

**Petition before the
Maine Board of Environmental Protection
to Modify the Water Quality Certification Order
for the Union Gas Hydro Electric Project
Messalonskee Stream, Waterville, Maine.**

Pursuant to 38 MRSA §341-D and Ch. 2 §27 of Maine DEP Rules, Douglas H. Watts of 131 Cony Street, Augusta, Maine 04330 submits this Petition and evidentiary appendices requesting the Maine Board of Environmental Protection convene a public adjudicatory hearing to modify the Maine Water Quality Certification issued for the Union Gas Hydro Project on Messalonskee Stream in Waterville, Maine.

STANDING OF PETITIONER

Chapter 2 §27 of the DEP's Rules for the Processing of Applications and Other Administrative matters provides that any person, including the Commissioner, may petition the Board to revoke, modify or suspend a license. For the purposes of the Chapter 2 Rules, "person" means any individual; partnership; corporation; Federal, state or local government entity; association; or public or private organization of any character; except the agency conducting the hearing." To the extent that standing is construed by the Board or any court in subsequent actions as being limited to any person who can demonstrate a particular interest harmed, it is settled that any harm to aesthetic, environmental or recreational interests confers standing. Fitzgerald v. Baxter State Park Authority, 385 A.2d 189, 196-7 (Me. 1978) (citing Sierra Club v. Norton, 405 U.S. 727 (1972)).

BACKGROUND

The Union Gas Hydro Electric Project on Messalonskee Stream in Waterville, Maine was

constructed in approx. 1920. It is located approx. 1.5 miles above the confluence of Messalonskee Stream and the Kennebec River. As part of the Project's federal relicensing in the early 1990s, the Maine BEP on August 28, 1995 approved a Water Quality Certification Order (WQC) allowing continued operation of the Project until its federal license expires in 2036.

In June 2001, a large portion of the granite block face of the dam spillway suddenly collapsed and the dam impoundment was drained for safety reasons. Further inspection showed the remaining portion of the dam was in very poor condition. The Project owner at that time, FPL Energy, applied for a Maine DEP permit to remove approx. 70 feet of the granite block dam and spillway and to secure the dam abutments with sprayed concrete. This permit was issued and the work was completed by Sept. 2001. Since that time, the Union Gas Project has not operated and has not been repaired. Since Sept. 2001, the 1.2 mile reach of Messalonskee Stream formerly impounded by the Union Gas dam has reverted to its natural, free-flowing condition and has rapidly revegetated -- with numerous trees up to 25 feet in height.

In 2004 the Union Gas Project was sold by FPL Energy to Synergics of Annapolis, Maryland d/b/a Messalonskee Stream Hydro LLC. In Feb. 2005 the company applied for a Maine DEP permit to construct a new concrete dam and spillway at the Project so as to resume power generation at the site. The company proposed to construct a new dam structure and impoundment of similar dimensions to that which existed at the site prior to summer 2001. This permit was approved by the Maine DEP on May 10, 2005. The permit was appealed on June 9, 2005. This appeal was denied by the Maine BEP on Nov. 3, 2005.

PURPOSE AND INTENT OF PETITION

Douglas H. Watts requests the August 28, 1995 Water Quality Certification Order be modified so as to allow for hydro electric power generation to resume at the Union Gas Project site in a manner which conforms with Maine water quality laws and allows Messalonskee Stream to be in attainment of its Class C water quality standards and designated uses.

This can be accomplished by lowering the height of the proposed dam and spillway to the elevation of the natural bedrock ledge upon which the existing Project facilities are built. This

redevelopment proposal will allow for hydro electric generation, safe and effective upstream and downstream fish passage, and preservation of nearly all of the natural, free-flowing stream habitat in the 1.2 mile reach of Messalonskee Stream formerly impounded by the pre-2001 dam structure. Structural modifications of the Project necessary to implement this proposal can be implemented through a License Amendment request by the project licensee to the Federal Energy Regulatory Commission. By taking advantage of the significant natural fall of Messalonskee Stream at the Project site, the alternative proposal presented herein would allow for the resumption of hydro electric generation at site, safe and convenient fish passage at the site, and preservation of the most of the natural, free-flowing habitat of Messalonskee Stream above the site.

APPLICABLE STANDARDS

Section 27 of the DEP's Chapter 2 Rules for the Processing of Applications and Other Administrative Matters provides that any person, including the Commissioner, may petition the Board to revoke, modify or suspend a license. The DEP's Rules further provide that, after notice and opportunity for the petitioner and the licensee to be heard, the Board shall, within 30 days of the filing of the petition, dismiss the petition or schedule a hearing on the petition. Finally, the DEP's Rules provide that, after a hearing, the Board may modify in whole or in part any license, issue an order prescribing necessary corrective action, or refer a license to District Court for revocation or suspension when the Board finds that:

- A. The licensee has violated any condition of the license;
- B. The licensee has obtained a license by misrepresenting or failing to disclose fully all relevant facts;
- C. The licensed activity poses a threat to human health or the environment;
- D. The license fails to include any standard or limitation legally required on the date of issuance;

- E. There has been a change in any condition or circumstance that requires revocation, suspension or a temporary or permanent modification of the terms of the license;
- F. The licensee has violated any law administered by the Department; or
- G. The license fails to include any standard or limitation required pursuant to the federal Clean Air Act Amendments of 1990.

ARGUMENT

Evidence presented herein shows the Maine BEP has ample grounds to modify its August 28, 1995 WQC for the Union Gas Project:

Criterion C. The licensed activity poses a threat to human health or the environment.

The activity licensed by the August 28, 1995 WQC consists of an approx. 35 foot high dam in the bed of Messalonskee Stream, an approx. 1.2 mile long impoundment behind the dam, and facilities for the diversion of water from the stream for the purpose of hydro electric generation. Because of the voluntary removal of the dam structure in 2001 there is no longer a dam in the natural bed Messalonskee Stream at the site today; and the former impoundment no longer exists. The May 10, 2005 dam reconstruction permit issued by the Maine DEP allows for construction of a new 35 foot high dam at the site and a new impoundment approx. 1.2 miles long. The Maine DEP permit states that this reconstruction activity is authorized under the terms and conditions of the August 28, 1995 Water Quality Certification Order issued by the Maine BEP for the Union Gas Project. As such, the proposed reconstruction activity, is the “licensed activity” referenced in Criteria C.

The licensed activity poses a clear threat to the environment. The licensed activity includes a 35 foot high dam in the bed of Messalonskee Stream and 1.2 mile long impoundment behind it. The dam (as described and permitted in 1995 and 2005) is an impassable barrier to all fish species including migratory species which must travel from freshwater to saltwater to

complete their lifecycle. Migratory fish species indigenous and present in Messalonskee Stream today include American eel, Atlantic salmon, sea lamprey and blueback herring. The existence of a 35 foot high impassable dam at the Union Gas site would prevent these fish from occupying their native habitat in Messalonskee Stream above the dam. The approx. 1.2 mile impoundment created by this dam represents a profoundly negative alteration to the natural character and ecological functions of Messalonskee Stream. The natural character of this section of Messalonskee Stream is a fast-moving stream with rapids, riffles and deep pools with a high degree of habitat complexity. In contrast, the dam impoundment is deep, steep-sided and pond-like with virtually no habitat complexity. The impoundment provides no suitable habitat for indigenous Atlantic salmon. In its natural, free-flowing condition, the same area provides a significant amount of Atlantic salmon spawning and juvenile production habitat. The impoundment, as described and permitted in 1995 and 2005, precludes indigenous Atlantic salmon from living in Messalonskee Stream from the Union Gas Project site to the base of the Automatic Dam, 1.5 miles upstream. These impacts represent a clear threat to the ecological health of Messalonskee Stream and the ability of indigenous migratory fish species to successfully live in the stream. As such they represent a clear threat to the environment.

Criterion E: There has been a change in any condition or circumstance that requires revocation, suspension or a temporary or permanent modification of the terms of the license;

Several critical changes of in condition and circumstance have occurred on Messalonskee Stream since August 28, 1995 which require permanent modification of the terms of the 1995 WQC.

The first critical change was the removal of the impassable Edwards Dam from the Kennebec River in Augusta, Maine in July 1999 -- four years after the WQC was issued. The removal of the Edwards Dam in 1999 has restored free access to Messalonskee Stream for five of its native, migratory fish species: American eel, sea lamprey, Atlantic salmon, blueback herring and striped bass. All five of these fish species have been repeatedly documented occupying their native habitat in Messalonskee Stream since 1999. When the WQC for the Union Gas Project was issued on August 28, 1995 none of these species had free access to Messalonskee Stream

and none were present in the stream except for American eel. American eel were present in Messalonskee Stream in 1995 because they migrate into freshwater as very small (2-3 inch) juveniles and were capable of swimming through small crevices in the base of the Edwards Dam, which was made of timber cribs filled with stones. Except for American eel, the Edwards Dam was impassable to all other migratory fish species native to Messalonskee Stream and thus prevented these fish from being present in the stream when the WQC was issued in 1995. For this reason, the 1995 WQC failed to analyze or consider the effects of continued operation of the Union Gas Dam Project on these migratory fish species. The entire 20+ page WQC document does not mention or reference any of these migratory fish species; nor does the WQC discuss the potential of these fish species restoring themselves to Messalonskee Stream when and if the Edwards Dam were removed [in 1992, three years before the Union Gas WQC was issued, the State of Maine Planning Office adopted an official comprehensive plan for the Kennebec River drainage which called for the complete removal of the Edwards Dam].

In hindsight, the Maine DEP in 1995 should have considered the possibility that removal of the Edwards Dam in Augusta would result in a number of migratory fish species indigenous to Messalonskee Stream returning to the stream once the Edwards Dam was removed. The text of the WQC shows the Maine DEP did not consider this possibility when it issued the WQC. Direct experience now shows that Atlantic salmon, sea lamprey, blueback herring, striped bass and American eel have all returned to Messalonskee Stream with the removal of the Edwards Dam in 1999. The 1995 WQC makes no accommodation or provision for this fact. The removal of the Edwards Dam has added at least four native fish species to Messalonskee Stream since the 1995 WQC was issued. Based upon historic and biological data, the lower reach of Messalonskee Stream now supports its full complement of indigenous fish species for the first time since the Edwards Dam was constructed in 1837. This represents a marked and significant change in circumstances since the Union Gas WQC was issued by the Maine DEP in August 28, 1995.

A second and important change in circumstance is that the water quality of Messalonskee Stream has improved markedly since 1995 due to the closure of the Cascade Woolen Mill in Oakland, Maine during the late 1990s. The 1995 WQC specifically notes that the discharge of treated wastewater from this mill into Messalonskee Stream resulted in depressed dissolved oxygen levels, algae blooms and eutrophication of the stream. The closure of the Cascade Woolen

Mill eliminated the largest and most damaging pollution source to Messalonskee Stream. Since the mill's closure, water quality in the stream has improved dramatically. This change in circumstances has greatly increased the ability of Messalonskee Stream to support its native fish and aquatic fauna as compared to conditions which existed when the 1995 WQC was issued. In sharp contrast to 1995, Messalonskee Stream in the vicinity of the Union Gas Project site now supports its full complement of native fish species -- and -- the water quality of the stream itself has dramatically improved. The 1995 WQC did not envision either of these events or accommodate for them. It is critical to understand how profoundly these two events have altered the ecological health of Messalonskee Stream during the past six years. In 1995, Messalonskee Stream was one of the most degraded waterways in Maine due to point and non-point source pollution and the impacts of impassable dam. Today, the lower, free-flowing reach of Messalonskee Stream supports as many or more native, migratory fish species than the most pristine coastal watersheds of Maine or New England. Messalonskee Stream is the little engine that could. The text of the 1995 WQC shows that Maine DEP and Maine BEP did not imagine or conceive such a thing happening -- or happening so quickly. But it most assuredly has.

The third critical change in circumstances which has occurred on Messalonskee Stream since 1995 is the collapse and removal of the former granite-block dam from the bed of Messalonskee Stream at the Union Gas Project site in summer 2001. This event has restored the lowermost 2.5 miles of Messalonskee Stream to its natural, free-flowing character for the first time since the early 1800s [historic maps show that several small mill dams were present in this reach of the stream before the Union Gas Dam was built in 1920]. This event, of course, was not envisioned when the 1995 Union Gas WQC was issued. Yet it happened. This 2.5 mile reach of Messalonskee Stream has now existed in its natural, free-flowing condition for more than five years. This five-year period has allowed the natural banks and riparian corridor of Messalonskee Stream above the Union Gas site to completely revegetate and has allowed the natural bed and channel of Messalonskee Stream to revert to its natural course and character. Trees in excess of 25 feet in height now grow in soil that was under 30 feet of water just six years ago.

These three changes in circumstances have been profoundly beneficial to one member of the natural fauna of Messalonskee Stream: the American eel. The American eel is the one native, migratory fish species of Messalonskee Stream which was not extirpated from Messalonskee

Stream by the construction of the Edwards Dam in Augusta in 1837, the construction of the Union Gas Dam in c. 1920, or the construction of other, upstream dams on Messalonskee Stream during the 1910-1930s era. This is solely because of the unique lifecycle of the American eel which operates in reverse from all other migratory fish species. Other migratory fish species, such as Atlantic salmon or blueback herring, are born in freshwater, migrate to saltwater and return to freshwater to give birth. American eels do the opposite. They are born in the mid-Atlantic Ocean, migrate into freshwater as 2-3 long juveniles, spend their adult lives in freshwater, then migrate back to saltwater and their own birthplace in the mid-Atlantic Ocean where they spawn and die. Due to their very small size and “slithery” character, baby American eels can migrate upstream past artificial dams and obstacles that are impassable to larger fish. A crack or crevice in a dam no larger than a pencil hole can be used by baby American eels to migrate past the dam. Because American eels have the ability to breathe oxygen through their skin as well as their gills, baby American eels can actually travel some distance over the moistened surface of ledges and inclined dam surfaces so as to reach their adult habitat upstream. No other migratory fish native to Maine is capable of such a feat.

The removal of the Union Gas Dam structure has benefitted the stream’s native eel population in two different ways. First, the removal of the dam structure has greatly increased the number of eels which can migrate past the dam site. This was documented with photographs and extensive visual observations by the Petitioner on June 12 and 13, 2005. On both dates, literally thousands of American eels ranging from 3-6 inches long were observed climbing the wetted bedrock ledges of Messalonskee Stream and migrating up the stream. On June 12, 2005 visual observations were conducted at the next dam upstream, the Automatic Dam, approx. 1.5 miles above the Union Gas Project site. On June 12, 2005 hundreds of 3-6 inch long American eels were observed and photographed attempting to climb over the Automatic Dam and swimming in Messalonskee Stream at the foot of the dam. These observations conclusively confirmed that a large number of juvenile American eels are now present above the Union Gas Project site. These direct visual observations have also been confirmed by dam operators on Messalonskee Stream. On Nov. 3, 2005 the scientific consultant for the Union Gas Project owner, Mr. David Dominie of E-Pro Consulting, informed the Maine BEP that Messalonskee Stream dam operators have observed adult American eels many miles above the Union Gas site for more than 30 years. These observations are confirmed by Maine Dept. of Inland Fisheries &

Wildlife fisheries survey data which have found adult American eels in various locations in the Belgrade Chain of Lakes which are the source of Messalonskee Stream itself. This physical data has been further confirmed by a recent statement by Gail Wippelhauser, Ph.D. of the Maine Dept. of Marine Resources, to Maine DEP Commissioner David Littell in which Ms. Wippelhauser stated that restoration of American eels to their native habitat in the Messalonskee Stream watershed and the Belgrade Chain of Lakes is an important restoration goal of Maine DMR. Taken together, these facts and observations show that the removal of the Union Gas dam in 2001 has significantly enhanced the ability of juvenile American eels to gain access to their native habitat in Messalonskee Stream.

In order to complete their lifecycle and give birth, adult American eels must migrate from their freshwater habitat to the mid-Atlantic Ocean. American eels conduct this migration at ages ranging from eight years to as much as 40 years and when they have grown to lengths of three to four feet. American eels migrate to the Atlantic Ocean to breed only once in their lives and die after spawning. For this reason, it is critically important that male and female American eels can successfully migrate from freshwater to saltwater when they become sexually mature. Scientific research shows that nearly all adult American eels living in freshwater are females; the smaller males tend to inhabit brackish estuaries and coastal marine waters. Sexually mature female American eels migrate to the ocean from freshwater lakes, ponds and rivers during the autumn months (Sept. to Nov.) and exclusively at night. A large body of evidence and research shows these American eels are attracted to the intakes of hydro-electric dam turbines where they are killed or severely injured, and thus cannot complete their once-in-a-lifetime spawning migration.

Since the Union Gas Project dam was removed in 2001, all of the female American eels migrating from Messalonskee Stream to spawn have been able to swim freely past the Union Gas Project site without being killed or severely injured in the turbines of the Project. This change in circumstances during the past five years is profound and highly beneficial to each individual female eel and to the health of the American eel population as a whole. If the Union Gas Project dam is reconstructed as proposed, female American eels would no longer be able to swim past the Project site safely as they have for the past five years. This is because the reconstruction proposal calls for no safe downstream passage for American eels at the dam and calls for diverting nearly all of the stream's flow through the dam turbines, where the eels will be killed or

severely injured by the spinning turbine blades.

Criteria D: The license fails to include any standard or limitation legally required on the date of issuance.

The Maine BEP may only issue a water quality certification order for a hydropower project if the standards of classification of the waterbody are met. 38 MRSA §464 (4)(F)(3). If the standards of classification of the waterbody are not being met, the Maine BEP may only issue a water quality certification order if the project does not cause or contribute to the failure of the waterbody to meet the standards of classification. *Id.* This means if a hydropower power project causes or contributes to the failure of a waterbody to meet its classification standards, the BEP cannot issue a water quality certification order for the project.

Messalonskee Stream is classified as “C” by the Maine Legislature. Class C waters “shall be of such quality that they are suitable for the designated uses of ... recreation in and on the water ... and as a habitat for fish and other aquatic life.” 38 MRSA § 465(4)(A). Discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community. 38 MRSA § 465(4)(C). If a project under review for water quality certification prevents an indigenous fish species from living in its native habitat in a stream, the project must be modified to allow the fish species to live in the stream. Otherwise, the BEP cannot issue a water quality certification order for the project. 38 M.R.S.A. § 465(4)(C). 38 MRSA §464 (4)(F)(3).

The water quality certification order issued by the Maine BEP for the Union Gas Project in 1995 does not allow Messalonskee Stream above the Union Gas Project to support all species of fish indigenous to the stream, including American eel, sea lamprey, Atlantic salmon, blueback herring and striped bass. All of these fish species are highly migratory and require safe access to and from their freshwater and saltwater habitats in order to live. American eel, sea lamprey, blueback herring and striped bass are indigenous to Messalonskee Stream.

When the Maine DEP issued its water quality certification order for the Union Gas Dam

in 1995, the 35-foot high dam at the Union Gas site was impassable to all fish, except for very small numbers of juvenile American eels which (somehow) crawled through wetted crevices at the base of the dam. In 1995, the Maine DEP was required by law to issue a WQC for the Union Gas Dam which would allow all of the native migratory fish of Messalonskee Stream to safely migrate back and forth past the Union Gas Dam and live in their native habitat in Messalonskee Stream. Maine law required the WQC to do this. The WQC failed to do it.

Maine's Class C water quality standards require all Class C waterbodies to be suitable habitat for all of their indigenous fish species. 38 MRSA § 465(4)(C). This is a legal requirement - not a goal. If an impassable, 35-foot-high dam prevents a stream's indigenous fish species from gaining access to a waterbody, that dam is causing and contributing to the failure of that waterbody to meet its Class C standards. In 1995, the Union Gas Dam was causing and contributing to this failure of Messalonskee Stream to meet its minimum Class C water quality standards. By law, the Water Quality Certification Order issued by the Maine DEP in 1995 was supposed to correct and remediate this failure. Instead, the 1995 WQC authorized and enshrined it. The WQC for the Union Gas Project was invalid at the moment it was issued on August 28, 1995 and remains invalid today. For this reason, the Union Gas Project WQC issued by the Maine DEP in 1995 fails to include standards and limitation legally required on the date of its issuance.

SUMMARY OF APPLICABLE CRITERIA

A summary of the criteria set forth in Ch. 2 §27 which allow the Maine BEP to modify a previously issued Water Quality Certification Order show that Criteria C, D and E are met in this case. Reconstruction of the Union Gas Dam, as permitted by Maine DEP in 2005 and allowed under the existing WQC, will have obvious and profoundly negative impacts on the ecological health of Messalonskee Stream. These impacts are so profound that they will cause this reach of Messalonskee Stream to fall from full attainment of its Class C water quality standards into full violation of its standards for at least next 20 years (ie. until the dam's federal license expires in 2036). This reconstruction will deprive five native fish species from living in Messalonskee Stream above the dam site for at least the next 20 years. The reconstruction will cause annual fish kills of adult American eels now documented living above the dam site as they attempt to migrate

down the stream each fall to spawn in the Atlantic Ocean. From a biological and ecological standpoint, the reconstruction will cause that portion of Messalonskee Stream directly above the Union Gas Dam to cease to function or exist.

There is no question that conditions and circumstances on Messalonskee Stream have profoundly changed since the WQC Order was issued in August, 1995. The removal of the Edwards Dam in 1999 has allowed five native, migratory fish species free access to Messalonskee Stream for the first time since 1837. Atlantic salmon, striped bass, blueback herring and sea lamprey are now all seasonally present in Messalonskee Stream for the first time since the beginning of the Industrial Revolution in Maine. Atlantic salmon, blueback herring and sea lamprey are now using Messalonskee as spawning habitat. Water quality in Messalonskee Stream today is far better today than it was in 1995 due to the closure of the Cascade Woolen Mill and improvements at the Oakland, Maine municipal wastewater treatment plant. The voluntary removal of the Union Gas Dam by its owner in 2001 has restored approx. 1.2 miles of the stream to its natural, free-flowing condition and free access to this stream reach for its indigenous fish species for the first time in nearly a century. It would be hard to find a single waterbody in Maine which has changed so profoundly as Messalonskee Stream has changed during the past decade.

The text of the 1995 WQC for the Union Gas Project shows that Maine DEP failed to consider the impacts of the project on the native, migratory fish species of Messalonskee Stream. Such consideration is essential given the 40-year license term issued for the Project in 1997. The text of the WQC shows that no consideration was given for the need to adjust or modify the WQC after the removal of the Edwards Dam in Augusta and the restoration of free access to the stream for its native, migratory fish species such as American eel, Atlantic salmon, sea lamprey, blueback herring or striped bass.

The reason for this is simple. In 1995, neither the Maine DEP or Maine fisheries agencies expected native fish such as Atlantic salmon, sea lamprey, blueback herring and striped bass would migrate into Messalonskee Stream as soon as the Edwards Dam in Augusta was removed. Neither the Maine DEP or Maine fisheries agencies expected that Atlantic salmon, sea lamprey and blueback herring would begin spawning in Messalonskee Stream almost immediately after the

Edwards Dam was removed. Neither Maine DEP or Maine fisheries agencies expected that significant numbers of striped bass would chase baby American eels and blueback herring up Messalonskee Stream and create a brand new, highly desirable recreational fishery in Messalonskee Stream. None of these potentialities were even dreamed of by Maine DEP and Maine fisheries agencies when the Union Gas Project WQC was issued in 1995. Yet today, in 2006, this has all become reality.

The text of the 1995 WQC shows that Maine DEP failed to consider the needs of any of the native, migratory fish species of Messalonskee Stream when it issued the WQC. When the Union Gas Project WQC was issued in 1995 the State of Maine was actively working to secure the removal of the Edwards Dam through the federal re-licensing process. At minimum, the WQC should have contained specific re-opener provisions for upstream and downstream passage for native migratory fish at the Union Gas Dam if and when the Edwards Dam was removed. This was not done. American eels were present in Messalonskee Stream above and below the Union Gas dam in 1995. The WQC should have contained conditions ensuring these American eels had safe and convenient upstream and downstream passage at the dam. This was not done, because as Mr. Dana Murch of the Maine DEP informed the BEP in Nov. 2005: “Nobody was even thinking about American eels in 1995.” This candid, and accurate admission by Mr. Murch demonstrates that the lack of any requirements for the safe passage of American eels in the Union Gas WQC was an error of omission.

All of the facts above represent a text-book illustration of why the Maine Legislature enacted 38 MRSA §341-D and granted authority to the Maine BEP to modify previously issued water quality certifications. Times change. Circumstances change. Attitudes change. Knowledge grows. Evidence grows. Streams become cleaner. Rivers become healthier. Native fish return to their formerly obstructed and polluted homes. People return to streams which once had few fish in them and are now abundant with fish. Parents bring their children to the waters’ edge to fish.

PROPOSAL FOR LICENSE MODIFICATION

Messalonskee Stream at the Union Gas Project site is remarkably well adapted for the generation of hydro electric power in a manner which fully protects the natural character of the

stream and the health of its native fish and aquatic fauna. This is because the Union Gas Project is situated at the top of a large, natural bedrock ledge falls and rapids with a vertical drop of ten feet or more.

Hydro electric power is generated by the same principle as a water wheel. As water falls from a high point onto the blades of the water wheel, the weight of the water forces the wheel downward with the water until the water is discharged at the bottom of the water wheel. If gears and axles are attached to the spinning water wheel, the wheel can perform work, such as turning a millstone to grind grain. Hydro electric turbines operate in the exact same manner as a water wheel. Hydro electric turbines consist of metal blades around a central hub, much like a propellor or window fan. When such a turbine is placed in the path of water falling due to gravity, the blades of the turbine spin. By connecting an electrical generator to the center axle of the spinning turbine, electricity is produced.

The amount of electricity which can be generated at any hydro electric dam site is determined by the amount of water (flow) passing the turbines and the amount of vertical drop at the site (ie. how far the water falls from the top of the site to the bottom). This is no different than a water wheel. In general, sites with large amounts of flow and larger vertical drops can produce more hydro power than sites with small amounts of water and small vertical drops. For this reason, the maximum generating capacity of any hydro power site is determined by the amount of water flow and the vertical drop from the top of the dam to the bottom.

The natural ledge drop and falls at the Union Gas Project site provides approx. ten feet of vertical drop from the top of the falls to the bottom. During the 1800s, this amount of vertical drop was considered sufficient to produce valuable amounts of hydro power for grain mills, saw mills, textile mills and other factories. This amount of vertical drop is also sufficient to produce hydro electric power, since hydro electric dams operate on the exact same principle as their 19th century predecessors, ie. water falling by gravity and forcing a wheel to turn. As the height of a dam or falls increases, the distance that water falls over it also increases. This increases the amount of mechanical work the water can perform as it falls.

The Union Gas Project was specifically constructed in 1920 so as to extract the maximum

amount of mechanical work from Messalonskee Stream as possible. The reason the original dam at the Union Gas Project was approx. 35 feet in height is that this dam brought the water level of Messalonskee Stream above the dam all the way up to the base of the next set of falls on Messalonskee Stream, 1.5 miles upstream. Had the Union Gas Dam been built higher than 35 feet it would have interfered with and reduced the generating capacity of the dam at the next upstream falls. By making the Union Gas Dam approx. 35 feet tall, its builders were able to “capture” the entire fall of Messalonskee Stream along its 1.5 mile journey from the upstream falls to the falls upon which the dam was built. While this strategy is efficient from an engineering perspective it is not efficient from an ecological perspective. By raising the Union Gas Dam to a height of 35 feet, its builders converted the entire 1.5 miles of Messalonskee Stream above dam from a rapidly rushing stream into a deep, narrow pond. This deep, narrow pond ended at a 35 foot high granite-block dam which was utterly impassable to fish.

Today, in 2007, the opportunity exists to reconfigure and re-engineer the Union Gas Project site so that it can produce hydro electricity and preserve and protect the ecological health of Messalonskee Stream. This can be done very simply by lowering the height of the dam. Since the dam was completely removed in 2001, this does not require removing any portion of what is left of the Union Gas Dam. This solution can be accomplished by not rebuilding the dam as high as it used to be.

DESCRIPTION OF EVIDENCE TO BE PRESENTED

Presented as evidence are photographs taken by the Petitioner of Messalonskee Stream since the Union Gas Dam project was removed in 2001. These photographs span from 2001 to 2006. They are included herein as JPEG files on CD-ROM. These photographs document the juvenile American eels climbing the ledges at the Union Gas site and climbing the ledges of the Automatic Dam site, 1.5 miles upstream of the Union Gas site on June 12 and 13, 2005. These photographs document blueback herring (*Alosa aestivalis*) spawning directly below the Union Gas site on June 8, 2004. These photographs show adult sea lamprey (*Petromyzon marinus*) spawning directly below the Union Gas site in June 2003 and climbing the ledges of the Union Gas site in June 2005. These photographs show the exoskeletons of stoneflies on river rocks directly above the Union Gas site in June 2006. These photographs are of interest because

stoneflies are aquatic insects which require clean, fast-flowing, highly-oxygenated water to survive. Stoneflies cannot live in slow-moving water such as dam impoundments. Stoneflies are a preferred food item for juvenile Atlantic salmon in part because both species rely upon clean, rapidly flowing, highly oxygenated water to survive. This is the only photographic record in existence which documents the physical and ecological changes that have occurred on Messalonskee Stream since the Union Gas dam was removed in 2001.

Presented as evidence is a verbal statement made on April 7, 2006 by Dr. Gail Wippelhauser of the Maine Dept. of Marine Resources to Maine DEP Commissioner David Littell that restoration of the American eel to the entire Messalonskee Stream drainage is a high priority for the Maine Dept. of Marine Resources. This verbal statement by Dr. Wippelhauser is included herein because the Maine Dept. of Marine Resources has never stated this in writing to the Maine DEP and because it was made directly to Maine DEP Commissioner Littell. Petitioner Douglas H. Watts was present at the April 7, 2006 meeting at the Maine DEP offices on Hospital Street in Augusta, Maine when Dr. Wippelhauser made this statement to Commissioner Littell.

Presented as evidence is a verbal statement by Mr. Dana P. Murch of the Maine DEP to Maine BEP members on November 3, 2005 where Mr. Murch informed BEP members that when the 1995 Water Quality Certification Order was issued for the Union Gas Project, "Nobody was thinking about American eels ..." This verbal statement is included as evidence because it confirms that in 1995 the Maine DEP failed by omission to consider the impact of the Union Gas Dam Project on American eels living in Messalonskee Stream when it issued the WQC.

Presented as evidence is a verbal statement by Mr. David Dominie of E-Pro Consulting to Maine BEP members on November 3, 2005 where Mr. Dominie informed BEP members that he had been told by dam operators on Messalonskee Stream that for many years they have observed adult American eels in the "trash racks" of hydro electric dams on Messalonskee Stream. This verbal statement by Mr. Dominie is included as evidence because it demonstrates that American eels are indigenous to the Messalonskee Stream drainage and have for many years been observed by dam operators in the stream above the Union Gas Project. At this Nov. 3, 2005 Maine BEP meeting, Mr. Dominie was present as a consultant for the Union Gas Project owner.

Presented as evidence is the verbal statement to the Maine BEP of Dana P. Murch on Nov. 3, 2005 in which Mr. Murch told Board members that the appropriate and proper regulatory method for Douglas Watts to address his concerns about the Union Gas Dam reconstruction would be to file this Petition for license modification under Ch. 2 §27 of Maine DEP rules.

Presented as evidence by reference is the entire record of the appeal of Douglas H. Watts to the Maine Board of Environmental Protection of the May 2005 permit issued by the Maine DEP allowing reconstruction of the Union Gas Dam and the board's denial of this appeal on Nov. 3, 2005.

Mr. Watts requests the Maine BEP conduct a short site visit to Messalonskee Stream so that BEP members can assess the recovery of the stream since it was undammed in June, 2001.

Dated in Augusta, Maine April 30, 2007.

Douglas H. Watts, Petitioner
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