STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

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Environmental Health and Drinking Water Branch

MEMO

TO: Pete Aarrestad, Division Director, Fisheries Division, CTDEEP

FROM: Sharee Rusnak, Epidemiologist 3, Toxic Hazards Health Assessment Program SR

THRU: Margaret Harvey, Epidemiologist 4, Toxic Hazards Health Assessment Program Supervisor MLH

CC: Jenna Nicol, Section Chief, Environmental Health Section

SUBJ: PFOS Levels in Fish Evaluation for the Hockanum River and its Lakes and Ponds in Connecticut

DATE: January 16, 2025

This Letter Health Consultation (LHC) was prepared to document our evaluation of per- and poly- fluoroalkyl substances (PFAS) fish tissue analysis data from the Hockanum River and its Lakes and Ponds (Hockanum River) in Connecticut. Fish tissue analysis data in this LHC was obtained from Connecticut Department of Energy and Environmental Protection (CTDEEP).

Statement of Issues

The Fisheries and the Remediation Divisions at CTDEEP requested that Connecticut Department of Public Health (CTDPH) evaluate PFAS fish tissue analysis data (collected in 2022) from the Hockanum River for the Connecticut fish consumption advisory program. This LHC documents the data evaluation process for the Hockanum River.

Background

Fish tissue sampling results from 2021 showed that PFOS levels in fish from the Hockanum River were very high. Average perfluorooctanesulfonic acid (PFOS) concentrations were 640.00 parts per billion (ppb) in fallfish and exceeded CTDPH consumption limits, resulting in CT DPH issuing a 'do not eat' advisory in April 2022 for the entire Hockanum River. In an effort to better characterize PFOS levels in fish tissue from the Hockanum River, a larger fish tissue sampling event took place in 2022 by CT DEEP Fisheries Division. CTDPH was asked by CTDEEP Inland Fisheries to evaluate PFAS data in fish tissue from this additional round of sampling from the Hockanum River in 2022. Fish tissue from 2022 from the Hockanum River are evaluated in this document.

Health Comparison Values and Fish Contaminant Levels

1. Health Comparison Values

In order to determine the number of fish meals that can be safely consumed on a weekly or bimonthly basis, CTDPH developed a Risk Based Consumption Protocol for PFOS in Fish (Appendix A, Table 1).[1] This protocol was developed using Connecticut's Reference Dose (RfD) of 0.0029 µg/kg/day for PFOS (CTDPH 2022), assumptions about fish meal size and an updated body weight. A more detailed explanation can be found in Rusnak (2023).

2. Fish Contaminant Levels

East Hartford Section of Hockanum River

In 2022, CTDEEP collected 81 individual fish (8 species-common carp, smallmouth bass, yellow perch, white sucker, bluegill, rock bass, redbreast sunfish and wild brown trout) from the East Hartford Section of the Hockanum River. For PFOS analysis, they created fish composites each comprised of 2-5 fish while sometimes analyzing individual fish. As shown in Table 1, average PFOS concentrations in fish tissue samples collected from the East Hartford Section of Hockanum River ranged from 6.89 ppb in white sucker to 36.2 ppb in smallmouth bass.

Table 1. PFOS Concentrations in Fish Caught in the Hockanum River in East Hartford, 2022

Fish Species	Number of Samples	Total Number of Individual Fish	Average PFOS Concentration (ppb)*

[1] It is important to note that Connecticut's fish consumption advisory cutoff concentrations for PFAS are based only on PFOS concentrations. However, 99% of PFAS found in fish tissue in Connecticut waterbodies is PFOS and PFOS is the most toxic to human health of the four PFAS compounds referenced in CTDPH (2022).

Common Carp	1	1	13.62
Smallmouth Bass	4	9	36.20
Yellow Perch	4	17	23.05
White Sucker	6	30	6.89
Bluegill	1	5	16.7
Rock Bass	3	10	28.4
Wild Brown Trout	2	4	18.84
Redbreast Sunfish	1	5	23.8

*Parts per billion

East Hartford Lake, East Hartford

In 2022, CTDEEP collected 13 fish (6 species- smallmouth bass, yellow perch, chain pickerel, bluegill, largemouth bass, and northern pike) from East Hartford Lake. For PFOS analysis, they created fish composites each made up of 2-3 fish while sometimes analyzing individual fish. As shown in Table 2, average PFOS concentrations in fish tissue samples collected from the East Hartford Lake ranged from 19.6 ppb in northern pike to 31.9 ppb in smallmouth bass.

Table 2. PFOS Concentrations in Fish Caught in the East Hartford Lake in East Hartford, 2022

Fish Species	Number of Samples	Total Number of Individual Fish	Average PFOS Concentration (ppb)*
Bluegill	1	1	20.5
Chain Pickeral	1	1	22.1
Largemouth Bass	2	4	22.25
Northern Pike	1	1	19.6
Smallmouth Bass	1	1	31.9
Yellow Perch	2	5	30.05

*Parts per billion

Manchester Section of Hockanum River

In 2022, CTDEEP collected 63 fish (5 species-smallmouth bass, largemouth bass, fallfish, white sucker, and wild brown trout) from the Manchester Section of the Hockanum River. For PFOS analysis, they created fish composites each made up of 4-5 fish while sometimes analyzing individual fish. As shown in Table 3, average

PFOS concentrations in fish tissue samples collected from the Manchester Section of Hockanum River ranged from 9.40 ppb in white sucker to 51.8 ppb in fallfish.

Table 3. PFOS Concentrations in Fish Caught in the Hockanum River in Manchester, 2022

Fish Species	Number of Samples	Total Number of Individual Fish	Average PFOS Concentration (ppb)*
Wild Brown Trout	4	19	17.96
White Sucker	6	30	9.40
Fallfish	1	5	51.8
Smallmouth Bass	2	8	32.32
Largemouth Bass	1	1	20.05

*Parts per billion

Union Pond, Manchester

In 2022, CTDEEP collected 45 fish (3 species-largemouth bass, white sucker, and common carp) from Union Pond in Manchester. For PFOS analysis, they created fish composites each made up of 4-5 fish while sometimes analyzing individual fish. As shown in Table 4, average PFOS concentrations in fish tissue samples collected from Union Pond in Manchester ranged from 25.42 ppb in white sucker to 74.68 ppb in largemouth bass.

Table 4. PFOS Concentrations in Fish Caught in Union Pond in Manchester, 2022

Fish Species	Number of Samples	Total Number of Individual Fish	Average PFOS Concentration (ppb)*
White Sucker	3	15	25.42
Largemouth Bass	4	15	74.68
Common Carp	3	15	48.33

*Parts per billion

Vernon Section of Hockanum River

In 2022, CTDEEP collected 117 fish (7 species-smallmouth bass, fallfish, white sucker, wild brown trout, largemouth bass, American eel, and rock bass) from the Vernon Section of the Hockanum River. For PFOS analysis, they created fish composites each made up of 2-5 fish while sometimes analyzing individual fish. As

shown in Table 5, average PFOS concentrations in fish tissue samples collected from the Vernon Section of Hockanum River ranged from 16.2 ppb in white sucker to 71.04 ppb in smallmouth bass.

Table 5. PFOS Concentrations in Fish Caught in the Hockanum River in Vernon, 2022

Fish Species	Number of Samples	Total Number of Individual Fish	Average PFOS Concentration (ppb)*
Wild Brown Trout	2	10	61.69
Smallmouth Bass	3	8	71.04
White Sucker	9	45	16.2
American Eel	4	20	52.18
Fallfish	3	15	35.53
Rock Bass	4	18	61.25
Largemouth Bass	1	1	66.01

*Parts per billion

Papermill Pond, Vernon

In 2022, CTDEEP collected 20 bluegills from Papermill Pond in Vernon. For PFOS analysis, they created fish composites each made up of 5 fish. As shown in Table 6, average PFOS concentrations in bluegill tissue samples collected from Papermill Pond in Vernon were 9.83 ppb.

Table 6. PFOS Concentrations in Fish Caught in Papermill Pond in Vernon, 2022

Fish Species	Number of Samples	Total Number of Individual Fish	Average PFOS Concentration (ppb)*
Bluegill	4	20	9.83

*Parts per billion

Ellington Section of the Hockanum River

In 2022, CTDEEP collected 20 fish (3 species- largemouth bass, white sucker, and wild brown trout) from the Ellington Section of the Hockanum River. For PFOS analysis, they created fish composites each made up of 3-5 fish while sometimes analyzing individual fish. As shown in Table 7, average PFOS concentrations in fish tissue samples collected from the Ellington Section of Hockanum River ranged from 3.61 ppb in largemouth bass to 13.00 ppb in wild brown trout.

Table 7. PFOS Concentrations in Fish Caught in the Hockanum River in Ellington, 2022

Fish Species	Number of Samples	Total Number of Individual Fish	Average PFOS Concentration (ppb)*
Wild Brown Trout	3	9	13.00
White Sucker	3	10	5.71

Largemouth Bass	1	1	3.61

*Parts per billion

Shenipsit Lake, Vernon, Ellington and Tolland

In 2022, CTDEEP collected 65 fish (5 species-pumpkinseed, bluegill, yellow perch, largemouth bass, and brown bullhead) from Shenipsit Lake in Vernon, Ellington and Tolland. For PFOA analysis, they created fish composites each made up of 5 fish. As shown in Table 8, average PFOS concentrations in fish tissue samples collected from Shenipsit Lake in Vernon, Ellington and Tolland ranged from 0.80 ppb in brown bullhead to 5.41 ppb in yellow perch.

Table 8. PFOS Concentrations in Fish Caught in Shenipsit Lake in Vernon, Ellington and Tolland, 2022

Fish Species	Number of Samples	Total Number of Individual Fish	Average PFOS Concentration (ppb)*
Pumpkinseed	3	15	3.81
Bluegill	3	15	4.99
Yellow Perch	3	15	5.41
Brown Bullhead	1	5	0.80
Largemouth Bass	3	15	5.18

*Parts per billion

Discussion

Exposure Pathway Analysis

To determine if community members are exposed to contaminated fish in the various portions of the Hockanum River and its lake and ponds, CTDPH evaluated the environmental and human components that lead to human exposure. CTDPH evaluated the fish tissue data and considered how people may be exposed to contaminants in the fish. The only possible complete pathway of exposure is via ingestion (eating the fish). An exposure pathway consists of five elements (ATSDR 2022):

1. A source of contamination;
2. Transport through an environmental medium;
3. A point of exposure;
4. A route of human exposure; and
5. A receptor population.

ATSDR categorizes an exposure pathway as either completed, potential, or eliminated. In a completed pathway, all five elements exist and indicate that exposure to a contaminant has occurred in the past, is occurring, or will occur in the future. In a potential exposure pathway, at least one of the five elements has not been confirmed, but it may exist. Exposure to a contaminant may have occurred in the past, may be occurring, or may occur in the future. An exposure pathway can be eliminated if at least one of the five elements is missing and will never be present (ATSDR 2022).

Environmental data showed that all fish species sampled and analyzed from the Hockanum River had detectable levels of PFOS. Individuals who catch and eat fish in these water bodies would likely be exposed to PFOS in the fish. In addition, their families and friends would also be exposed to PFOS if they eat the fish.

Public Health Implications for Adults and Children and Conclusion

When determining the public health implications of exposure to hazardous contaminants, CTDPH considers how people might come into contact with contaminants and compares contaminant concentrations with health protective levels. When contaminant levels exceed health-based comparison values, it first prompts CTDPH to consider a consumption advisory to reduce exposure. In this health consultation, CTDPH used a Risk Based Consumption Protocol for PFOS in Fish as comparison levels as described in the Health Contaminant Values and Fish Contaminant Levels section of this document.

Ingestion of several fish species from the Hockanum River mentioned above which contain PFOS is a complete exposure pathway and is evaluated in this health consultation, using this Risk Based Consumption Protocol for PFOS in Fish.

Appendix A, Table 1 lists 4 restriction level categories; 'A' being the least restrictive and 'D' being the most restrictive. Appendix A, Table 2 gives the updated fish consumption advisories for the Hockanum River. The new consumption limits are less restrictive than previous consumption limits except for Union Pond (Manchester) and the Vernon Section of the Hockanum River. In addition, as in 2021, there is no specific advisory for Shenipsit Lake in Tolland and Vernon. Fish species from Union Pond and the Vernon portion of the Hockanum River had the highest PFOS levels of all of the locations samples by CTDEEP in the 2022 sampling event. In general, bass (both smallmouth and largemouth) were the fish species with the highest PFOS levels in the Hockanum River. This is expected because they are predator fish. White suckers tended to be the species with the lowest PFOS concentrations in all of the waterbodies because they are bottom feeders. PFOS levels are generally expected to be higher in predator fish and lower in bottom feeders.

<u>East Hartford Section</u>

Environmental data indicated that PFOS levels in common carp, smallmouth bass, yellow perch, white sucker, bluegill, rock bass, wild brown trout, and redbreast sunfish in the East Hartford Section of the Hockanum River are well above concentrations where CTDPH issues a consumption advisory based on CTDPH's fish consumption limits (Appendix A, Table 1). The average PFOS levels for all of these species except for smallmouth bass are within the category C restriction level. Average PFOS levels in smallmouth bass exceed the cutoff limit for allowing consumption (Category D restriction level).

CTDPH has decided to issue the advisory of 'do not eat' for bass and '1 meal per month' for all other fish species for the East Hartford Section of the Hockanum River for the following reasons:

1. PFOS levels in these fish species are consistently within the Category C Restriction Level, except for smallmouth bass.
2. Even though they were not sampled, stocked trout are included in this advisory as a risk management decision when all fish species are included in an advisory to keep the message simpler and because it is difficult to distinguish between native and stocked trout. In addition, there is scientific evidence supporting PFOS uptake in stocked trout.
3. Largemouth bass are included in the 'do not eat' advisory along with smallmouth bass because of risk management considerations to keep the message simpler and because it is difficult distinguishing the two species from one another.

East Hartford Lake, East Hartford

Environmental data indicated that PFOS levels in bluegill, chain pickerel, largemouth bass, northern pike, smallmouth bass and yellow perch in East Hartford Lake, East Hartford are well above concentrations where CTDPH issues a consumption advisory based on CTDPH's fish consumption limits (Appendix A, Table 1). The average PFOS levels for all of these species except for smallmouth bass are within the category C restriction level. Average PFOS levels in smallmouth bass slightly exceed the cutoff limit for allowing consumption.

CTDPH has decided to issue the advisory of 'do not eat' for bass and '1 meal per month' for all other fish species for the East Hartford Lake Section of the Hockanum River for the following reasons:

1. PFOS levels in all fish species except for smallmouth bass are consistently within the Category C Restriction Level.
2. Even though they were not sampled, stocked trout are included in this advisory as a risk management decision when all fish species are included in an advisory to keep the message simpler and because it is difficult to distinguish between native and stocked trout. In addition, there is scientific evidence supporting PFOS uptake in stocked trout.
3. Largemouth bass are included in the 'do not eat' advisory along with smallmouth bass because of risk management considerations to keep the message simpler and because it is difficult distinguishing the two species from one another.

Manchester Section of the Hockanum River

Environmental data indicated that PFOS levels in wild brown trout, fallfish, white sucker and smallmouth bass in the Manchester Section of the Hockanum River are well above concentrations where CTDPH issues a consumption advisory based on CTDPH's fish consumption limits (Appendix A, Table 1). The average PFOS levels for all of these species except for wild brow trout, largemouth bass, and white sucker are within the Category C Restriction Level. Average PFOS levels in fallfish and smallmouth bass exceed the cutoff limit for allowing any consumption.

CTDPH has decided to issue the advisory of 'do not eat' for bass and '1 meal per month' for all other fish species for the Manchester portion of the Hockanum River from the East Hartford border to the outlet of Union Pond, Manchester. A 'do not eat' advisory for all fish species advisory will remain from and including Union

Pond, Manchester, east through the remainder of Manchester and through Vernon to the outlet of Shenipsit Lake, Tolland Avenue, Vernon the following reasons:

1. PFOS levels in all fish species except for smallmouth bass and fallfish are consistently within the Category C Restriction Level.
2. Even though fallfish have PFOS concentrations that exceed limits to allow any consumption, they are included in the Restriction Level C as a risk management decision in the Manchester section of the Hockanum River from the East Hartford border to the outlet of Union Pond, Manchester to keep the message simpler.
3. Even though they were not sampled, stocked trout are included in this advisory as a risk management decision when all fish species are included in an advisory to keep the message simpler and because it is difficult to distinguish between native and stocked trout. In addition, there is scientific evidence supporting PFOS uptake in stocked trout.
4. Largemouth bass are included in the 'do not eat' advisory along with smallmouth bass because of risk management considerations to keep the message simpler and because it is difficult distinguishing the two species from one another.
5. For risk management purposes to keep the message simpler, A 'do not eat' advisory for all fish species advisory will remain from and including Union Pond, Manchester, east through the remainder of Manchester and through Vernon to the outlet of Shenipsit Lake, Tolland Avenue, Vernon.

Union Pond in Manchester

Environmental data indicated that PFOS levels in white sucker, largemouth bass, and common carp in Union Pond, Manchester are well above concentrations where CTDPH issues a consumption advisory based on CTDPH's fish consumption limits (Appendix A, Table 1). The average PFOS level for white sucker is within the category C restriction level. Average PFOS levels in largemouth bass and common carp greatly exceed the cutoff limit for allowing consumption.

CTDPH has decided to keep the current consumption advisory of 'do not eat'-all fish species, for this waterbody in place for all fish species for the following reasons:

1. The current advisory of 'do not eat' for all fish species continues to be appropriate to protect public health.
2. Average PFOS levels in 2 out of 3 fish species sampled are 1.5 to 2.5 times higher than the levels that allow for any consumption of fish.
3. Even though white sucker have lower PFOS concentrations that would allow some consumption, they are included in this advisory as a risk management decision to keep the message simpler.
4. Even though they were not sampled, stocked trout are included in this advisory as a risk management decision when all fish species are included in an advisory to keep the message simpler and because it is difficult to distinguish between native and stocked trout. In addition, there is scientific evidence supporting PFOS uptake in stocked trout.

Vernon Section of the Hockanum River

Environmental data indicated that PFOS levels in wild brown trout, smallmouth bass, white sucker, American eel, fallfish, rock bass, and largemouth bass in the Vernon section of the Hockanum River are well above

concentrations where CTDPH issues a consumption advisory based on CTDPH's fish consumption limits (Appendix A, Table 1). Average PFOS levels in all fish species except for white sucker exceed the cutoff limit for allowing any consumption with some of the PFOS levels in fish exceeding the cutoff limit for any consumption by 2-2.5 times. The average PFOS level for white sucker is within the category C restriction level.

CTDPH has decided to keep the current consumption advisory of 'do not eat'-all fish species, in place for all fish species for the following reasons:

1. The current advisory of 'do not eat' for all fish species continues to be appropriate to protect public health.
2. Average PFOS levels in all but one fish species sampled exceed the cutoff limit that allows for any consumption with some PFOS concentrations exceeding the cutoff limit 2-2.5 times.
3. Previous sampling in the Vernon section of the Hockanum River in 2021 indicated high PFOS levels in all fish species.
4. Even though white suckers have PFOS concentrations that would allow some consumption, they are included in this advisory as a risk management decision to keep the message simpler.
5. Even though they were not sampled, stocked trout are included in this advisory as a risk management decision when all fish species are included in an advisory to keep the message simpler and because it is difficult to distinguish between native and stocked trout. In addition, there is scientific evidence supporting PFOS uptake in stocked trout.

Papermill Pond, Vernon

Environmental data indicated that PFOS levels in bluegill in Papermill Pond are well above concentrations where CTDPH issues a consumption advisory based on CTDPH's fish consumption limits (Appendix A, Table 1). The average PFOS levels in bluegill are within the category C restriction level.

CTDPH has decided to issue the advisory of 'do not eat' for all fish species for the Papermill Pond section of the Hockanum River for the following reasons:

1. PFOS levels in bluegill are consistently within the Category C Restriction Level.
2. Even though they were not sampled, stocked trout are included in this advisory as a risk management decision when all fish species are included in an advisory to keep the message simpler and because it is difficult to distinguish between native and stocked trout. In addition, there is scientific evidence supporting PFOS uptake in stocked trout.
3. Both small and largemouth bass are included in the advisory because of risk management considerations to keep the message simpler and because of the difficulty distinguishing the two species from one another.
4. The lack of data in fish species other than bluegill at this location prompts the need to make a risk management decision to include all species in order to be heath protective and to keep the message simpler.
5. Since Papermill Pond is located within the reaches of the Hockanum River in Vernon, for risk management purposes to keep the message simpler, it is included in the 'do not eat' advisory for the Hockanum River for all fish species from and including Union Pond, Manchester, east through the remainder of Manchester and through Vernon to the outlet of Shenipsit Lake, Tolland Avenue, Vernon.

Ellington Section of the Hockanum River

Environmental data indicated that PFOS levels in wild brown trout and white sucker in the Ellington Section of the Hockanum River are above concentrations where CTDPH issues a consumption advisory based on

CTDPH's fish consumption limits (Appendix A, Table 1). The average PFOS levels for wild brown trout are within the category C restriction level while the average PFOS levels for white sucker fall within the category B restriction level. Average PFOS levels in largemouth bass are below levels where an advisory would be necessary to protect public health.

CTDPH has decided to issue the advisory of 'do not eat' for bass and '1 meal per month' for all other fish species for the Ellington section of the Hockanum River for the following reasons:

1. PFOS levels in wild brown trout are within the Category C Restriction Level.
2. Even though white sucker have PFOS concentrations that fall within the Category B Restriction Level and largemouth bass have PFOS levels that are below cutoff limits where an advisory is necessary to protect public health, they are included in this advisory as a risk management decision to keep the message simpler.
3. Even though they were not sampled, stocked trout are included in this advisory as a risk management decision when all fish species are included in an advisory to keep the message simpler and because it is difficult to distinguish between native and stocked trout. In addition, there is scientific evidence supporting PFOS uptake in stocked trout.
4. Both small and largemouth bass are included in the 'do not eat' advisory because of risk management considerations to keep the message simpler and because of the difficulty distinguishing the two species from one another.

Shenipsit Lake, Tolland, Ellington and Vernon

Environmental data indicated that PFOS levels in bluegill, yellow perch, and largemouth bass in Shenipsit Lake, Tolland, Ellington and Vernon are slightly above concentrations where CTDPH issues a consumption advisory based on CTDPH's fish consumption limits (Appendix A, Table 1). PFOS levels in pumpkinseed and brown bullhead in Shenipsit Lake, Tolland, Ellington and Vernon are below concentrations where CTDPH issues a consumption advisory. The average PFOS levels in bluegill, yellow perch and largemouth bass are much lower than other areas of the Hockanum River and fall within the category B restriction level.

CTDPH has decided not to issue a consumption advisory for this waterbody for the following reasons:

1. While PFOS levels in yellow perch, bluegill, and largemouth bass within the Restriction Category Level B, there is already a statewide fish consumption advisory of one meal per week (general population, one meal per month (high risk population[2]) on all freshwater bodies in Connecticut based on mercury levels.
2. PFOS levels in pumpkinseed and brown bullhead in Shenipsit Lake, Tolland, Ellington and Vernon are below concentrations where a consumption advisory is necessary to protect public health.

Conclusion

Upon evaluating the most current PFOS fish tissue data from the Hockanum River using CTDPH's consumption limits for PFOS levels, CTDPH has relaxed the 'do not eat' advice for 4 locations as shown in Appendix A, Table 2. The current PFOS fish tissue data do not support loosening the existing 'do not eat' advisory in place from and including Union Pond (Manchester) east through the remainder of Manchester and through Vernon (including Papermill Pond and the Tankerhoosen River) to the outlet of Shenipsit Lake at Tolland Avenue in Vernon. Current fish tissue data continue to support the decision that no specific advisory is

[2] High Risk Population includes women planning on becoming pregnant within a year, women that are nursing, and children under 1 2 years old.

necessary for Shenipsit Lake, in Vernon, Ellington and Tolland. It is important to reiterate that there is already a statewide consumption advisory for all freshwater bodies in the state of Connecticut of '1 meal per week' for the general population and '1 meal per month' for high risk populations due to mercury contamination in fish. The consumption advisories for mercury and PFOS are necessary to protect public health while allowing for community members to benefit from the nutritional benefits of eating fish.

Recommendations

1. CTDEEP Inland Fisheries Division should continue to work with CTDPH to educate fishing populations about all of the Connecticut fish consumption advisories.

2. CTDEEP Inland Fisheries Division should continue to share fish contaminant data with CTDPH so that fish consumption advisories can be updated as necessary when new data are available.

3. CTDEEP and local health departments should work with CTDPH to post signs on the Hockanum River to notify the public of the modified advisories.

References

ATSDR 2022. Public Health Assessment Guidance Manual. Agency for Toxic Substance and Disease Registry, *Available at* https://www.atsdr.cdc.gov/pha-guidance/index.html. Updated on April 14, 2022.

CT DPH 2022. Connecticut Department of Public Health. Technical Support Document for FINAL Drinking Water Action Levels for per- and Polychlorinated Alkyl Substances (PFAS). July 15, 2022

Rusnak 2023. Memorandum Regarding PFOS in Fish Consumption Limits. Connecticut Department of Public Health, Environmental and Occupational Health Assessment Program. March 2023.

Appendix A

Table 1. CTDPH's Risk Based Consumption Protocol for PFOS in Fish (Rusnak 2023)

Restriction Category (Level)	# Meals	PFOS Concentration (ppb)
A	Unlimited	< 4
B	1 meal/week	≥ 4 to < 8
C	1 meal/month	≥ 8 to < 31
D	Do not eat	≥ 31

*Parts per billion

Table 2. Consumption Advisory History for Fish Caught in Several Sections of the Hockanum River, Connecticut

Waterbody	Species	Previous Consumption Recommendation (2022)	Updated Consumption Recommendation	Updated Advisory Category

East Hartford Section	All	Do Not Eat-Everyone	Do not eat Bass, All other species, 1 Meal Per Month-Everyone	D,C
East Hartford Lake	All	Do Not Eat-Everyone	Do not eat Bass, All other species, 1 Meal Per Month-Everyone	D,C
Manchester Section from the East Hartford border to the outlet of Union Pond, Manchester	All	Do Not Eat-Everyone	Do not eat Bass, All other species, 1 Meal Per Month-Everyone	D,C
Union Pond, Manchester Section to outlet of Shenipsit Lake, Tolland Avenue, Vernon (includes several riverine impoundments of Papermill Pond, including Pitney Park and Tankerhoosen River (upstream to dam at Main St., Vernon))	All	Do Not Eat-Everyone	No Change	D
Ellington Section	All	Do Not Eat-Everyone	Do not eat Bass, All other species, 1 Meal Per Month-Everyone	D,C
Shenipsit Lake, Ellington, Vernon and Tolland	All	No Specific Advisory	No Change	A

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