MEMORANDUM

TO: Maine Water Quality Standards Administrative Record File

FROM: Ralph Abele, Chief, Water Quality Branch

DATE: January 30, 2015

SUBJECT: Effects of Maine Fishing Regulations on Sustenance Fishing by Maine Tribes

I. INTRODUCTION

A. Tribal Fishing Rights and Sustenance Fishing

This memorandum addresses whether state imposed fishing limits in Maine would preclude Maine Tribes from taking fish for their individual sustenance. In this analysis, EPA has estimated the amount of fish that could reasonably be taken from inland Maine waters, consistent with state fishing regulations in terms of low-to-high fish yield, based on size variability for each species of fish. These fish yield results are compared to two different sustenance fish consumption levels of 286 grams/day and 514 grams/day for inland Tribes in Maine.[1] Both estimates are based on a 2,000 kcal/day Maine diet for average adults in tribal communities, reflecting "subsistence-traditional lifeways."[1] The fish consumption rate of 286 grams/day reflects a diet of inland communities without access to anadromous fish runs. The consumption rate of 514 grams/day reflects a diet of inland communities living on rivers with anadromous fish runs.[2]

B. Maine State Fishing Limits

Freshwater fish size and take ("daily bag" or possession) limits applicable under Maine State General Law are set by the Maine Department of Inland Fisheries and Wildlife ("IF&W"), and are imposed for purposes of natural resource conservation and management. The limits vary by fish species, waterbody type (lakes & ponds, or brooks, streams & rivers) and season of the year.[3]

Special rules that differ from General Law provisions are listed for individual waters. If there are no special length and/or bag limits listed within the Indian Territory waters, then the statewide General Law length and bag limits apply.

Special rules ("S-codes") further affect either fish length, daily take, and/or restrictions on the use of live bait versus lure only.[4] Waterbodies with special rules applied are listed by name under each county in Maine in two State lists (one for southern and eastern counties,

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[1] Harper, B., and D. Ranco, Wabanaki Traditional Cultural Lifeways Exposure Scenario, July 9, 2009 (Prepared for EPA in collaboration with the Maine Tribes).

[2] EPA has focused its analysis on inland waters because they represent the vast majority of waters in Indian lands.

[3] http://www.eregulations.com/maine/fishing/general-law-limit-information/

[4] http://www.eregulations.com/maine/fishing/s-codes-season-date-codes/

and one for northern and western counties).[5] (IF&W's E-regulations website also has additional special rules that apply to boundary waters[6] and public water supplies. Boundary waters between Maine and New Brunswick are included in the analyses below.)

Three general categories of fish regulated in Maine are:

- **Trout** (including Splake and Arctic Char),
- **Bass** (including Largemouth and Smallmouth), and
- **Other regulated fish**, specifically including Pickerel, Whitefish, Smelts, Northern Pike, Muskellunge, American Eel, Shad, Atlantic Salmon, Striped Bass, and Alewife.

Unregulated fish species are those that are not listed above in the regulations. Common species of unregulated fish in Maine include White Perch, Yellow Perch, Black Crappie, Brown Bullhead, and Cusk.

While EPA's analysis is largely focused on the state fishing regulations, EPA also reviewed the rules adopted by the Maine Indian Tribal-State Commission ("MITSC"), which affect certain waters within Indian Territory.[7] In addition, we note that Tribes may regulate any pond 10 acres or less within Indian Territory.

II. APPROACHES USED TO ANALYZE STATE FISHING LIMITS' IMPACTS ON SUSTENANCE FISHING

A. Fish Weight and Fish Consumption Yield Calculations

The initial analytical approach used a spreadsheet to compare and evaluate the impact of state fishing limits on various regulated species. This somewhat complex task was deemed necessary to account for differences in state limits depending on inland waterbody type, during various seasons of the year, as well as the need to compare the variety in fish yield results to two different tribal fish consumption rates which support sustenance fishing for tribal members. In general, state fishing limits on number of fish take allowed per day, and on minimum or maximum length of fish taken, were organized by two water resource categories (lakes & ponds, or brooks, streams & rivers), and by fish species. Seasonal fishing limits were translated into a fishing access rate in terms of days per year for each season/waterbody type/fish species combination. The following steps and assumptions were involved in calculating lower and upper seasonal fish yields in terms of grams per day. (To avoid confusion, fish length limits are described in terms of *minimum* and *maximum*; fish weights and yields are described in terms of *lower* and *upper*.)

The range of seasonal fish yields for each fish species was calculated using the following approach:

1. Lower Fish Weight:
   a. In cases where the Maine minimum length limit was set in fishing regulations, that value was converted from inches to centimeters and this length was put

[5] http://www.eregulations.com/maine/fishing/fishing-rules-southern-eastern-counties/ http://www.eregulations.com/maine/fishing/fishing-rules-northern-western-counties/
[6] http://www.eregulations.com/maine/fishing/boundary-waters-between-maine-new-brunswick/

into the Fishbase.org fish length/width calculator tool[7] to produce an estimated corresponding weight in grams.

b. In cases where there was no Maine regulation that specified a minimum length limit, values in either length or weight were taken from the *Fishes of Maine* guide[8] that specifies adult length or weight. In the case of anadromous fish, the value for when the fish return to freshwater spawning waters was used.

2. Upper Fish Weight:

a. In cases where a maximum length limit is also set in fishing regulations, that value was converted to centimeters and was put into the Fishbase.org fish length/width calculator tool to produce an estimated corresponding weight in grams.

b. In cases where there was no regulation that specified a maximum length limit, the maximum weight was calculated using the reference from the *Fishes of Maine* guide, which was available as either a maximum weight or length. When a maximum weight was available, this was used; when a maximum weight was unavailable, the maximum length from the reference was used in the Fishbase.org length/width calculator.

Note: Trophy fish weights were not used in maximum weight estimations; rather, weights that were characterized as "common", "typical", "not uncommon", "have been caught", or similar qualifiers were used. See *Fishes of Maine* guide for specific examples.

Note: In the case of Splake[9] and Shad[10], additional references to determine length or weight estimates were used to determine appropriate length/weight data. The data calculations for these species were done in the same manner as all other species.

3. Fish Filleted Weight Correction: Depending on the particular fish species, fish minimum and maximum weights were adjusted using one of the following three factors to convert whole fish weight to edible portions of each fish: 78% for smelt, 40% for landlocked salmon and Atlantic salmon, 30% for smallmouth bass and all other fish.[11]

4. Seasonal Filleted Lower and Upper Weight Calculations: The corrected filleted weights were used to calculate a seasonal take total in grams for each species. The season was determined by the time in days specified in the Maine fishing regulations for each species based on the waterbody type and location. For these

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[7] http://www.fishbase.org/search.php

[8] Maine Dept. of Inland Fisheries and Wildlife, Fishes of Maine, 2002. http://www.maine.gov/ifw/fishing/fishingGuide.html

[9] Michigan Dept. of Natural Resources Manual of Fisheries Survey Methods II, Chapter 17: Length- Weight Relationships, January 2000.

[10] University of Massachusetts Dept. of Biology, Connecticut River American Shad Webpage. http://www.bio.umass.edu/biology/conn.river/shad.html. Accessed on January 12, 2015.

[11] ChemRisk & HBRS, Inc., Consumption of Freshwater Fish by Maine Anglers, Revised July 24, 1992.

calculations, the season is represented by the number of days that the particular fishery is open to fishing. The daily bag limit was also applied in this calculation. [Seasonal Weight= (Filleted Weight) x (Daily Bag Limit) x (Seasonal Access Days)]

5. Seasonal Fish Yields for Lower and Upper Weights: The seasonal lower and upper estimated fish weights were divided by the number of days in the season to determine the seasonal fish yields for each particular species. These values can also be determined by multiplying the filleted weight (lower and upper) by the daily bag limit to determine the seasonal fish yields.

B. Analysis of Fish Species with Currently Unlimited (Unregulated) Take

The following analytical approach was used to evaluate the yields needed, in terms of fish caught per day to satisfy the two different tribal sustenance fish consumption rates of 286 grams per day and 514 grams per day explained above:

1. Published Maine fish survey data from several inland waters in or abutting tribal lands were reviewed to support the selection of example fish species commonly found in Maine waters that are not listed in the state fishing regulations, and therefore, have no state take or size limits.[12] Other fish survey data from major non-wadeable rivers in Maine were reviewed, as well.[13] [14] [15]

2. The sustenance fish consumption rates of 286 grams/day and 514 grams/day were both used to back-calculate an estimated range in the number of fish that would need to be caught to satisfy sustenance fishing needs. Each of the two tribal fish consumption rates were divided by the lower and upper filleted weight estimates respectively to calculate the number of fish that would need to be harvested on a daily basis to reach each fish consumption rate. (Estimates of fish weights and fish yield calculations were done as described in the calculation section above.)

3. For presentation of results, the calculated lower and upper fish yields for each state-defined fishing season were listed for each fish species. The lower and upper levels of tribal (sustenance) fish consumption rates of 286 grams/day and 514 grams/day were included at the bottom of each table for visual comparison of potentially available fish yields and tribal sustenance consumption levels.

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[12] Maine Dept. of Inland Fisheries and Wildlife, fish survey report sheets for select waters (located in Indian Territory), 1954-2006.

[13] Midwest Biodiversity Institute, The Spatial and Relative Abundance Characteristics of the Fish Assemblages in Three Maine Rivers, 2002 and 2003 (Prepared for EPA Region 1).

[14] Yoder, C., B. Kulik, and J. Audet, Maine Rivers Fish Assemblage Assessment: Interim Report II, 2004. (Prepared by Midwest Biodiversity Institute for EPA Region 1).

[15] Yoder, C., R. Thoma, L. Hersha, Maine Rivers Fish Assemblage Assessment: Development of an Index of Biotic Integrity for Non-Wadeable Rivers, March 8, 2009. (Prepared by Midwest Biodiversity Institute for EPA Region 1).

III. RESULTS & DISCUSSION

A. Estimated Fish Yields from Lakes and Ponds

Maine fishing limits are least restrictive for **lakes and ponds**, where access is **year round** (during open water and for ice fishing) for **species identified in the law** and **species not specifically listed** in the law (unless special rules apply to a specific waterbody). Common species of fish known to exist in Maine waters which are not specifically listed in the law include White and Yellow perch, Black Crappie, Brown Bullhead, White Sucker and Cusk, among others (see footnotes 6-9).

MITSC has adopted rules, which may affect fish yields in certain waters within Indian Territory that would otherwise be accessible under state fishing regulations. For example, ice fishing is closed by MITSC in approximately 15 ponds and lakes across the state. On the other hand, for about a half dozen ponds and lakes in Indian lands, a longer ice fishing season is allowed, (beginning from the time ice forms, instead of beginning January1st). Maine General Law provisions apply to the majority of other lakes and ponds within Indian Territory, which could provide ample fish yields from species not specifically limited in the law, as shown in Table 1 below.

Under unlimited take and year round access, for example, 1 to 8 Yellow Perch (at the lower consumption rate) or 2 to 15 Yellow Perch (at the higher consumption rate) would be needed per adult per day to support sustenance fishers at the two tribal sustenance fish consumption levels considered, depending on the size of fish caught. (See details in Table 1) This take seems reasonably achievable because this species of fish is commonly found in fish surveys done of lakes in tribal waters in Maine (see footnote 11).

Table 1 below presents a summary of the estimated number of fish needed to satisfy the lower and upper fish consumption rates of 286 g/day and 514 g/day (depending on the size of fish caught). The estimates are back-calculated for several unregulated fish species, which have no take limit year round. The species listed in the table are found in many of the tribal ponds and lakes surveyed by Maine IF&W and in surveys carried out by EPA on the Penobscot, St. Croix and Meduxnekeag Rivers.

Our analysis of these data shows that 286 grams per day of fish could be achieved by catching a relatively small number of Yellow Perch, Brown Bullhead and White Sucker at the lower end of the size/weight range. Far fewer fish would be required to achieve 286 grams at the upper end of the weight/length range. Many potential combinations between the lower and upper yields could also exceed rates of 286 grams per day and 514 grams per day.

Table 1. **Unregulated Species (Jan 1 – Dec 31)**

Fish Species	Daily Bag Limit	**Number of Fish/day** Needed to Reach **286** grams/day Fish Consumption Level		**Number of Fish/day** Needed to Reach **514** grams/day Fish Consumption Level	
		Based on **Lower** Fish Weight	Based on **Upper** Fish Weight	Based on **Lower** Fish Weight	Based on **Upper** Fish Weight
White Perch	none	22	3	39	5
Yellow Perch	none	8	1	15	3
Black Crappie	none	18	1	33	3
Brown Bullhead	none	5	2	8	3
Cusk	none	1	1	3	1
Northern Pike	none	1	1	1	1
White Sucker	none	3	1	5	1

Table 2 below shows the results of seasonal yield calculations for species of Trout and Salmon in lakes and ponds, where the take limit for all species is two fish per day year round. Our analysis shows that the state fishing regulations for Landlocked Salmon, Togue and Brown Trout would allow a fish yield in excess of 286 grams per day at the lower daily yield, and Togue would provide sufficient yield if 514 grams per day level is used. Each of the seven species listed in the table would yield in excess of 286 grams and 514 grams if the upper daily yield is used.

Table 2. **Trout and Salmon from Lakes & Ponds (Jan 1 – Dec 31)**

State Fishing Regulations				Seasonal Fish Yield	
Fish Species	Access (days/yr.)	Daily Bag Limit (# fish/day)	Min. Length Limit (inches)	Lower Daily Yield Based on Lower Fish Weight (grams/day)	Upper Daily Yield Based on Upper Fish Weight (grams/day)
Brook Trout	365	2	6	24	626
Splake	365	2	6	18	2,724
Arctic Char	365	2	6	68	817
Landlocked Salmon	365	2	14	370	1,816
Togue (Lake Trout)	365	2	18	580	2,724
Brown Trout	365	2	14	300	2,724
Rainbow Trout	365	2	12	182	2,179
Tribal Fish Consumption Levels (grams/day): **286** and **514**					

Table 3 below shows the results of seasonal yield calculations for other regulated fish in lakes and ponds. Our analysis shows that the state fishing regulations for Pickerel, Smelts, Whitefish and Shad would allow a fish yield in excess of 286 grams per day at the lower daily yield, and Pickerel, Smelts and American Shad would provide sufficient yield if the level of 514 grams per day is used. Calculated yields for Pickerel, Whitefish, Smelts, American Eel and American Shad are in excess of 286 grams and 514 grams per day if the upper daily yield is used. Many potential combinations between the lower and upper yields could also exceed 286 and 514 grams per day. The analysis for Northern Pike and Muskellunge is also contained in Table 3. Based on our review of the occurrence of Muskellunge in Maine, we believe it is unlikely that this introduced species would be found in tribal waters.

Table 3. **Other Regulated Fish from Lakes & Ponds**

State Fishing Regulations				Seasonal Fish Yield	
Fish Species	Access (days/yr.)	Daily Bag Limit (# fish/day)	Min. Length Limit (inches)	Lower Daily Yield Based on Lower Fish Weight (grams/day)	Upper Daily Yield Based on Upper Fish Weight (grams/day)
Pickerel	365	10	none	819	5,448
Whitefish	365	3	none	409	2,452
Smelts - 2 Qt. limit	365	120	none	2,550	16,998
Northern Pike	365	unlimited	none	unlimited	unlimited
Muskellunge	365	unlimited	none	unlimited	unlimited
American Eel	365	50	6	84	40,282
Shad	365	2	none	545	1,907
Atlantic Salmon	365	0	-	0	0
Alewife	365	25	none	71	230
Tribal Fish Consumption Levels (grams/day): **286 to 514**					

B. Estimated Fish Yields for Bass

While fishing is open year round for bass, take limits are not uniform throughout the year. Table 4 below shows the results of seasonal yield calculations for Largemouth and Smallmouth Bass in lakes and ponds as well as streams and rivers. The take limit for the two species varies by season. Our analysis shows that the state fishing regulations for Largemouth and Smallmouth Bass would allow a fish yield in excess of 286 grams per day between July 1 and September 30, at the lower daily yield. Calculated yields for both species are in excess of 286 and 514 grams per day, year round, if the upper daily yield is used.

Table 4. **Bass from Lakes & Ponds, and Brooks, Streams & Rivers**

State Fishing Regulations				Seasonal Fish Yield	
Fish Species	Access (days/yr.)	Daily Bag Limit (# fish/day)	Min. Length Limit (inches)	Lower Daily Yield Based on Lower Fish Weight (grams/day)	Upper Daily Yield Based on Upper Fish Weight (grams/day)
Largemouth Bass	273	1	10	100	1,453
(July 1 – Sept. 30)	92	3	10; 1>14*	300	2,023
Smallmouth Bass	273	1	10	104	908
(July 1 – Sept. 30)	92	3	10; 1>14*	311	1,590
Tribal Fish Consumption Levels (grams/day):				**286** to **514**	
* Ten-inch minimum limit, with only 1 fish greater than 14 inches.					

C. Estimated Fish Yields from Brooks, Streams, and Rivers

Estimated fish yields for brooks, streams, and rivers rely on the results shown in Table 1 above for unlisted species, as well as the results below for species that are specifically regulated by Maine regulations. Except for bass fishing explained above, the most restrictive Maine fishing limits are set from Oct 1 – Mar 31 (182 days/year) when **brooks, streams, and rivers** are closed to fishing for **trout** and **other regulated fish** (unless the water is specifically listed as open in the county lists of special conditions).

Tables 5 and 6 below show the results of seasonal yield calculations for Trout and Salmon in brooks, streams, and rivers. The take limits vary during the open seasons from 2 fish per day from April 1 to August 15 to 1 fish per day from August 16 to September 30 (more protective during the spawning season). Our analysis shows that the state fishing regulations for Landlocked Salmon, and Togue would allow a fish yield in excess of 286 grams per day at the lower daily yield from April 1-August 15, and Togue would provide sufficient yield in excess of 514 grams per day if the lower daily yield level is used. During the same time period, each of the seven species listed in the table would yield in excess of 286 and 514 grams if the upper daily yield is used. However, from August 16 –September 30, only the yield from Togue is potentially adequate to meet a fish yield of 286 grams per day using the lower daily yield. For the same time period if the upper daily yield is used, the

yields from Splake, Landlocked Salmon, Togue, Brown Trout and Rainbow Trout are adequate to meet a fish yield of 514 grams per day.

Table 5. **Trout from Brooks, Streams, and Rivers (April 1 – August 15)**

State Fishing Regulations				Seasonal Fish Yield	
Fish Species	Access (days/yr.)	Daily Bag Limit (# fish/day)	Min. Length Limit (inches)	Lower Daily Yield Based on Lower Fish Weight (grams/day)	Upper Daily Yield Based on Upper Fish Weight (grams/day)
Brook Trout	137	2	6	24	626
Splake	137	2	6	18	2,724
Arctic Char	137	2	6	68	817
Landlocked Salmon	137	2	14	370	1,816
Togue (Lake Trout)	137	2	18	580	2,724
Brown Trout	137	2	14	23	2,724
Rainbow Trout	137	2	12	22	2,179
Tribal Fish Consumption Levels (grams/day): **286 to 514**					

Table 6. **Trout from Brooks, Streams, and Rivers (August 16 – Sept 30)**

State Fishing Regulations				Seasonal Fish Yield	
Fish Species	Access (days/yr.)	Daily Bag Limit (# fish/day)	Min. Length Limit (inches)	Lower Daily Yield Based on Lower Fish Weight (grams/day)	Upper Daily Yield Based on Upper Fish Weight (grams/day)
Brook Trout	46	1	6	12	313
Splake	46	1	6	9	1,362
Arctic Char	46	1	6	34	409
Landlocked Salmon	46	1	14	185	908
Togue (Lake Trout)	46	1	18	290	1,362
Brown Trout	46	1	14	12	1,362
Rainbow Trout	46	1	12	11	1,090
Tribal Fish Consumption Levels (grams/day): **286 to 514**					

From **brooks, streams, and rivers**, the daily bag limits for **other regulated fish** vary by species and season. As shown in Tables 7 and 8 below, allowed fish takes range from zero (Atlantic salmon, a federally regulated species) to unlimited for Northern pike and Muskellunge. Tables 7 and 8 also show the results of seasonal yield calculations for other regulated fish in brooks, streams and rivers. Our analysis shows that the state fishing

regulations for Pickerel, Smelts, and Shad would allow a fish yield in excess of both 286 and 514 grams per day, at both the lower and upper daily yield for the duration of the open seasons. Additionally, calculated yields for Whitefish, and American Eel are in excess of 286 and 514 grams if the upper daily yield is used for the length of the season. Many potential combinations between the lower and upper yields could also exceed 286 and 514 grams per day. The analysis for Northern Pike and Muskellunge is also contained in Tables 7 and 8. Based on our review of the occurrence of Muskellunge in Maine, we believe it is unlikely that this introduced species would be found in tribal waters.

Table 7. **Other Regulated Fish from Brooks, Streams, & Rivers (Apr. 1 - Aug. 15).**

State Fishing Regulations				Seasonal Fish Yield	
Fish Species	Access (days/yr.)	Daily Bag Limit (# fish/day)	Min. Length Limit (inches)	Lower Daily Yield Based on Lower Fish Weight (grams/day)	Upper Daily Yield Based on Upper Fish Weight (grams/day)
Pickerel	137	10	none	819	5448
Whitefish	137	3	none	409	2,452
Smelts	137	120	none	2,550	16,998
Northern Pike	137	unlimited	none	unlimited	unlimited
Muskellunge	137	unlimited	none	unlimited	unlimited
American Eel	137	50	6	84	40,282
Shad	137	2	none	545	1,907
Atlantic Salmon	137	0	-	0	0
Alewife	137	25	none	71	230
Tribal Fish Consumption Levels (grams/day): **286** to **514**					

Table 8. **Other Regulated Fish from Brooks, Streams, & Rivers (Aug. 16 – Sept 30).**

State Fishing Regulations				Seasonal Fish Yield	
Fish Species	Access (days/yr.)	Daily Bag Limit (# fish/day)	Min. Length Limit (inches)	Lower Daily Yield Based on Lower Fish Weight (grams/day)	Upper Daily Yield Based on Upper Fish Weight (grams/day)
Pickerel	46	10	none	819	5,448
Whitefish	46	3	none	409	2,452
Smelts	46	120	none	2,550	16,998
Northern Pike	46	unlimited	none	unlimited	unlimited
Muskellunge	46	unlimited	none	unlimited	unlimited
American Eel	46	50	6	84	40,282
Shad*	46	2	none	545	1.907
Atlantic Salmon	46	0	-	0	0
Alewife*	46	25	none	72	230
Tribal Fish Consumption Levels (grams/day): **286** to **514**					

D. Estimated Fish Yields from Boundary Waters between Maine and New Brunswick

Special boundary waters regulations apply to specific lakes/ponds and river/stream segments where jurisdiction is shared between Maine and New Brunswick, as specified in the Maine fishing regulations (see footnote 6). As shown in Table 9 below, the limits apply to the Ice Fishing season from January 1st to March 31st, and the Trout species, Bass species, Landlocked Salmon and Togue are based on an aggregate number of species which could be taken. The species combinations are numerous, therefore, the aggregate examples provided in Table 9 are intended to demonstrate lower/upper weight scenarios. The Splake example is on the lower end of the weight spectrum to show a consumption rate for a species that can be harvested at lower length limits with a corresponding lower weight. The aggregated example of 2 Togue combined with 1 Brown Trout shows two species with upper weight limits that can be harvested together which provides an estimate of the upper end of the take spectrum that meets this regulation. The seasonal fish yield values for Pickerel, Whitefish, Smelt and Cusk are based on the same weight estimates as in Table 3, with adjustments made to the number of access days and daily bag limits. General Law limits apply to other species (with the exception of Atlantic Salmon and the unlisted species found in Table 1) that are not specifically mentioned in this table in these waters. There are a number of special regulations for particular waterbodies in the international boundary waters area that can be found in the Maine special regulations (see footnote 6).

Our analysis shows that the state fishing regulations for Togue, Pickerel, Smelts, and Cusk would allow a fish yield in excess of both 286 and 514 grams per day, at both the lower and upper daily yields for the length of the open ice fishing season in these boundary waters. Additionally, calculated yields for Splake, Brown Trout, and Whitefish, are in excess of 286 and 514 grams if the upper daily yield is used for the length of the season. Many potential combinations of species and lower and upper yields could also exceed both 286 and 514 grams per day.

Table 9. Boundary Waters - Ice Fishing Season (Jan. 1- March 31)

State Fishing Regulations				Seasonal Fish Yield	
Fish Species	Access (days/yr.)	Daily Bag Limit (# fish/day)	Min. Length Limit (inches)	Lower Daily Yield Based on Lower Fish Weight (grams/day)	Upper Daily Yield Based on Upper Fish Weight (grams/day)
Splake (Lower wt. aggregate example)	90	3	6	27	4,086
Togue (Higher wt. aggregate example)	90	2	18	580	2,724
Brown Trout (Higher wt. aggregate example)	90	1	6	150	1,362
Togue + Brown Trout (aggr. ex.)				Total: 730	Total: 4,086
Pickerel	90	10	none	819	5,448
Whitefish	90	3	none	409	2,452
Smelt	90	60	none	1,275	8,499
Cusk	90	10	none	2,043	5,278
Tribal Fish Consumption Levels (grams/day): **286** to **514**					
All other species not listed above: no limits					

As shown in Table 10, below, the values for the boundary waters between Maine and New Brunswick apply to the open water season from April 1st to September 30th. There is an aggregation component to these regulations, which applies only to Landlocked Salmon, Togue and Trout species. Five fish may be taken during this time as long as no more than 2 Togue or 2 Landlocked Salmon are taken. All five fish may be Trout species and the total aggregated harvest must not exceed 3,500 grams no matter what combination of these protected species are harvested to reach the five fish aggregate. As noted in Table 10, yields of Splake, Brown Trout and Rainbow Trout will exceed the 3,500-gram limit at the upper weight limit for these species. Largemouth and Smallmouth Bass are not subject to an aggregation limit, but are regulated by two different seasons with different take limits in these waters. The values for Pickerel, Whitefish, Smelt and Cusk have been adjusted from the values in Table 9 to reflect the different number of access days and take limits in the open water season. All other fish not mentioned in the Table 10 (with the exception of Atlantic Salmon) have no limits in these waters.

Our analysis shows that the state fishing regulations for Togue, Brown Trout, Pickerel, Smelts, and Cusk in these international waters would allow a fish yield in excess of both 286 and 514 grams per day, at the lower and upper daily yields for the length of the open season. Additionally, calculated yields for Brook Trout, Splake, Arctic Char, Landlocked Salmon, Rainbow Trout, Whitefish, Large and Smallmouth Bass are in excess of 286 grams at both the lower and upper daily yields for the length of the season. Many potential combinations of species and fish size/weight could result in yields exceeding both 286 and 514 grams per day.

Table 10. Boundary Waters - Open Water Season (April 1 – Sept. 30)

State Fishing Regulations: 5-Fish Aggregate for Landlocked Salmon, Trout and Togue (Limit of 2 Landlocked Salmon and 2 Togue, all 5 may be trout); Total Aggregate Weight cannot exceed 3,500 grams/day for these species only				Seasonal Fish Yield	
Fish Species	Access (days/yr.)	Daily Bag Limit (# fish/day)	Min. Length Limit (inches)	Lower Daily Yield Based on Lower Fish Weight (grams/day)	Upper Daily Yield Based on Upper Fish Weight (grams/day)
Brook Trout	183	5	6	60	1,564
Splake	183	5	6	46	6,810*
Arctic Char	183	5	6	170	2,043
Landlocked Salmon	183	2	14	370	1,816
Togue (Lake Trout	183	2	18	580	2,724
Brown Trout	183	5	14	751	6,810*
Rainbow Trout	183	5	12	455	5,448*
Other Species-Specific Regulations (not subject to aggregate regulations):					
Largemouth Bass (April 1- June 30)	91	1	10	100	1,453
Largemouth Bass (July 1 – Sept. 30)	92	3	10	300	4,358
Smallmouth Bass (April 1- June 30)	91	1	10	104	908
Smallmouth Bass ((July 1 – Sept. 30)	92	3	10	311	2,724
Pickerel	183	10	none	819	5,448
Whitefish	183	3	none	409	2,452
Smelt	183	60	none	1,275	8,499
Cusk	183	10	none	2,043	5,278
Tribal Fish Consumption Levels (grams/day): **286 to 514**					
*Exceeds 3,500 grams/day regulation					
All other species not listed above: no limits					

IV. CONCLUDING ASSESSMENTS

The Maine state fishing regulations describe the limits for various species across Maine. The regulations include waterbody type, fish species and seasonal components. The regulations do not set limits or seasons for all species of fish in Maine. In our analysis we first focused on species that had no take or seasonal limits in any waters in Maine. Next, we looked at limits for lakes and ponds where, for the most part, fishing is allowed year round, but there are limits on the number of particular fish species that could be taken. Lastly we analyzed the regulations with respect to brooks, streams and rivers, where the State has set both take limits and seasonal limits.

In all cases, we examined the effects of the limits on sustenance fishing by converting limits which are typically expressed in numbers of species to estimated yield for consumption measured in grams. We analyzed multiple species at different times of year to determine if state law would allow sufficient fish yields to provide sustenance levels of fishing at both 286 grams/day and 514 grams/day.

Fish Species with No Take Limit or Season in Lakes, Ponds, Brooks, Streams and Rivers

Our analysis of these data in Table 1 shows that fish yields of both 286 and 514 grams per day of fish could be achieved by catching a relatively small number of Yellow Perch, Brown Bullhead and White Sucker at the lower end of the size/weight range. Far fewer fish would be required to achieve 286 and 514 grams at the upper end of the weight/length range. Many potential combinations between the lower and upper yields of multiple species could also exceed 286 and 514 grams per day.

Regulated Fish Species in Lakes and Ponds

Tables 2, 3, and 4 show the results of yield calculations for regulated fish in lakes and ponds. Our analysis shows that the state fishing regulations for Togue, Pickerel, Smelts, and Shad would allow a fish yield in excess of both 286 and 514 grams per day, at the lower and upper daily yield for all of those species throughout the year. In addition, the regulations would allow a fish yield in excess of 286 grams per day at the lower and upper daily yield for the additional species of Landlocked Salmon, Brown Trout and Whitefish throughout the year, and for Largemouth and Smallmouth Bass between July 1 and September 30.

Calculated yields for Brook Trout, Splake, Arctic Char, Landlocked Salmon, Togue, Brown Trout, Rainbow Trout, Pickerel, Whitefish, Smelts, Largemouth and Smallmouth Bass and American Shad are in excess of both 286 and 514 grams if the upper daily yield is used throughout the year. Many potential combinations between the lower and upper yields could also exceed 286 and 514 grams per day.

Regulated Fish Species in Brooks, Streams and Rivers

Tables 4, 5, 6, 7, and 8 show the results of yield calculations for regulated fish in brooks, streams and rivers. Unlike fishing in lakes and ponds, fishing in brooks, streams and rivers

is typically open from April 1 through September 30, with lower take limits during the spawning season (August 16 – Sept 30). Our analysis shows that the state fishing regulations for Togue (April 1 – August 15), Pickerel, Smelts and Shad (April 1 – September 30) would allow a fish yield in excess of both 286 and 514 grams per day, at both the lower and upper daily yield. Regulations would allow a fish yield in excess of 286 grams per day at the lower and upper daily yield for the additional species of Landlocked Salmon, Whitefish, and Smallmouth and Largemouth Bass between July 1 and September 30. Calculated yields for Smallmouth and Largemouth Bass would exceed 286 grams if the upper daily yield were used for the entire year.

Regulated Fish Species in Boundary Waters Between Maine and New Brunswick

Tables 9 and 10 show the results of fish yield calculations for regulated fish species in specific lakes and ponds, streams and rivers shared by Maine and New Brunswick, Canada. These complicated special regulations would allow many combinations of takes during the ice fishing and open water seasons that would yield in excess of both 286 and 514 grams per day.

Regulated Fish Species within Indian Territory

We also analyzed the effects of the MITSC adopted rules in lakes, ponds, brooks, streams and rivers on fish yields in certain waters within Indian Territory that would otherwise be regulated under state fishing regulations. The MITSC rules are in some cases more restrictive and in others less restrictive than the general laws, however we believe that on balance they do not alter our conclusion that adequate fish are available to support sustenance fishing.

Summary

Based on the assumptions used, the data presented and reasons stated above, EPA believes that tribal sustenance fishing can be supported under current Maine state fishing regulations.