR 2 ng/kg/day toxicity value (RfD), a body weight (BW) of 80 kg, and a relative source contribution (RSC) of 70% to account for average background exposure to PFOS in the U.S. population, Maine CDC calculates FTALs for PFOS that correspond to specified fish consumption (FC) rates expressed as 8-oz meal frequencies. Table 1 provides example meal frequences and the corresponding fish tissue PFOS concentrations.

**Table 1. Example fish tissue PFOS concentrations 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 |

To determine whether a fish consumption advisory is needed for a particular waterbody, the measured concentration of PFOS in fish tissue is compared to the FTALs. Maine CDC's preference is to estimate fish tissue concentrations for a waterbody based on five composite samples each consisting of five individual fish for a targeted species. In circumstances where contaminant levels are high enough to suggest the need for a very restrictive consumption advisory, Maine CDC will consider the development of advisories based on fewer than the desired five composite samples. To account for uncertainty in estimating fish tissue levels representative of an entire waterbody from the available data, Maine CDC uses U.S. EPA's ProUCL software to compute a statistical upper confidence limit (UCL)

on the estimated mean of the composite samples (EPA, 2022). Maine CDC compares the UCL of the mean to the maximum measured concentration and uses the lower of the two values as an upper-level estimate of fish tissue concentrations for a given waterbody.

Selection of appropriate indicator fish species for a given waterbody (e.g., brook trout, smallmouth bass, black crappie) can vary depending on the contaminant and fishery and are selected based on recommendations from the Maine Department of Environmental Protection (DEP) and the Maine Department of Inland Fisheries and Wildlife, as well as the fish species able to be collected in a specific waterbody. Fish tissue samples are primarily collected by the Maine DEP with funding from the Surface Water Ambient Toxics (SWAT) Monitoring Program.[2]

Maine CDC considers issuing a fish consumption advisory if fish cannot be safely consumed at a rate of at least one meal per week. Available data indicate that few anglers consume recreationally caught fish more frequently than 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. At lower consumption rates, and 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 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.

[2] https://www.maine.gov/dep/water/monitoring/toxics/swat/

[3] Current fish consumption advisories can be found under Maine CDC's Freshwater Fish Safe Eating Guidelines (https://www.maine.gov/dhhs/mecdc/healthy-living/health-and-safety/food-safety/fish-and-seafood)

**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 |

A meal is equivalent to an 8-ounce serving

## II. 2026 Recommended Waterbody-Specific Fish Consumption Advisories

Maine CDC is issuing updates to freshwater fish consumption advisories on two waterbodies in Maine in response to data on PFOS levels in fish collected in 2025. The new advisories come after testing of fish in these waterbodies found elevated levels of PFOS, 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 either all fish or certain fish species from these waterbodies.

The new and expanded advisories are summarized in Table 3 and apply to Sandy Stream in Freedom, Knox, and Unity; and Sebasticook River in Winslow. The fish tissue data and basis for the consumption advisory are described for each of these waterbodies in Section III of this report. A list of all current PFOS advisories can be found in section IV of this report.

**Table 3. Recommended waterbody-specific fish consumption advisories.**

| Area | Waterbody | Consumption Advisory[1] |
|---|---|---|
| Freedom, Knox, Unity | Sandy Stream from Route 137 in Freedom to Stevens Road in Unity. | Consume no more than 5 meals per year of any fish species. |
| | Sandy Stream from Stevens Road in Unity to the confluence with Halfmoon Stream. | Do Not Eat any fish species. |
| | Sandy Stream from the confluence with Halfmoon Stream to Unity Pond. | Consume no more than 5 meals per year of smallmouth bass. |
| Winslow | Sebasticook River from Benton Falls to the Kennebec River. | Consume no more than 1 meal per month of any fish species. |

[1] A meal is equivalent to an 8-ounce serving

## III. Basis for Waterbody-Specific Fish Consumption Advisories

### Sandy Stream – Unity, Knox, Freedom

Areas: Sandy Stream from Route 137 in Freedom to Stevens Road in Unity; from Stevens Road in Unity to the confluence with Halfmoon Stream; from the confluence with Halfmoon Stream to Unity Pond.

Advisory: From Route 137 in Freedom to Stevens Road in Unity, consume no more than five meals per year of any fish species. From Stevens Road in Unity to the confluence with Halfmoon Stream, Do Not Eat any fish species. From the confluence with Halfmoon Stream to Unity Pond, consume no more than five meals per year of smallmouth bass.

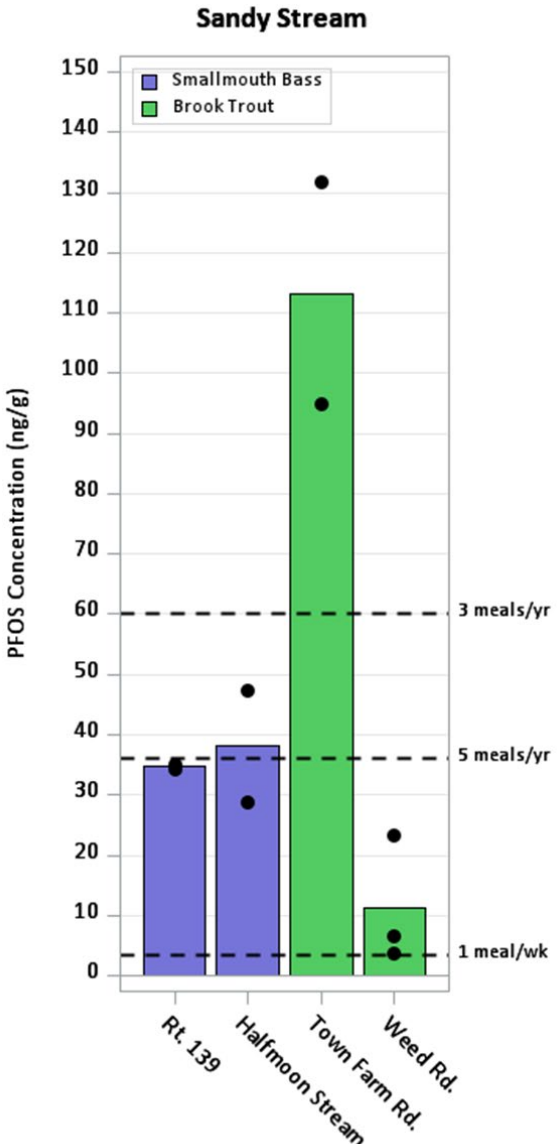



**Figure 1. Fish tissue PFOS concentrations in Sandy Stream in Unity, Knox, and Freedom.** The bar corresponds to the mean PFOS tissue concentration in each fish species sampled. The circles represent the concentration for individual composite samples.

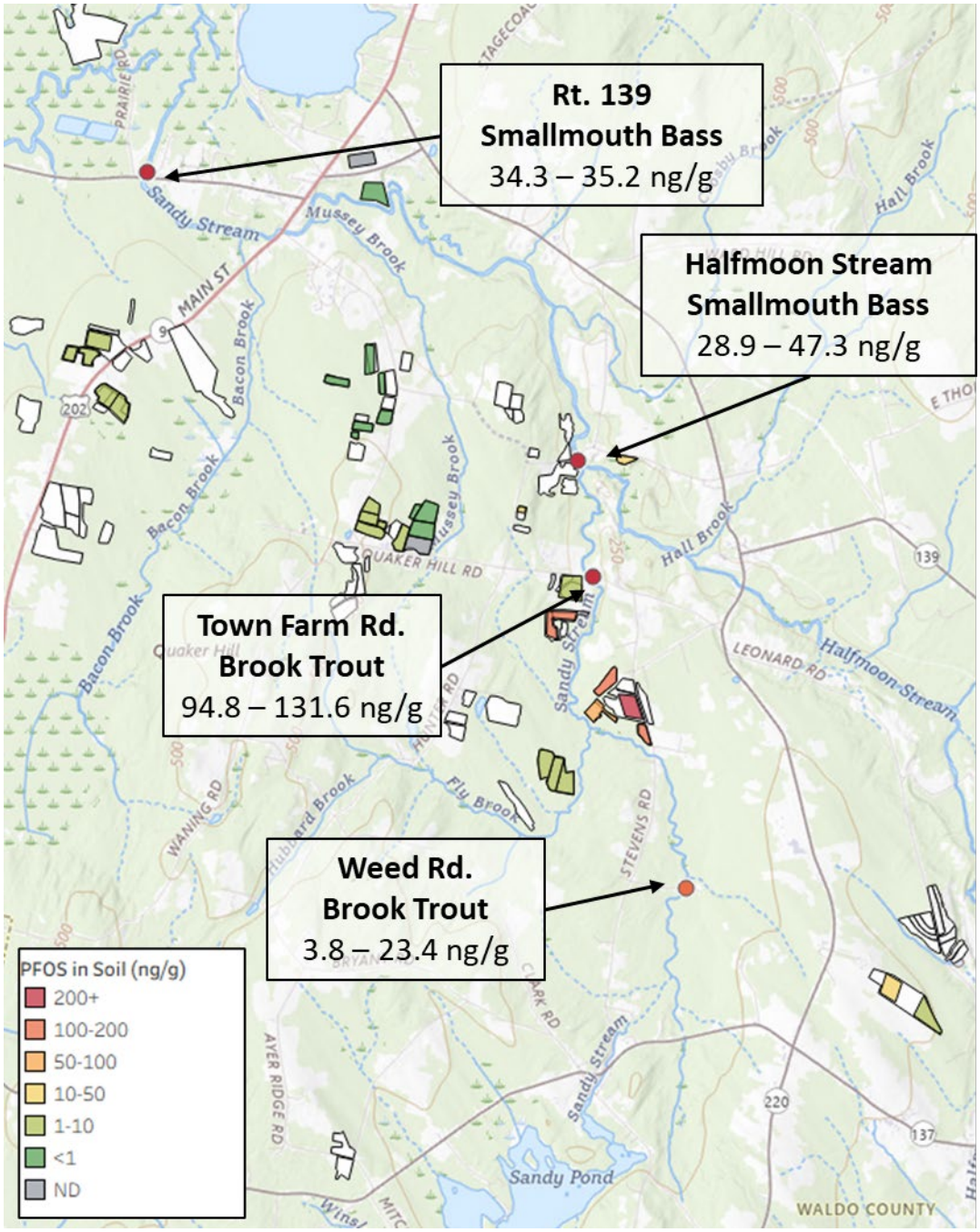
Justification: In 2024 a fish consumption advisory was issued for smallmouth bass in Sandy Stream from Stevens Road in Unity to Unity Pond. This advisory was based on two five-fish smallmouth bass composites collected by Maine DEP both upstream and downstream of the Route 139 crossing (Figure 1, Rt. 139). The upstream extent of the advisory was set at Stevens Road based on the knowledge that between Stevens Road and Route 139, Sandy Stream flows adjacent to several farm fields with elevated soil PFOS levels ranging from 82 to 350 ng/g (Map 1). In both 2024 and 2025, Maine DEP collected additional fish samples within and upstream of this stretch to confirm there were elevated fish tissue PFOS levels upstream of where the initial sampling took place.

In 2024, Maine DEP collected two five-fish smallmouth bass composites upstream of Route 202 around the confluence with Halfmoon Stream (Map 1). The PFOS concentrations in these smallmouth bass samples were 28.9 and 47.3 ng/g (Figure 1, Halfmoon Stream). These results were generally consistent with the smallmouth bass samples collected downstream near Route 139, which had PFOS concentrations of 34.3 and 35.2 ng/g (Figure 1, Rt. 139). In 2025, Maine DEP collected two five-fish brook trout composite samples further upstream in the waters adjacent to the farm fields with elevated soil PFOS levels (Map 1). The PFOS concentrations in these brook trout samples were 94.8 and 131.6 ng/g, both of which fall above the three meals per year Do Not Eat threshold (Figure 1, Town Farm Rd.). Given the significantly higher PFOS concentrations in

these fish tissue samples, Maine DEP conducted additional sampling further upstream in the fall of 2025 consisting of three five-fish brook trout composites collected both upstream and downstream of Weed Road (Map 1). The PFOS concentrations in these upstream brook trout samples ranged from 3.8 to 23.4 ng/g (Figure 1, Weed Rd). The maximum concentration in these three composite brook trout samples of 23.4 ng/g corresponds to a consumption rate of seven meals per year. Because these fish were sampled in the fall, these data may not be directly comparable to the other data on fish collected downstream in the spring and early summer months.

Given the elevated fish tissue PFOS concentrations in brook trout collected upstream of the confluence with Halfmoon Stream, Sandy Stream fish consumption advisories will be issued separately for three sections. The furthest downstream section extends from Unity Pond up to the confluence with Halfmoon Stream and will remain at no more than five meals per year of smallmouth bass. The second section extends from the confluence with Halfmoon Stream up to the Stevens Road crossing. For this section a Do Not Eat advisory is recommended for all fish species. The furthest upstream section extends from where Route 137 in Freedom crosses Sandy Stream to the Stevens Road crossing in Unity. The recommended advisory for this section of the stream is conservatively set at no more than five meals per year of any fish species both to be consistent with the lower reach and to account for the uncertainty in PFOS levels given the timing of sampling.

**Map 1.** Approximate locations of fish sampling for PFOS along Sandy Stream in Unity, Knox, and Freedom with range of PFOS concentrations in each species sampled. The polygons show locations of fields that were licensed for biosolids application. The color of the polygons corresponds to the concentration of PFOS detected in the soil of those fields, with white fields having no available soil data.



**Sebasticook River – Benton, Winslow**

Area: Sebasticook River from Benton Falls to the Kennebec River.

Advisory: Consume no more than one meal per month of any fish species.

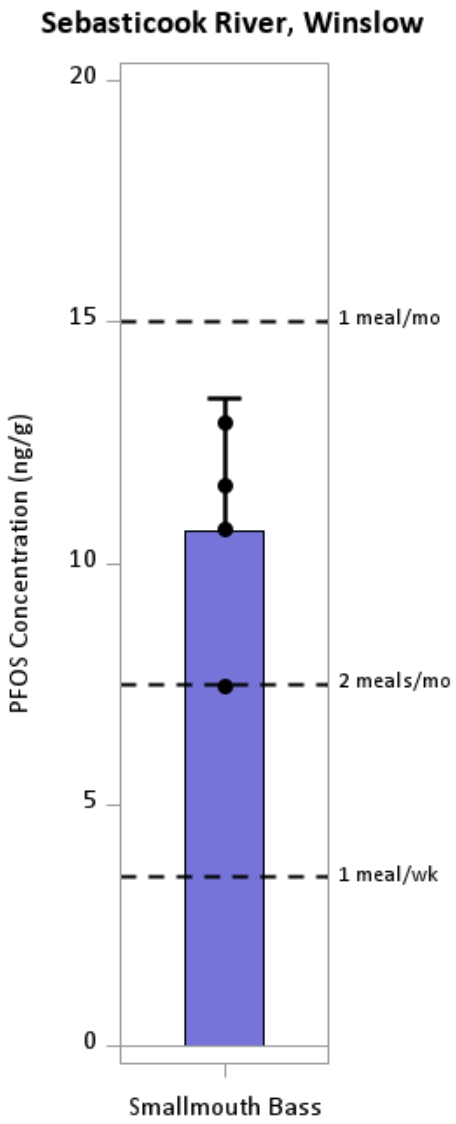


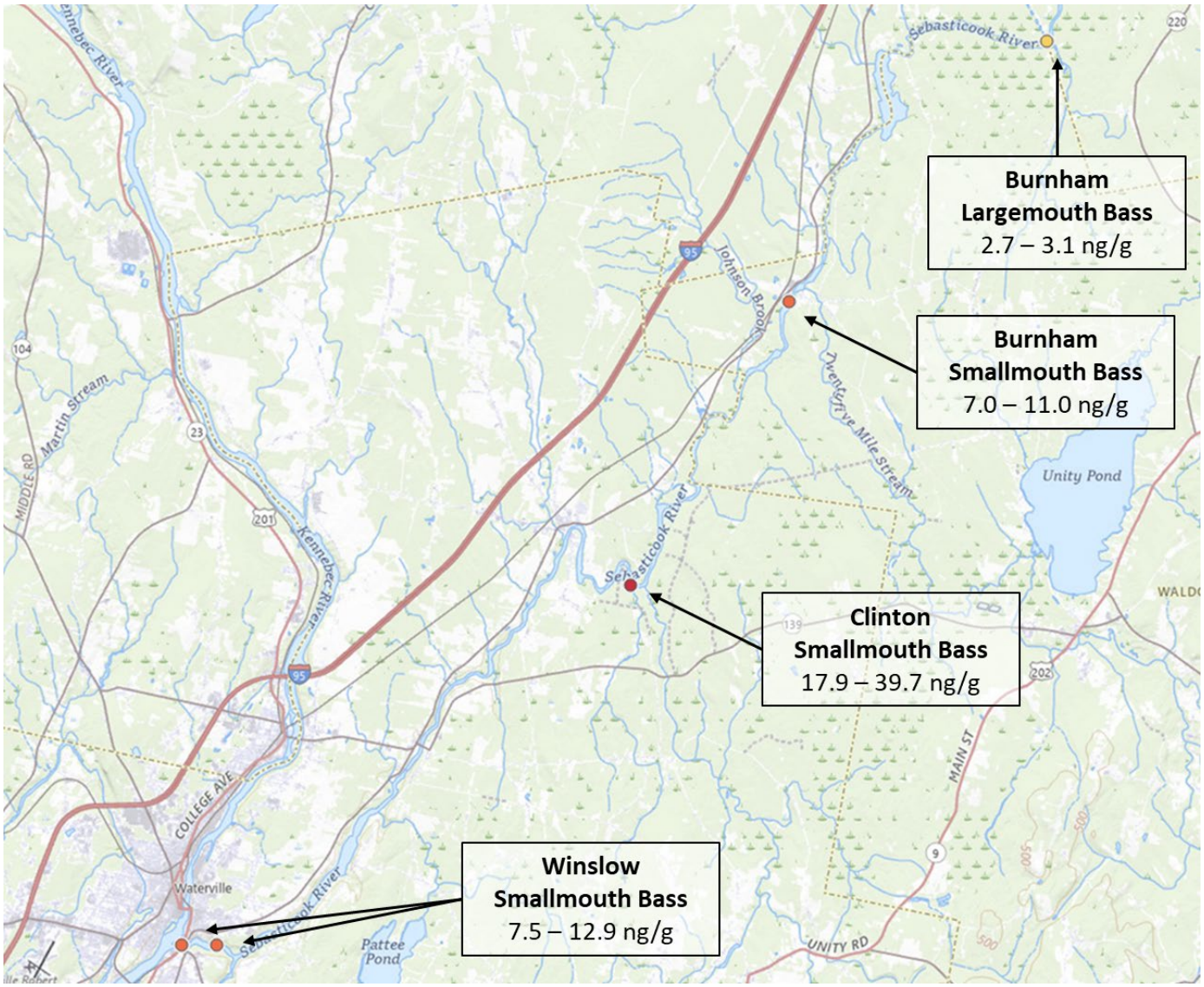

**Figure 2. Fish tissue PFOS concentrations in the Sebasticook River in Winslow.** The bar corresponds to the mean PFOS tissue concentration in smallmouth bass from the Sebasticook River in Winslow. The circles represent the concentration of each individual composite sample. The cap of the error bar corresponds to the upper confidence limit on the mean.

Justification: In 2024 a fish consumption advisory of no more than five meals per year of any fish species was placed on the Sebasticook River between the confluence with Twentyfive Mile Stream in Burnham to Benton Falls in Benton. The downstream boundary was set at Benton Falls because data from two five-fish smallmouth bass composites collected in 2021 downstream in Winslow showed lower PFOS levels of 7.5 and 10.7 ng/g. While these levels were still elevated, they were associated with a consumption advisory of about two meals per month, which is the existing advisory on the Sebasticook River due to historic PCB contamination and thus no PFOS specific advisory was issued.

Maine DEP collected two additional five-fish composite smallmouth bass samples downstream at Winslow in 2025. The PFOS concentrations in the two smallmouth bass composites were 11.6 and 12.9 ng/g. Taken together, the four five-fish composite samples collected in Winslow have a mean PFOS concentration of 10.7 ± 2.3 (standard deviation) ng/g with an upper confidence limit on the mean of 13.4 ng/g. The upper confidence limit on the mean is greater than the maximum concentration of 12.9 ng/g, though both correspond to a consumption rate of one meal per month.

Based on the elevated fish tissue in Winslow, an advisory of one meal per month is recommended for all fish species. This advisory extends from Benton Falls in Benton to the Kennebec River.

**Map 2.** Approximate locations of fish sampling for PFOS from the Sebasticook River in Burnham to Winslow with range of PFOS concentrations in each fish species sampled.



## IV. Summary of all current PFOS fish consumption advisories

Table 4 below is a summary table that includes all of the PFOS advisories issued to date. The table is organized alphabetically by town name. For flowing waterbodies (i.e., rivers and streams), town names are listed from upstream to downstream. For larger lakes and ponds that border multiple towns, town names are listed alphabetically.

**Table 4. List of all PFOS advisories issued to date.**

| Area | Waterbody | Consumption Advisory |
|---|---|---|
| Albion | Fifteenmile Stream from the Yorktown Brook inlet at the Hussey Road to Route 137/202 in Albion. | Consume no more than 2 meals per month of brook trout. |
| Albion | All of Lovejoy Pond. | Consume no more than 6 meals per year of any fish species. |
| Belgrade and Oakland | All of McGrath Pond and Salmon Lake (Ellis Pond). | Consume no more than 1 meal per month of any fish species. |
| Brunswick (Former Naval Air Station) | Mere (Mare) Brook from Coffin Ice Pond to the Western edge of the runway. | Consume no more than 6 meals per year of any fish species. |
| | Mere (Mare) Brook from the Eastern side of the runway to Liberty Crossing. | Do not eat any species of fish. |
| | All of Merriconeag Stream. | Do not eat any species of fish. |
| | All of Picnic Pond. | Do not eat any species of fish. |
| | All of Site 8 Stream. | Do not eat any species of fish. |
| Burnham to Winslow | Sebasticook River from the confluence with Twentyfive Mile Stream in Burnham to Benton Falls in Benton. | Consume no more than 5 meals per year of any fish species. |
| | Sebasticook River from Benton Falls in Benton to the Kennebec River. | Consume no more than 1 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 2 meals per month of brook trout. |

| Area | Waterbody | Consumption Advisory |
|---|---|---|
| China | All of China Lake. | Consume no more than 1 meal per month of any fish species. |
| Corinth to Bangor | Kenduskeag Stream from the Robyville covered bridge to the Penobscot River. | Consume no more than 1 meal per month of smallmouth bass. |
| Fairfield | Fish Brook, including any tributaries, from the headwaters to the confluence with Messalonskee Stream. | Do not eat any species of fish. |
| Fairfield | All of the Police Athletic League (PAL) Ponds. | Do not eat any species of fish. |
| 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 9 meals per year of smallmouth bass and no more than 5 meals per year of black crappie. |
| Freedom, Knox, Unity | Sandy Stream from Route 137 in Freedom to Stevens Road in Unity. | Consume no more than 5 meals per year of any fish species. |
| | Sandy Stream from Stevens Road in Unity to the confluence with Halfmoon Stream. | Do Not Eat any fish species. |
| | Sandy Stream from the confluence with Halfmoon Stream to Unity Pond. | Consume no more than 5 meals per year of smallmouth bass. |
| Gray | All of Collyer Brook. | Consume no more than 1 meal per month of brook trout. |
| Leeds and Wayne | All of Androscoggin Lake. | Consume no more than 1 meal per month of black crappie. |
| Limestone to Fort Fairfield | All of Durepo Pond and Limestone Stream. | Consume no more than 4 meals per year of brook trout and Do Not Eat smallmouth bass. |
| Monmouth and Winthrop | All of Annabessacook Lake. | Consume no more than 10 meals per year of any fish species. |
| Sanford and Alfred | The Mousam River from below the Number One Pond Dam to Outlet Dam on Estes Lake, including all of Estes Lake. | Consume no more than 3 meals per year of any fish species. |

| Area | Waterbody | Consumption Advisory |
|---|---|---|
| Sanford | All of Number One Pond. | Consume no more than 1 meal per month of largemouth bass. |
| Thorndike and Unity | Halfmoon Stream from the Shikles Road in Thorndike to the confluence with Sandy Stream in Unity. | Consume no more than 5 meals per year of smallmouth bass and no more than 2 meals per month of brook trout. |
| Unity | All of Unity Pond. | Consume no more than 6 meals per year of black crappie and no more than 12 meals per year for all other fish species. |
| Waterville and Oakland | Messalonskee Stream from the Rice Rips Dam in Oakland to the Kennebec River in Waterville. | Consume no more than 3 meals per year of any fish species. |
| Westbrook and Falmouth | The Presumpscot River from Saccarappa Falls in Westbrook to Presumpscot Falls in Falmouth. | Consume no more than 4 meals per year of any fish species. |

A meal is equivalent to an 8-ounce serving

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