STATE OF MAINE
BOARD OF ENVIRONMENTAL PROTECTION
IN THE MATTER OF

LOCKWOOD HYDRO PROJECT	)
#L-20218-33-C-N	)
	)
HYDRO-KENNEBEC PROJECT	)
#l-11244-35-A-N	)
	)
SHAWMUT HYDRO PROJECT	)
#L-19751-33-A-M	)
	)
WESTON HYDRO PROJECT	)
#L-17472-C-M	)

Rebuttal of Petitioner Douglas H. Watts to Pre-Filed Testimony of FPL Energy

I. TESTIMONY OF ROBERT RICHTER.

1. While discussing the number of American eels confirmed killed by FPLE's dams, Mr. Richter asserts at footnote 7 on page 14: "DMR and DIFW fishing regulations allow up to 50 eels per day to be taken per person throughout the year. An unlimited number eels can be taken each day by persons possessing an eel harvester license."

RESPONSE: By Mr. Richter's own testimony at 14, FPLE has admitted to committing numerous Class E crimes under Maine law by killing American eels at its dams. Maine fish and game laws, Title 12, expressly prohibit the killing of American eels and other fish in the turbines of hydroelectric dams. Such killing falls within the statutory category of "illegal fishing" -- a Class E crime.

Under Maine law, any and all acts of taking, killing and molesting fish are *prima facie* illegal --

except under the extremely specific, narrow and explicit conditions affirmatively stated and described in statute.

Maine law defines "to fish" as: "**Fish, the verb.** To "fish" means to take, catch, kill, molest or destroy fish or to attempt to take, catch, kill, molest or destroy fish." 12 MRSA §10001, ¶23.

"All inland waters of the State are closed to fishing except as opened by law or rule." 12 MRSA §12453.

Maine law prohibits anyone from "taking" or "catching" or "molesting" or "killing" or "destroying" any fish in the inland waters of Maine -- except in the manner specifically allowed under 12 MRSA §12654 ¶1. "1. Prohibition. A person may not angle or fish other than by the use of the single baited hook and line, artificial flies, artificial lures and spinners, except that a person may take smelts in accordance with rules adopted with regard to the taking of smelts."

The killing and destroying and molesting of American eels in the turbines of FPLE's dams is not done with a single baited hook and line, artificial lure or spinner. Therefore, this killing violates 12 MRSA §12654. The penalty for violating this statute is set forth at ¶2: **"Penalty.** A person who violates this section commits a Class E crime. The court shall also impose a fine of $20 for each fish unlawfully possessed, none of which may be suspended."

Mr. Richter's reference in fn. 7 at 14 to catch limits of eels is not relevant here because those catch limits only apply to *legal* fishing methods -- not illegal fishing methods. The only legal fishing method for American eel in the inland waters of Maine is with a single hook and line -- or a licensed eel weir or trap operated by the holder of a commercial eel harvesting permit. FPLE does not possess a Maine commercial eel harvesting permit nor can it because Maine law forbids the issuance of any new commercial eel harvesting permits. 12 MRSA §12506.

2. Mr. Richter summarizes at 12-13 the genesis of FPL Energy "eel observation program."

RESPONSE: Mr. Richter's history of this "eel observation program" is incorrect. Mr. Richter fails to note that the KHDG Agreement and Water Quality Certification Orders require all

studies and consultation for downstream eel passage to have been completed by June 30, 2002 -- five years ago. These studies and consultations were never completed, and still have not been completed in 2007.

On August 20, 2004 Petitioner Douglas H. Watts wrote a letter to FPL Energy, FERC and the Maine DEP requesting immediate action be taken at the Lockwood Dam to prevent eel kills during the 2004 fall migration season. Similar letters were written regarding the Benton Falls and Burnham Dams on the nearby Sebasticook River. No reply was ever made to these letters. Upon receipt of this letter in 2004, FPL Energy made no commitment of any kind to do anything to prevent the death of American eels at its Kennebec River Dams.

On October 15, 2004 Petitioner Douglas H. Watts, on his own, discovered a large kill of American eels at the Benton Falls Dam, later confirmed by Maine DMR. October 15 is approx. 30-45 days into the fall eel migration season, which can begin as early as the end of August. The "eel observation program" referenced by Mr. Richter at 12-13 only began in late October and only through a request by Maine DMR -- directly in response to Mr. Watts' discovery of the massive eel kill at Benton.

Mr. Richter's testimony admits that FPL Energy conducted no eel observations at its dams from 1998 until late October 2004 -- a period of seven years. Mr. Richter fails to explain why FPLE conducted no observations during this seven year period. FPLE only began observations after the Benton Falls eel kill in late October 2004.

3. Mr. Richter at 14 states that eel kills documented by FPLE since 2004 are "not significant."

RESPONSE: Mr. Richter provides no scientific or regulatory definition for this term. Mr. Richter is aware that American eels migrating from the Kennebec River watershed above Skowhegan, Maine must swim past all four of the subject dams without being killed or injured to continue their migration to the Atlantic Ocean to give birth. Simple arithmetic shows that if the subject dams only kill or injure 2 of every 10 migrating eels, the cumulative mortality is more than 50 percent:

Start with 100 eels above Weston Dam, Skowhegan
Assume 80 percent survival at each dam.

100 eels above Weston = 80 eels below Weston
80 eels above Shawmut = 64 eels below Shawmut.
64 eels above Hydro Kennebec = 51 eels below Hydro Kennebec
51 eels above Lockwood Dam = 41 eels below Lockwood.

This simple arithmetic exercise shows that even at 80 percent survival per dam, American eels migrating from above the four dams will suffer 60 percent total mortality. Of 100 female American eels swimming down the Kennebec River above Skowhegan, only 40 will still be alive in Waterville, Maine just 35 miles downriver.

Simple arithmetic shows that each of the four dams must individually achieve extremely high passage survival rates to avoid creating significant cumulative death rates. Even at 90 percent survival at each dam we get the following:

100 eels above Weston = 90 eels below Weston
90 eels above Shawmut = 81 eels below Shawmut.
81 eels above Hydro Kennebec = 73 eels below Hydro Kennebec
73 eels above Lockwood Dam = 65 eels below Lockwood.

Even at 90 percent survival at each dam, more than one third (35 percent) of the entire migration of American eels above the four dams will be killed each and every year. [The same arithmetic and attrition applies to all migratory species.]

Given this basic arithmetic, Mr. Richter must show that FPL Energy's dams -- at present -- actually provide survival rates of 98 percent or higher for them to have no significant impact on migrating fish swimming past all four dams. This is because at 95 percent survival at each dam:

100 eels above Weston = 95 eels below Weston
95 eels above Shawmut = 90 eels below Shawmut.

90 eels above Hydro Kennebec = 86 eels below Hydro Kennebec
86 eels above Lockwood Dam = 80 eels below Lockwood.

Even at 95 percent survival at each dam, one fifth (20 percent) of the entire migration of eels are killed trying to go past the four dams in this proceeding.

In his testimony, Mr. Richter discusses two studies of eel passage and mortality at Kennebec River drainage dams, conducted at the Benton Falls Dam on the Sebasticook River in 2001 and FPLE's Lockwood Dam on the Kennebec River in 2002. These two studies show that 40-50 percent of American eels trying to pass the dams are killed or injured. For American eels migrating from the Kennebec River above Skowhegan this means:

100 eels above Weston Dam = 50 eels below Weston
50 eels above Shawmut = 25 eels below Shawmut.
25 eels above Hydro Kennebec =13 eels below Hydro Kennebec
13 eels above Lockwood Dam = 7 eels below Lockwood.
Total survival = 7 eels out of 100. Total killed = 93 of 100 eels.

All of the studies cited by Mr. Richter in his testimony show that 90 percent of the American eels trying to migrate past the Weston, Shawmut, Hydro Kennebec and Lockwood Dams each year are being killed. Mr. Richter does not cite any scientific study showing a cumulative mortality *lower* than 90 percent at the four dams.

Yet despite these studies offered into evidence by Mr. Richter, he asserts at 14: "Based on this evidence, significant eel injuries or mortalities from downstream passage at the Lockwood, Shawmut and Weston sites have not been observed."

The scientific evidence referenced by Mr. Richter himself refutes this assertion. The *only scientific studies* of American eel survival at Kennebec River drainage dams show per dam survival rates of 40-50 percent at best. Both of these studies were conducted by FPLE or other KHDG dam owners in cooperation with Maine DMR. Based upon these studies, cumulative mortality of American eels migrating from the Kennebec River above Skowhegan to the Atlantic

Ocean exceed 90 percent. Simple arithmetic shows that unless FPLE's Weston, Shawmut and Lockwood Dams provide American eel survival of 95 percent or greater, they will kill 20 to 100 percent of all the pregnant American eels migrating down the Kennebec River each and every year.

4. Mr. Richter asserts at 15: "It is my best professional judgment that the existing arrangements for eel passage at the projects do not pose a threat to human health or the environment."

RESPONSE: This is provably false based on the evidence above, cited by Mr. Richter himself. In his testimony, Mr. Richter asserts that all known studies of American eel mortality at Kennebec River dams show mortality in the range of 40-50 percent per dam passage. Simple arithmetic shows that 90 percent of American eels migrating from Skowhegan would die if subjected to 40-50 percent mortality at the Weston, Shawmut, Hydro Kennebec and Lockwood Dams. Yet, Mr. Richter states that such mortality of American eels is not "significant" or a "threat to the environment."

Mr. Richter provides no evidence to show the actual per dam mortality of American eels is lower than the 40-50 percent found during the 2001 and 2002 studies conducted at the Benton Falls and Lockwood Dams. Mr. Richter here asks the Maine BEP to completely ignore published study results that FPL itself has cited and referenced in its testimony. Instead, Mr. Richter asks the Maine BEP to base its decision entirely upon the results of studies that have not even happened yet, and may not happen at all -- and to completely dismiss as meaningless the results of all studies conducted thus far.

Mr. Richter's testimony consists entirely of physical evidence which proves the dams do kill American eels and studies which indicate FPLE's dams kill American eels. Mr. Richter's testimony is a pinata. The more you hit it, the more dead eels fall out of it.

II. TESTIMONY OF BRANDON KULIK.

1. Mr. Kulik asserts at 5: "[T]o support restoration of anadromous populations, some form of site specific fish passage around an obstruction may be required, consistent with population

management objectives established by the applicable natural resource agencies."

RESPONSE: This sentence is true, except for the last clause, which is completely false. Under Maine law, fish population objectives of natural resource agencies do not control legal requirements for safe and effective fish passage at hydro-electric dams. Such agency objectives, if they exist, are advisory only. Maine statute controls. See Maine BEP, Sept. 3, 2003, Findings of Fact and Order Denying Appeal of S.D. Warren Company:

> "The draft plan, however, was not, as Warren contends, the "basis" on which the fish passage conditions were imposed. The plan was one piece of information, among others, that the Department considered in making its determination that certain fish passage conditions were necessary to meet water quality standards. Moreover, to the extent that Warren implies that a final fishery management plan is necessary before the Department may impose fish passage conditions in a certification, it is not correct as a matter of law. There is nothing in the statute or regulation that limits the Department's authority to require fish passage in order to meet water quality standards to those instances where a final fisheries management plan has been adopted by the relevant state agency(s) through a public process. Indeed, over the years, many fishways have been required by the Department and constructed and operated by hydropower project owners on rivers where no formal fishery management plan has been adopted.
>
> "Taking Warren's argument to its logical extension, no fishways could be required anywhere by DEP (or, by the state's own fisheries agencies) unless a final fishery management plan had been adopted, even though (1) the state's fisheries agencies are already charged under law with restoring sea-run fish to their historic habitat, and (2) the DEP is already charged under law with restoring the chemical, physical and biological integrity of the State's waters. Such an argument has no legal basis and could limit the restoration of sea-run fish to Maine's waters and the attainment of water quality standards in Maine's waters."

2. Mr. Kulik asserts at 6: "Anadromous salmon, for example, predictably migrate downstream in the surface flow and mostly at night, and respond to accelerating flow fields ..."

RESPONSE: Here, Mr. Kulik admits that if much or most of the river's flow is being passed through the project turbines, migrating Atlantic salmon will be preferentially attracted to the intakes of the project turbines and the turbines themselves. As such, he concurs with the findings and conclusions of Maine DMR in a letter to FPLE dated May 8, 2006:

> "MDMR is concerned that controlled spill via bypass gates will not be an effective measure for downstream eel passage, and that significant injury or mortality to eels will occur unless additional measures are taken. In September and October, river flow exceeds hydraulic capacity only 5-15% of the time at the Weston and Shawmut projects and 40-50% of the time at the Lockwood Project and. If migrating eels are randomly distributed in the river, then eels will pass through the turbines at Weston and Shawmut 85-95% of the time and through the turbines at Lockwood 50-60% of the time. We note that both FPL Energy and MDMR have observed eel mortalities below the Shawmut Project." [1]

3. Mr. Kulik asserts at 6: "Thus, any passage condition that provides hydraulics conducive to fish passage is likely to pass these fish."

RESPONSE: In this assertion Mr. Kulik admits that migrating fish will be attracted to hydraulics conducive to them even if the selected passage route is fatal (ie. through turbines).

Mr. Kulik's statement means that fish trying to migrate downstream past a dam have no idea if the passage route they have selected will kill them.

Migrating fish cannot read signs that say "Danger. Hydroelectric Turbines Directly Ahead. Do not go any farther than this point." Large, prominent signs are posted at all four dams to warn upriver swimmers and boaters of the risk of death posed by the turbines of these dams. If the turbines were not dangerous, the dam owners would not post these signs, nor would public agencies require these signs to be prominently posted.

4. Mr. Kulik asserts at 7: "Anadromous fish can pass both upstream and downstream at the Lockwood, Shawmut and Weston hydro-projects with minimal injury or mortality."

RESPONSE: This is provably false and is contradicted by Mr. Kulik himself at 15.

At 15, Mr. Kulik cites an FPLE study of turbine survival of Atlantic salmon smolts at FPLE's

[1] Letter of George Lapointe, MDMR Commissioner, to Christopher Shaw, FPL Energy, May 8, 2006 at 2.

Bar Mills Dam on the Saco River which showed 88 percent of smolts passing through the dam turbine survived. Adult Atlantic salmon migrating up the Kennebec River are now transported to the Sandy River, above all four of the subject dams, thus requiring a downstream migration for adults and juveniles (smolts) past all four of the subject dams. At the 88 percent turbine passage survival rate cited by Mr.Kulik at p. 15, the total mortality of Atlantic salmon smolts migrating past the four dams would be 40 percent. Starting with a group of 1,000 salmon smolts leaving the Sandy River:

1,000 smolts x 88 percent survival at Weston = 880
880 smolts x 88 percent survival at Shawmut = 774
774 smolts x 88 percent survival at Hydro Kennebec = 681
681 smolts x 88 percent survival at Lockwood = 599

Using Mr. Kulik's own cited figures, a cohort of 1,000 Atlantic salmon smolts migrating from the Sandy River would be reduced to 599 smolts at Waterville. Four hundred smolts (400) would be killed at the dams, ie. 40 percent.

By no possible interpretation or definition within fisheries science is a mortality rate of 40 percent considered "minimal injury or mortality," as Mr. Kulik asserts.

As such, Mr. Kulik's factual assertion is proven wrong by the exact same facts he cites to support it.

5. Mr. Kulik asserts at 8: "... passage is provided [at the dams] without significant injury or mortality to the migrating fish."

RESPONSE: Mr. Kulik fails to define or quantify the term. "significant injury or mortality."

6. Mr. Kulik asserts at 9. "Biologists trap, count, measure and truck the fish at Lockwood, then bypass the Shawmut, Hydro Kennebec and Weston dams and place the fish directly in targeted upriver spawning habitat."

RESPONSE: By this assertion, Mr. Kulik admits that trap and truck methods at the Lockwood are used to bypass the reaches of the Kennebec River between the Lockwood and Weston Dam, and thus prevent migrating fish from gaining access to these reaches. This deliberate "bypass" prevents these reaches from being in attainment of their water quality standards because indigenous migrating fish are not allowed to gain access to these reaches.

7. Mr. Kulik asserts at 10 that 15 adult Atlantic salmon were captured at Lockwood trap in 2006. Mr. Kulik fails to mention the fact that the Lockwood Dam fish trap failed to capture any American shad below the dam even though numerous American shad were present in the vicinity of the dam.

8. Mr. Kulik asserts at 12: " ... there is no evidence that these interim [downstream] fish passage measures at the projects are in any way hampering anadromous fish restoration on the Kennebec."

RESPONSE: This is provably false. Scientific data provided by Mr. Kulik at 15 show that cumulative turbine mortality for downstream migrants at the subject dams is 40 percent or higher each year. Mr. Kulik cites to no evidence showing that the annual death of 40 percent or more of a downstream migrating fish population i s not "significant" and does not "hamper" the restoration of the species. As discussed above in Robert Richter's testimony, simple arithmetic shows that per dam survival rates of 95 percent would still result in the death of 20 percent of all fish migrating from above the Weston Dam in Skowhegan to the Atlantic Ocean.

9. Mr. Kulik asserts at 13: "The KHDG Agreement provide a methodical scientific process for restoring runs of anadromous fish that includes monitoring and adjusting fish passage measures based on monitoring feedback. The Agreement anticipated the need to pass anadromous fish downstream toward the ocean without significant injury or mortality."

RESPONSE: Scientific data cited by Mr. Kulik at 15 shows that the subject dams are now causing significant injury and mortality to downstream migrants (ie. 40 percent cumulative mortality or higher). As such, Mr. Kulik's testimony demonstrates the subject dams are completely failing to fulfill the "need to pass anadromous fish downstream toward the ocean

without significant injury or mortality" as stated in the KHDG Agreement and Water Quality Certification Orders for the dams.

10. Mr. Kulik asserts at 13: "In most cases, the dams have gates and sluices already in place for the original purpose of passing logs and floating debris. These devices have been adapted for passing fish."

RESPONSE: By this assertion, Mr. Kulik admits the subject dams lack any passage mechanisms or devices specifically designed, manufactured and installed for the purpose of safely passing migrating fish. As Mr. Kulik admits above, the "passage facilities" were constructed for the sole purpose of allowing logs and other floating debris to be passed over the dam structure. These structures were never designed nor intended to be used for the purpose of safely passing migrating fish. As such, the size, location and design parameters of these structures have never been subjected to scientific analysis as to their adequacy or fitness for passing migrating fish. Nor have these structures been reviewed and approved by expert fisheries agencies as being suitable or effective at safely passing migrating fish. As such, Mr. Kulik's assertion at 13 that "these devices have been adapted for passing fish" is provably false.

12. Mr. Kulik at 15 cites and discusses scientific studies conducted at hydro-electric dams on the Saco River to determine turbine mortality on Atlantic salmon smolts at those facilities.

RESPONSE: Based upon the data cited by Mr. Kulik, Atlantic salmon smolts and other migrating fish could suffer 40 percent or greater cumulative mortality when attempting to migrate down the Kennebec River past the Weston, Shawmut, Hydro Kennebec and Lockwood Dams.

13. Mr. Kulik describes at 16 the discovery and documentation of severe fish kills at the Benton Falls Dam by the Petitioner and Maine DMR. Mr. Kulik asserts "If any large numbers of these fish were in fact being killed and injured by turbine passage at these sites [the subject dams], the evidence would readily observable and documented, as noted by petitioners' reference to the Benton Falls project on the Sebasticook River. The fact that no such occurences have been documented at Lockwood, Shawmut and Weston despite direct monitoring is indicative that there are no significant problems at these projects."

RESPONSE: This statement is provably false for a number of reasons. First, Mr. Kulik misrepresents the facts surrounding the October, 1999 alewife kill at the Benton Falls project and the October 2004 American eel kill at the Benton Falls Project. The Petitioner, Douglas H. Watts, personally discovered and documented both of these severe fish kills and therefore has firsthand, eyewitness knowledge of both. The 1999 and 2004 fish kills were discovered by sheer luck and accident. Had Mr. Watts himself not spontaneously decided to go fishing below the Benton Falls Dam on Oct. 12, 1999 that severe fish kill of alewives would not have been discovered. Had Mr. Watts not driven to the Benton Falls Dam at 7 a.m. on October 14, 2004 and then observed a bald eagle pecking at an eel carcass on a gravel bar in the center of the Sebasticook River channel well below the Benton Falls Dam, the magnitude of the Oct. 2004 eel kill would never have been discovered. Mr. Kulik's assertion is provably false for the following additional reasons:

a) If no witnesses are present, large numbers of migrating fish can be killed at hydro-electric dams without anybody noticing. This is axiomatic.

b) Because of the physical mechanism by which dead and injured fish are carried and dispersed by river currents below hydro-electric dams, large numbers of dead fish can go completely undetected unless intensive, directed efforts are undertaken to find them. And even then, a large amount of sheer luck and serendipity may be necessary to find the bodies.

c) In both incidents Mr. Kulik cites, a private citizen discovered these fish kills. Dam operators were either not present during the kills or were not aware of them. These severe kills also went completely unnoticed by expert fisheries agencies who purportedly were supposed to watch out for them and discover them. This is especially pertinent in the 2004 Benton Falls fish kill because Maine DMR and the Benton Falls Dam owner had direct evidence as early as 2001 that the dam was killing massive numbers of eels each and every fall.

d) Large fish kills at hydro-electric dams occur episodically, often in short but intense bursts. This is due to the very specific behavioral attributes of various migrating fish species. Juvenile alewives and shad travel in very large schools, numbering in the tens of thousands, and may attempt to pass a dam in a matter of a few minutes, followed by many hours in which no

alewives or shad pass until the next school arrives. As such, a very large school of juvenile alewives or shad could be killed at a hydro-electric dam in a matter of minutes and not ever be noticed by even the most attentive dam operator making observations once every hour or once every several hours. Adult American eels migrate at night. This habit makes it impossible for even the most attentive dam operator to observe them trying to pass a dam.

e) The size and character of the Kennebec River and the Weston, Shawmut and Lockwood Dams make it impossible to rely upon the observational methods used at the Benton Falls Dam to discover and document episodic fish kills. This fact is summarized by MDMR fisheries scientist Nate Gray in a Dec. 20, 2007 email in which he states:

> "The big dams with deep tailraces could hide an army of dead and you'd never know. I base that observation on experience. Once injured or killed the eels do not float. Only the injured will make it an appreciable distance downstream as we've seen at Benton. The less the injury the greater the distance."

15. Mr. Kulik asserts at 16: "Scientific monitoring data show that these fish stocks are increasingly abundant under the passage conditions provided by the Agreement."

RESPONSE: This assertion so vague as to be meaningless. Which fish stocks? In what river? In which river reaches? The "flourishing commercial alewife fishery" Mr. Kulik cites at 16 is on the Sebasticook River, not the Kennebec River, and therefore has no relevance to this proceeding. The "successful breeding" of anadromous fish cited by Mr. Kulik in Yoder *et al.* (2004) refers to the free-flowing reach of the Kennebec River below Waterville -- not the Kennebec River above the subject dams, and thus is not relevant to this proceeding.

As such, the only direct references to fish abundance provided by Mr. Kulik are not relevant to the issue of effective fish passage at the subject dams. Mr. Kulik cites to no studies or evidence regarding the health of fish stocks that depend upon safe and effective fish passage at the subject dams. This is called "apples and oranges."

16. Mr. Kulik at 20 discusses the status of Atlantic salmon in the Kennebec River pursuant to

the U.S. Endangered Species Act.

RESPONSE: Contrary to Mr. Kulik's assertion at 20, the Sept. 2006 Status Review of the Gulf of Maine DPS of Atlantic salmon states at p. 55 that all anadromous Atlantic salmon in the Kennebec River are part of the Gulf of Maine Distinct Population Segment of Atlantic salmon:

> "Therefore, recent research supports the inclusion of all anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin northward along the Maine coast to the Dennys (see figure 6.2.2), including all associated conservation hatchery populations (including those currently maintained at Green Lake and Craig Brook National Fish Hatcheries) into one Gulf of Maine Distinct Population."
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> Fay, C., M. Bartron, S. Craig, A. Hecht, J. Pruden, R. Saunders, T. Sheehan, and J. Trial. 2006. Status Review for Anadromous Atlantic Salmon (*Salmo salar*) in the United States. Report to the National Marine Fisheries Service and U.S. Fish and Wildlife Service. 294 pages.

The delineation of the Gulf of Maine DPS quoted by Mr. Kulik at 20 is outdated and incorrect. The Sept. 2006 Status Review declares this fact at p. 43:

> "Finally, it is important to note two differences between the current analysis and that conducted by the 1999 BRT. First, the 1999 BRT excluded fish inhabiting the three large rivers (Penobscot above the site of the former Bangor Dam, Kennebec above the site of the former Edwards Dam, and the Androscoggin). The decision to not include the large rivers in the GOM DPS was based on the lack of a comprehensive genetic survey when the 1999 Status Review was being prepared. That information is now available and is being considered in detail in section 6.3.1.3."

This finding was reinforced on Nov. 14, 2006 when the Depts. of Interior and Commerce issued a positive 90-Day finding on the May 2005 petition submitted by Douglas Watts et al. to list

Atlantic salmon in the Kennebec River as an endangered species under the U.S. Endangered Species Act (Federal Register: 66298-66301).

It is unclear why Mr. Kulik fails to note, reference or even be aware of these 2006 scientific and regulatory findings regarding Atlantic salmon in the Kennebec River, given that his purpose here is as an expert in fisheries science.

The peer-reviewed scientific findings in the Sept. 2006 Status Review refute the assertions made by Mr. Kulik, cited to Paul Christman of the Maine Atlantic Salmon Commission, that "there is no remnant salmon population established in these waters [Kennebec River above Augusta]" and "Atlantic salmon native to the upper Kennebec were extirpated many decades ago."

Mr. Kulik is aware, or should be aware, that the U.S. Dept. of Interior and Commerce in their 2006 Status Review do not consider the salmon in Bond Brook and Togus Stream to be separate and distinct populations from Atlantic salmon living in the accessible portion of the Kennebec River. All of the anadromous Atlantic salmon in the Kennebec River today are considered to be part of the Gulf of Maine Distinct Population Segment of Atlantic salmon. As such, Mr. Kulik's assertion that the 15 salmon captured at the Lockwood fish trap in 2006 are "unrelated" to salmon from Bond Brook and Togus Stream has no scientific meaning.

Mr. Kulik states at 20: "Atlantic salmon in the Kennebec River above Augusta are not presently classified as part of the DPS ..." Mr. Kulik is wrong.

As such, all 15 of the Atlantic salmon captured at the Lockwood Dam fish trap in 2006 are part of the Gulf Of Maine Distinct Population of Segment of Atlantic salmon. Mr. Kulik states at 21 they are not. Mr. Kulik is wrong.

Mr. Kulik states the existence of two distinct, extant Atlantic salmon populations in Bond Brook and Togus Stream, two lower tributaries of the Kennebec River. This is wrong. Published survey data by the Maine Atlantic Salmon Commission since 1999 shows that Atlantic salmon have completely abandoned these two small streams in favor of spawning habitat in the restored 20-mile section of the Kennebec River from Augusta to Waterville. The descendants of salmon

which spawned in Bond Brook and Togus Stream prior to the removal of the Edwards Dam are now spawning in the Kennebec River from Augusta to Waterville.

At 21, Mr. Kulik states of the 15 salmon captured at the Lockwood Dam fish trap in 2006 that genetic studies show "none of these salmon was related to the Bond Brook or Togus population." Mr. Kulik cites to no scientific evidence or references to support this factual statement. Nor does he describe how genetic analysis could demonstrate a provable "relation" between these Kennebec salmon and two "populations" which ceased to functionally exist six years ago.

In review, virtually every scientific assertion made by Mr. Kulik regarding Atlantic salmon at pp. 20 and 21 is provably false and refuted by peer-reviewed scientific studies published in 2006 that he is or should be intimately familiar with as a professional fisheries scientist in Maine.

17.Mr. Kulik asserts at 22: " ... the Lockwood, Shawmut and Weston dams do not jeopardize the existence of Atlantic salmon because downstream fish passage is already provided."

RESPONSE: This assertion is proven false by Mr. Kulik's own citation of scientific data at 15 regarding turbine mortality studies of Atlantic salmon smolts. Using the data supplied by Mr. Kulik, simple arithmetic shows that cumulative passage mortality for Atlantic salmon smolts migrating from the Sandy River could exceed 40 percent each year. There is no question that a mortality rate of 40 percent would jeopardize the existence of the Kennebec River Atlantic salmon population.

18. Mr. Kulik at 23 describes existing downstream passage conditions at the Weston, Shawmut and Lockwood dams: "Although these structures were historically built for other purposes at the projects, they are now opened specifically during the times of year required for moving anadromous fish downstream. These fishways are monitored by DMR and FPLE biologists, and results are documented, reviewed and discussed in an annual scientific forum .... This type of downstream anadromous fish passage is conventional as it has been successfully adopted at numerous hydroelectric projects ..."

RESPONSE: This assertion is provably false. There are no specifically and intentionally designed, manufactured and installed downstream fish passage facilities at the three dams. What Mr. Kulik describes as "fishways" and "structures" are either log and trash sluices dating from the dams' original construction or the dam spillways themselves. Mr. Kulik here attempts to equate a log sluice with a carefully designed, engineered and tested downstream fish passage system. This is no different than saying a socket wrench is a hammer because you can tap a small nail into a piece of wood with its handle.

Mr. Kulik has defined "downstream fishway" so loosely that this term can be applied to any portion of the dam that fish can possibly swim over, around or through. By using Mr. Kulik's stated definition of "downstream fishway," one would have to conclude that the *entire dam* is a downstream fishway. Mr. Kulik asserts that "downstream fishways" exist at the dams today based upon the simple fact that the dams themselves exist today. This is circular logic.

Mr. Kulik takes us through this tortured argument solely to avoid admitting that the Weston, Shawmut and Lockwood dams are not equipped today with any downstream fishways as this term is defined and understood by professional fisheries scientists. The "fishways" and "structures" described by Mr. Kulik at 23 are nothing more than the dams themselves, including their turbines. This fact puts Mr. Kulik in the odd position of asserting that the turbines of a hydro-electric dam were designed and installed for the specific purpose of safely passing migrating fish; and that the entire dam was specifically designed as a downstream stream fish passage facility. Such a formulation fails the straight face test.

Mr. Kulik is aware that a real, actual downstream fish passage facility is designed and engineered from scratch for the highly specific goal of safely and effective passing migratory species. Mr. Kulik is aware that such facilities must be carefully and specifically designed in response to the precise fish species and life stages of those species which must be safely passed and their specific behavioral attributes. Mr. Kulik is aware that the location, number, design and size of the facilities must take into account the unique characteristics of the dam in question. Mr. Kulik is aware that successful downstream fish passage design is dependent on a high degree of knowledge and understanding of the hydraulic flow fields directly above the dam and how these flow fields can be used or modified to increase the effectiveness of the installed downstream fishway. In

sum, Mr. Kulik is completely aware via his professional work and expertise that designing and constructing an effective and successful downstream fish passage system at a hydro-electric dam is a very tightly focussed, complex and specialized fusion of fisheries biology, hydraulics, engineering and testing.

By his own assertions at 23 Mr. Kulik admits that what he calls downstream "fishways" and "structures" at the Weston, Shawmut and Lockwood Dams lack all of the known and accepted attributes of actual downstream fish passage facilities for the simple reason that they were never constructed or designed for the highly specific purpose of safely and effective passing the specific species and life stages of fish that exist in the Kennebec River. By Mr. Kulik's proferred definition, virtually any structure could be called a "downstream fishway" -- including the entire dam.

20. Mr. Kulik asserts at 23: "It is inappropriate to prematurely dismiss this form of passage as inadequate, in the absence of any data or any site-specific evidence that indicates otherwise. The effectiveness of these facilities has been and will continue to be studied by FPLE under the guidance of the resource agencies, the KHDG agreement and each applicable FERC license."

RESPONSE: This assertion is provably false based upon the facts discussed above. Mr. Kulik asserts here that any and all of the portions of the dams which water and fish can pass over or through are *de facto* "downstream fishways." This utterly perverts the accepted scientific and engineering definition of a downstream fishway. This is no different than saying a very large nail is a "hammer" because you can pound a small nail with it.

The burden of proof is not upon the Petitioners to provide evidence that the "structures" Mr. Kulik describes are not fishways. Mr. Kulik readily admits they are not. The commonly accepted scientific and engineering terms for these structures are: log sluices, trash gates, hydro-electric turbines, power canals, turbine intakes and spillways. Here, Mr. Kulik is making the extraordinary and non-intuitive assertion that these structures are in fact fishways. Since these structures are not fishways, the burden of proof falls upon Mr. Kulik and FPLE to provide compelling, affirmative evidence that these structures actually serve a very specific function they were never designed to perform.

The burden of proof is upon FPLE to provide affirmative evidence that these various "structures" are actually doing an equal or better job at safely passing migrating fish than specially designed, engineered and tested "state of art" downstream fish passage facilities of the type now in operation at the Benton Falls Dam, the Burnham Dam, the American Tissue Dam and numerous other hydro-electric dams across New England and the United States.

Mr. Kulik's assertion is fundamentally wrong here for the simple reason that the KHDG Agreement and the Water Quality Certification Orders for the dams specifically require "permanent downstream fish passage facilities" to be installed at the dams upon installation of permanent upstream fish passage facilities. These permanent facilities cannot be constructed and installed until the completion of a formal consultation and design/engineering process between the dam owner, the State of Maine, the U.S. Fish & Wildlife Service and the FERC. Within this process, if FPLE wished to assert that the dams, as built, already provide equal or better downstream fish passage than any potential "state of art" downstream fish passage facility, FPLE would be required to provide affirmative evidence to prove this, in the form of approved and detailed effectiveness studies.

Mr. Kulik's interpretation of burden of proof here is also refuted by the plain language of Maine's water quality statutes pursuant to water quality certification for hydro-dams under §401 of the federal Clean Water Act. By these statutes, the license applicant bears the burden of proof to show their activities will not cause violations of applicable state and federal water quality standards and designated uses. 38 MRSA §636(8) (The department shall approve a project when it finds that the applicant has demonstrated that there is reasonable assurance that the project will not violate applicable state water quality standards, including the provisions of 38 MRSA §464 (4)(F), as required for water quality certification under the United States Water Pollution Control Act, Section 401.) Therefore, the plain language of controlling statute compels the license applicant to provide affirmative evidence showing their activities will not cause a violation of water quality standards and designated uses. This means that if FPLE wishes to assert here that a 70-year-old log and trash sluice has been magically transformed into a 21st century "state of art" downstream fish passage facility, the burden is solely upon FPLE to prove this.

III. Testimony of Scott Ault.

1. Mr. Ault asserts at 7: "This observation program does not produce an exact count of dead and injured eels because not all areas of the tailrace can be observed. However, it is my professional opinion that the program does provide meaningful data on the relative abundance and seasonal trend of dead and injured eels occuring at each project and this evidence indicates that mortality events of the magnitude asserted by the petitioners have not been observed at these project."

RESPONSE: Mr. Ault here admits that due to its design, the "observation program" of FPLE cannot determine the actual, total number of eels killed each fall at FPLE's dams ("not all areas of the tailrace can be observed."). This identical admission is also made by Robert Richter of FPLE in his testimony at 12 and 13 as well as by Mr. Nate Gray of Maine DMR. If an observation method is unable to determine the *actual or total* number of eels killed at a dam, as Mr. Ault states here, the observation method is only capable of showing the *minimum* number of American eels killed each year at the dams.

By Mr. Ault's own admission, the "observation program" is incapable of allowing Mr. Ault to conclude eels are not being killed at the dams in the "magnitude" alleged by Petitioners. This is because, by Mr. Ault's own admission, the observation program may only be documenting a small percentage of the *actual* number of American eels killed at the dams. Mr. Ault's assertion is rests on a logical fallacy -- making a positive conclusion from a negative finding. As a fisheries expert, Mr. Ault should be aware that competent scientists do not make positive conclusions based upon negative findings.

Petitioners have cited an overwhelming preponderance of scientific evidence from the subject dams and other dams suggests that a significant portion of the total number of American eels attempting to migrate past the subject dams are being drawn into the dam turbines and killed due to a lack of safe and effective fish passage for them. Our assertions on this topic are based upon the exact same scientific principles and concerns cited by fisheries scientist for the Maine DMR in their May 8, 2006 letter to FPLE:

> "MDMR is concerned that controlled spill via bypass gates will not be an

> effective measure for downstream eel passage, and that significant injury or mortality to eels will occur unless additional measures are taken. In September and October, river flow exceeds hydraulic capacity only 5-15% of the time at the Weston and Shawmut projects and 40-50% of the time at the Lockwood Project and. If migrating eels are randomly distributed in the river, then eels will pass through the turbines at Weston and Shawmut 85-95% of the time and through the turbines at Lockwood 50-60% of the time. We note that both FPL Energy and MDMR have observed eel mortalities below the Shawmut Project."

Although Mr. Ault is described as an expert on American eels and American eel passage, he does not once mention, reference or discuss the May 8 and May 12, 2006 consultation letters to FPLE from the Maine DMR and U.S. Fish & Wildlife Service which describe in detail the scientific basis for their conclusions that the subject dams are killing significant numbers of American eels and the "passage methods" now provided by FPLE for eels are wholly inadequate.

One would assume that the entire reason for Mr. Ault's participation in this proceeding as an expert witness would be to analyze and comment on the extant consultation comments on this issue as provided by expert fisheries scientists with the Maine DMR and USFWS. This begs the question of whether Mr. Ault was ever provided by FPLE with these detailed consulation letters; and if so, why has Mr. Ault not mentioned them, commented upon them or even acknowledged their existence?

2. In his testimony at 8-9, Mr. Ault fails to note or acknowledge the American eel tracking studies conducted by FPLE and Maine DMR at the Lockwood Dam in 2002. Mr. Ault's testimony fails to cit or reference *any of the scientific studies or observations* made by Maine DMR in the Kennebec River drainage on the subject of downstream passage for American eels. Mr. Ault fails to state why none of this published data is relevant or worthy of his expert review and comment. Does Mr. Ault believe the 2002 Lockwood Dam study data is relevant or not? We don't know. Why does Mr. Ault refuse to acknowledge or discuss any of the published data on downstream American eel passage conducted in the Kennebec River and at FPLE's own dams; and the conclusions reached in Maine DMR and USFWS' 2006 consultation comments to FPLE? Would this not be the exact purpose of Mr. Ault participating in this proceeding as an

American eel passage expert?

3. Mr. Ault asserts at 11: "It should be noted that even state of the art downstream fish passage devices and measures are not 100 percent effective at passing fish and are not without risk of injury or death."

RESPONSE: Mr. Ault nor anyone else has stated these dams are equipped with "state of art" downstream passage. Except as a general, basic admission that these dams kill fish, the inclusion of this statement is meaningless.

IV. Testimony of F. Allen Wiley.

1. Mr. Wiley asserts at 3: "Once a state has issued its water quality certification and FERC has incorporated those conditions in a license, those conditions are enforceable only by FERC, not the state."

RESPONSE: This is refuted by enforcement actions made by the State of Maine to enforce water quality certification conditions at hydro-electric dams. *See*: In the Matter of Benton Falls Associates .... The text of this Consent Order is a joint Evidentiary Exhibit of Petitioner Friends of Merrymeeting Bay and Douglas Watts, labelled Exhibit W/FOMB-2.

2. Mr. Wiley asserts at 3: "A state may modify its certification after the FERC license is issued only when the FERC license contains a 're-opener' condition authorizing the state to modify said conditions, or if the licensee proposes to amend its license in a way that requires a new certification."

RESPONSE: This assertion turns the federal Clean Water Act on its head. The Clean Water Act and Maine law prohibit issuance of a certification unless the applicant demonstrates the project will not violate applicable water quality standards and designated uses. See Congressional testimony of Maine Senator Edmund S. Muskie:

> "This provision may be the most important action of this legislation. I call the

> Senate's attention to section 21. This section requires that any applicant for a federal license or permit obtain certification of reasonable assurance of compliance with water quality standards before that applicant can receive any license or permit." (Sen. Edmund S. Muskie. 116 Cong. Rec. 8,984 (1970) on H.R. 4148 after amendment by the Conference Committee).

3. Mr. Wiley asserts at 3: "Once a FERC license is issued, the license may be modified only upon the mutual consent of FERC and the licensee."

RESPONSE: This proceeding has nothing to do with a FERC license.

4. Mr. Wiley asserts at 3: "There is no regulatory mechanism available to the Board to revoke, modify or suspend the water quality certifications for the L, W and S projects."

RESPONSE: The regulatory mechanism is specifically provided by Maine Law under 38 MRSA §341-¶D.

4. Mr. Wiley discusses the sea lamprey at 7.

RESPONSE: FPLE references to lamprey eel are extremely out of date, are contrary to modern science and are irrelevant under Maine law. Maine law requires Maine waterbodies be suitable habitat for all native, indigenous fish species. The sea lamprey (*Petromyzon marinus*) is a native and critically important migratory fish species of the Kennebec River. This is demonstrated in a November 2006 paper in Fisheries:

> "Sea lampreys likely provide an additional benefit to Atlantic salmon spawning activity in sympatric reaches. In constructing their nests, lamprey carry stones from other locations and deposit them centrally in a loose pile within riffle habitat and further utilize body scouring to clean silt off stones already at the site (Kircheis 2004). Ultimately, a pile of silt-free stones as deep as 25 cm and as long as 1 meter is formed (Leim and Scott 1966; Scott and Scott 1988), into which the lamprey deposit their gametes.

> The stones preferred by lampreys are generally in the same size range as those preferred by spawning Atlantic salmon. Thus, lamprey nests can be attractive spawning sites for Atlantic salmon (Kircheis 2004). Kircheis (2004) also notes the lamprey's silt-cleaning activities during nest construction that may improve the "quality" of the surrounding environment with respect to potential diversity and abundance of macroinvertebrates, a primary food item of juvenile salmon; however, empirical data to support this assertion are lacking at this time."
>
> Fay, C., M. Hachey, R. Saunders. 2006. Maine's Diadromous Fish Community: Past, Present and Implications for Atlantic Salmon Recovery. Fisheries. Vol. 31. No. 11. p. 544.

5. Mr. Wiley quotes the Maine BEP decision of Feb. 2, 2006 at 17: "... in the absence of specific relevant reopeners in water quality certifications [the legal effect of a BEP attempt to modify a certification] is highly questionable."

RESPONSE: FPLE should be cautious about quoting this statement by the Maine BEP, since it directly contradicts a statement made by the Maine BEP only five months earlier, and it directly contradicts the decision by the Maine BEP to schedule an adjudicatory public hearing on this instant matter.

I declare under the penalty of perjury that the above is to the best of my knowledge true and correct.

Dated February 7, 2007.

_____

Douglas H. Watts, Petitioner
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