Hinkel, Bill

From: Edward Muzeroll <eamuzer57@hotmail.com>
Sent: Thursday, August 02, 2018 12:22 PM
To: Hinkel, Bill
Subject: CMP

Hello Bill,
I hope that 145 mile power line does not happen!!! Maine gets nothing but destruction of OUR land and we are all tired of being used!!!
Edward Muzeroll

Sent from my iPhone

Hinkel, Bill

From: sshores <sshores@fairpoint.net>
Sent: Saturday, August 18, 2018 10:06 AM
To: Hinkel, Bill
Subject: Fwd: [No Power Cord Through ME] For anyone that thinks that a mere overhead power...

Sent from my Verizon Wireless 4G LTE smartphone

-------- Original message --------
From: Kaleb Jacob <notification+yrrmqxxa@facebookmail.com>
Date: 08/18/2018 7:32 AM (GMT-05:00)
To: No Power Cord Through ME <295516257877096@groups.facebook.com>
Subject: [No Power Cord Through ME] For anyone that thinks that a mere overhead power...

Facebook

Kaleb Jacob, Todd Towle and 4 others posted in No Power Cord Through ME.

Kaleb Jacob
August 18 at 7:32 AM

For anyone that thinks that a mere overhead power line will not make much of a visual impact. This is a 5 minute video I made yesterday afternoon.

https://youtu.be/1VxCQm_Xpzk

MooseRiverViewVideo8 17 18

Like Comment Share

View on Facebook | Edit Email Settings

Reply to this email to comment on this post.

Hinkel, Bill

From: Todd Mercer <penobscotman@aol.com>
Sent: Wednesday, August 29, 2018 10:51 PM
To: Hinkel, Bill
Subject: Power Lines - There has to be another way

I'm sure you are receiving many emails regarding the power lines to move green energy from Canada to Mass. While I'm in favor of utilizing this existing resource, there has to be a way to complete the task in a more environmentally friendly way. Opening the canopy which protects countless native trout streams would be registering to the populations not only in those streams, but would damage the balance of the Kennebec watershed.
Please consider acting to protect Maines natural resources.

Todd Mercer
Maine Guide (Whitewater, fishing, recreation)
222 Maine Street
Poland, ME 04274

Sent from my iPhone
Sent from my iPhone

Hinkel, Bill

From: Jeremy Miller <millerjr8@gmail.com>
Sent: Thursday, August 30, 2018 6:09 AM
To: Hinkel, Bill
Subject: Opposition to NECEC Corridor

I'm writing to you to voice my opposition to the NECEC powerline project. This type of development was already rejected by New Hampshire regulators due to its obvious negative impacts on the regional environment, as well as the tourism based economy.

There are no long term benefits to the people of Maine or to the forest, wildlife and waterways-based economy of the region. This plan also includes a COMPLETELY inappropriate crossing of the Kennebec River Gorge, which was once considered for Wild & Scenic designation, however it was determined local regulators could adequately protect these qualities. Protecting these qualities is your civic duty. Please do your part in maintaining the spirit of this decision and the spirit of the Kennebec River Gorge. If you have never passed through the gorge, I please urge you to do so before making any decision. It is truly a magical place.

Furthermore, the proposed corridor would fragment one of the largest contiguous areas of temperate forest in the US. This corridor would daylight numerous trout holding waters, impacting stream quality and stream temperatures. Protecting both of these factors are imperative to the health of our trout populations. Maine has been the safe haven of the remaining wild brook trout habitat in the east and should remain that way in perpetuity.

I have heard the argument from proponents that the area is already industrialized due to logging activity. However, well planned logging on managed forests beget a new forest of healthy young trees for the future of the forest, creates habitat and provides recreational opportunities. A powerline corridor destroys a forest, invites new inappropriate industrial development, invites large scale chemical spraying and permanent disruption of animal behavior and water quality.

I urge you, for these and many other reasons, to reject this innapropriate development in our great state. Thank you for your time.

Jeremy Miller

Forester/Registered Maine Guide
Hampden, Me

Hinkel, Bill

From: Kurt Sawyer <kurt@sawyersmaple.com>
Sent: Thursday, August 30, 2018 12:10 PM
To: DEP, NECEC
Cc: Hinkel, Bill
Subject: No CMP Power corridor

This power line project will ruin the economy of the towns along it route. We survive of of tourism and if this get installed it will kill the ecosystem and the natural beauty of our beloved countryside and woods. Our scenic vistas, native brook trout, atv and snowmobile trails, deer, bear and moose, all things that bring tourists from in and out of state to enjoy are now in grave danger of being lost. If Massachusetts is so desperate for power than they can go generate some in their own state instead of raping ours.
So NO, do not allow this beastly thing to be installed, do not let the citizens of these communities to be slapped in the face and trampled on by big corporations from out of the country.

--
Kurt Sawyer
Owner
Sawyer's Maple Farm
P.O. Box 270
Jackman, Maine. 04945
Leader Evaporator Dealer
www.sawyersmaple.com
"Maine made, the way syrup oughta be!"

Hinkel, Bill

From: Ryan Reed <ryanreed360@gmail.com>
Sent: Thursday, August 30, 2018 10:49 PM
To: DEP, NECEC; Hinkel, Bill
Subject: NECEC Power Line Project

Hello,

I'm writing to you to voice my opposition to the NECEC power line project. This type of development was already rejected by New Hampshire regulators due to its obvious negative impacts on the regional environment, as well as the tourism based economy.

There are no long term benefits to the people of Maine or to the forest, wildlife and waterways-based economy of the region. This plan also includes a COMPLETELY inappropriate crossing of the Kennebec River Gorge, which was once considered for Wild & Scenic designation, however it was determined local regulators could adequately protect these qualities. Protecting these qualities is your civic duty. Please do your part in maintaining the spirit of this decision and the spirit of the Kennebec River Gorge. If you have never passed through the gorge, I please urge you to do so before making any decision. It is truly a magical place.

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I have heard the argument from proponents that the area is already industrialized due to logging activity. However, well planned logging on managed forests beget a new forest of healthy young trees for the future of the forest, creates habitat and provides recreational opportunities. A powerline corridor destroys a forest, invites new inappropriate industrial development, invites large scale chemical spraying and permanent disruption of animal behavior and water quality.

I urge you, for these and many other reasons, to reject this innapropriate development in our great state. Thank you for your time.

Ryan Reed
207-441-7114

Hinkel, Bill

From: Connor Phillips <phillycondor@gmail.com>
Sent: Friday, August 31, 2018 8:29 PM
To: Hinkel, Bill
Subject: CMP transmission line in Maine

Dear Mr. Hinkel,

Mr Beyer,

I moved to Maine as a recent college graduate some years ago. I work in outdoor education and teach students about the natural world. Maine's natural beauty drew me to this special place and I would like it to remain as such. The CMP transmission line and similar projects degrade Maine's outdoor wonder. Please do all in your power to ensure that these transmission lines remain out of our great state. Maine is on the brink of an economic and social boom, with young residents and college educated folks from away moving to and staying in Maine. "The way life should be" does not include such projects as the proposed CMP transmission line. Keep Maine beautiful!

Sincerely,
Connor Phillips

Hinkel, Bill

From: Bud <gbudsam@yahoo.com>
Sent: Monday, September 03, 2018 10:11 PM
To: Hinkel, Bill
Subject: CMP's Transmission Line Project (aka The CMP Corridor)

Dear Mr. Hinkel,

I am writing to you in strong opposition to CMP's proposed transmission line construction from the Canadian border to Lewiston. As a long-time lover and visitor (fisherman, hiker, paddler, and all-around worshiper of the outdoors) of the regions that will be directly affected by this project, I am very concerned that there will be severe and irreversible damage everywhere the transmission line touches. I understand and support the need for clean energy, but the price to Maine's Northern Wilderness and the communities through which the line will run is simply too great, the risk to the pristine environment that so many come to Maine to enjoy is simply too high. We've done enough damage to northern Maine, let's not make it worse, please.

Truly, there are few if any direct benefits to Maine and Mainers, but I'm sure there are great profits for a company based in Spain. Yes, there would be a number of temporary construction jobs---sorry, that just means short-term gain and long-term pain.

I urge you to reject this project entirely and let the folks in Massachusetts figure out another solution. There are lots of intelligent people down there who can find a good solution that does not have negative impact their neighbor states.

Thank you for doing the right thing for Maine. We can certainly do better than projects like this to protect Maine's future.

Sincerely,

G. Bud Samiljan

G. Bud Samiljan
207-688-5234
978-808-2158
gbudsam@yahoo.com

Hinkel, Bill

From: Lisa Shorey <aprilsong401@msn.com>
Sent: Tuesday, September 04, 2018 6:32 PM
To: Hinkel, Bill
Subject: NO CMP Corridor

Dear Mr. Hinkel:

I am writing to express concern regarding the CMP powerline corridor cutting through some of the pristine areas of our beautiful state.

I am a land owner along the western shore of Moxie Lake in The Forks Plantation. My family has enjoyed outdoor activities in these pristine areas of our beautiful state for generations. Recreation is a driving economic force in this area of Somerset county. These natural resources, if allowed to be taken up by industrial greed, will never be the same.

At the Spring meeting of the Lake Moxie Campers Association, a spokesperson for CMP presented plans for the corridor that showed widening an existing powerline. They seemed to have a thoughtful approach that would least disturb the area around Lake Moxie and the camp owners and visitors who enjoy this beautiful part of the state.

What they failed to share with the group were the plans over the currently undisturbed Kennebec River gorge. I was appalled to learn of plans to bisect The Gorge with overhead powerlines visible to rafters/hikers/anglers and others who visit this beautiful wilderness area. I was further appalled to learn of plans to come within 25 feet of existing water bodies and watershed areas, while private landowners are required to maintain at least 100 feet of natural habitat along those same waterways. And for whose benefit? Not for the long term benefit of the people of Maine!

I strongly oppose allowing CMP to develop a corridor outside of its existing route and urge you to deny approval of this CMP powerline corridor through Somerset county. Please protect the interest of the people of Maine in protecting our most valued natural resource!

Lisa Shorey
513 Troutdate Road
The Forks, ME

Residence: 203 Upper Pond Road, Litchfield, ME

Hinkel, Bill

From: Pam Tatham <ptatham@roadrunner.com>
Sent: Wednesday, September 05, 2018 7:57 AM
To: Hinkel, Bill
Cc: Beyer, Jim R; Cyrway, Scott; Strom, Scott
Subject: CMP 145 Mile Transmission Line Through Maine

Below is a copy of our letter to the PUC regarding this important mattter. Any assistance you can give in support of a NO vote to this proposal will be greatly appreciated. I would also refer you to the Facebook page by the same name as the Subject in this email where there are many posts in opposition to the proposal. Thank you.

Attention to Mr. Cryway and Mr. Strom, I look forward to hearing from you and your position on this matter.

"We, along with many other residents of Maine, oppose the CMP Corridor.

Our question for the PUC is why should we be allowing this expansion through our state to provide power to the residents if Massachusetts? The promises of payoffs to communities and businesses, at the expense of our environment, is enticing, but not acceptable.

CMP has lost the confidence of their customers in the past year and their business practices are questionable. Why would you allow them to become part of another endeavor which has been turned down by our neighboring states? And has no POWER benefit for our state?
The offer to subsidize low income residents of Massachusetts when we have Maine residents who struggle to pay their energy bills is beyond comprehension, especially when they want the Maine ratepayers to help with the cost of last year's storm damage.

Recently CMP offered and paid settlements to homeowners in the Benton area who complained about the noise created by the new substation in their neighborhood. Will CMP be able to afford more settlement money when there are issues raised about effects from these high tension wires?

Our request of the PUC is to make the right decision for the people of Maine, and turn down any requests for this expansion through Maine.

Thank you.

Doug and Pam Tatham, CMP customers in Clinton and East Moxie Township"

Hinkel, Bill

From: Emily Wolf <emwolf505@gmail.com>
Sent: Wednesday, September 05, 2018 11:26 AM
To: rsezak@somersetcounty-me.org; cypj@beeline-online.net; dcray@somersetcounty-ME.org; ngraf@somersetcounty-me.org; ltrafton@somersetcounty-me.org; DEP, NECEC; Hinkel, Bill
Subject: Submit Public Comment: oppose transmission line

I have recently become a resident of the West Forks. I moved here for many reasons but the main reason is the natural and remote environment of The Forks area. I strongly oppose this proposed transmission line for its effect on the environment, wildlife, scenic views, and the rafting/tourism industry. I also oppose this project for it ineffectiveness against climate change and the growth of renewable energy. I encourage all elected officials to listen to the majority of your voters and help stop this project now. I believe all state agencies in this process should deny the permits put forth for this project.

Thank you,
Emily Wolf
West Forks Resident

Emily Wolf
emwolf505@gmail.com

Sent from my iPhone

Hinkel, Bill

From: Justin Preisendorfer <alpinetraveler@gmail.com>
Sent: Saturday, September 15, 2018 8:06 AM
To: Hinkel, Bill
Subject: No support for NECEC

Dear Mr. Hinkel and LUPC,
I was deeply saddened to learn of Central Maine Power's quiet push for a 145-mile power corridor through Maine's North Woods. While not currently a Maine resident or CMP ratepayer I feel I have a stake in the landscape that CMP looks to degrade without regard for its stakeholders or the region's valuable natural resources.

My great, great, great, great grandfather Galon Newton moved to Moose River with his brother Jacob in 1828. Family members eventually spread into the communities from Dennistown to the Forks and my grandfather Linwood Moore was born in Moose River in 1930. While I live in northern New Hampshire I make at least one trip per year to visit the woods, ponds and rivers that my grandfather grew up in. Every year I spend time on the Kennebec River and never cease to be impressed by its beauty. You see, while I live surrounded by the beautiful White Mountains, there is something about the upper Kennebec River watershed that is special. Those qualities were documented in 1982 when the Maine Rivers Study was released by the State of Maine in coordination with the National Park Service. They were further documented and protected in 1987 by the Maine Legislature when they stated that the section of river below Harris Dam contained "significant river related natural and recreational values" that "provide irreplaceable social and economic benefits to the people in their existing state."

The outstandingly remarkable values that dominate the upper Kennebec make it a prime candidate for our nation's system of Wild and Scenic Rivers. In fact, the river is eligible based on its scenic, recreational and hydrological values. Central Maine Power has a responsibility to prove

that its proposed actions will not irrevocably degrade these values and negatively impact the social and economic benefits that they provide.

I've carried my grandfather's ashes down through the Gorge on multiple trips and every time I imagine what it was like when he fished this area as a boy. I remember asking him what it was like before the Indian Pond Project and hearing of the wooden dam and the log drives and of course, the spectacular fishing. The concrete dam tamed some of the wildness that existed in his youth but anyone who has been through the Gorge since 1954 knows that wildness remains still. A massive powerline will strangle that wildness and blight the landscape that my family and so many others have held dear.

I sit in New Hampshire relieved that we have just said no to our own massive transmission line but worried about my next trip to Maine. Will this fall's birdhunting trip be the last before a swath is cut across the landscape? Will my next float down the Gorge be marred by overhead transmission lines? Will CMP come to its senses and pull back from this damaging proposal? I can only hope so for my children with whom I want to visit the Kennebec River. I want to share in the awe of the scenery and tell stories of our family that was raised with this amazing backdrop and how it taught them a respect for the land and their neighbors. It's a lesson I hope we can all help teach CMP as well.

Sincerely,
Justin Preisendorfer
--
Justin

Hinkel, Bill

From: john & Nancy <jrnicholas@roadrunner.com>
Sent: Monday, September 17, 2018 11:33 AM
To: Hinkel, Bill; DEP, NECEC
Subject: FW: Cold Stream Forest
Attachments: 2. Recorded QC Deed.pdf; 3. Recorded REA.pdf; Cold_Stream_Forest_2018_.jpg

Importance: High

Bill and Jim, enclosed from Sarah Demers, Director of the Land for Maine's Future is a digitized map and recorded deeds for the Cold Stream Forest purchase. I received that information pursuant to a written FOI request for the purpose of understanding how CMP plans to cross or navigate the Cold Stream Forest with respect to the path of the transmission corridor. Apparently, there was a 700 foot wide tract of land that was retained by Plum Creek on either side of the Capitol Road, and traversing the bridge that crosses the Cold Stream, at the time of the Cold Stream Forest purchase.

I do not know whether or not CMP purchased from Plum Creek the land necessary for the transmission corridor or obtained a right-of-way from Plum Creek. Whichever transaction occurred would be on file in the Somerset County Registry of Deeds. I believe Plum Creek has retained ownership of the Capitol Road.

Jack Nicholas

From: Demers, Sarah <Sarah.Demers@maine.gov>
Sent: Tuesday, September 4, 2018 3:25 PM
To: john & Nancy <jrnicholas@roadrunner.com>
Subject: RE: Cold Stream Forest

Jack, Attached are the documents you requested. Let me know if there is anything else I can help you with.

Sarah

Sarah Demers
Director, Land for Maine's Future Program
Department of Agriculture, Conservation and Forestry
28 SHS | Augusta, ME 04333-0028
207-287-7576

From: john & Nancy [mailto:jrnicholas@roadrunner.com]
Sent: Friday, August 31, 2018 9:40 AM
To: Demers, Sarah <Sarah.Demers@maine.gov>
Subject: Cold Stream Forest

Sarah, thank you for taking the time to discuss with me the details of the Cold Stream Forest purchase. As we discussed, I would appreciate receiving a digitized map of the Cold Stream Forest and a copy of the deed of purchase.

Thanks, Jack Nicholas

Doc 3075 Bk 5011 Ps 1
Recorded: Somerset County Mar 24,2016 02:28P
Deputy Register of Deeds Laura L Price

Filed for record at the request of and after recording return to:
State of Maine
Department of Agriculture, Conservation, and Forestry,
Bureau of Parks and Lands
22 State House Station
Augusta, Maine, 04333

Doc 3352 Bk 5012 Ps 292
Recorded: Somerset County Mar 30,2016 10:31A
Deputy Register of Deeds Laura L Price

TRANSFER TAX PAID

CORRECTIVE

QUITCLAIM DEED WITH COVENANT

KNOW ALL BY THESE PRESENTS, that PLUM CREEK MAINE TIMBERLANDS, L.L.C., a limited liability company, organized and existing under the laws of the State of Delaware, formerly known as SDW Timber II, LLC, and having an address of c/o Weyerhaeuser Company, P.O. Box 9777, Federal Way, WA 98063-9777 ("Grantor"), for consideration paid, GRANTS to the State of Maine, acting by and through its Department of Agriculture, Conservation, and Forestry, Bureau of Parks and Lands, with a mailing address of 22 State House Station, Augusta, Maine, 04333 ("Grantee"), with QUITCLAIM COVENANTS, all that certain real estate located in the Townships of Johnson Mountain, Parlin Pond, and West Forks Plantation, all in Somerset County, Maine which is more particularly described in **Exhibit A** attached hereto and made a part hereof (the "Property") and is shown as the "Cold Stream Forest" on a set of plans entitled, "Boundary Survey Map of the Cold Stream Forest being the land conveyed by Plum Creek Maine Timberlands, LLC to the State of Maine Bureau of Parks and Lands" prepared by Maine Boundary Consultants, dated September 21, 2015 and filed with the Somerset County Registry of Deeds (the "Registry") as Plan Nos. File 2016 Pgs. ~~32-39~~ 32-38 ** (the "Cold Stream Plan").

The Property is conveyed TOGETHER WITH and SUBJECT TO those certain rights of way described in that certain Reciprocal Easement Agreement by and between the parties hereto of even or nearly even date hereto and recorded herewith.

ALSO TOGETHER WITH the benefit to "travel over, along and across" the Central Maine Power Company transmission Line as mentioned in the deed of Wallingford Timberlands Inc. to Central Maine Power Company, dated December 24, 1962 and recorded in the Somerset County Registry of deeds in Book 665, Page 393.

The Property is also conveyed SUBJECT TO the additional rights and easements described on **Exhibit B** attached hereto and incorporated herein by this reference.

The Property conveyed by this deed is being acquired in part with (i) funds from the Land for

** This document is being re-recorded to correct the Plan page numbers.

25

Maine's Future Fund in accordance with the Land for Maine's Future Act, at Title 5, Maine Revised Statutes, Chapter 353, as amended, and P.L. 2011, c.696, § 5, as a natural area important for conservation, water access, outdoor recreation, wildlife and fish habitat; and (ii) in part, with federal funds from Grant # 14-DG-11420004-224 of the Forest Legacy Program, in accordance with the provisions of Title XII of the Food, Agriculture, Conservation and Trade Act of 1990 (16 United States Code ("USC") Section 2103c), as amended, which was enacted to protect environmentally important private forest areas threatened by conversion to non-forest uses and for promoting forest land protection and other conservation opportunities. In the event that these lands acquired with Federal funds under the Forest Legacy Program (16 USC Section 2103c) are ever sold, exchanged or otherwise disposed, the United States shall be reimbursed the fair market value at the time of disposal in proportion to the original Federal investment. Provided, however, the Secretary of Agriculture may exercise discretion to consent to such sale, exchange, or disposition upon the State's tender of equal valued consideration acceptable to the Secretary.

MEANING AND INTENDING TO CONVEY A PORTION OF GRANTOR'S TITLE as described in the following three deeds from S.D. Warren Company to SDW Timber II, L.L.C., n/k/a Plum Creek Maine Timberlands, L.L.C., dated November 5, 1998, and recorded in Somerset County Registry of Deeds in Book 2490, Page 228 (Parlin Pond Parcel); Book 2491, Page 67 (West Forks Parcel); and Book 2490, Page 81 (Johnson Mountain Parcel), as affected by Corrective and Confirmatory Quitclaim Deed made by S.D. Warren Company to Plum Creek Maine Timberlands, L.L.C. dated July 25, 2014 and recorded in Book 4814, Page 137 (Johnson Mountain Parcel). SDW Timber II, L.L.C. changed its name to Plum Creek Maine Timberlands, L.L.C. as cited by instrument dated November 30, 1998 and recorded September 23, 1999 in Book 2605, Page 151, Recording No. 014193.

[signatures on following page]

In witness whereof, Plum Creek Maine Timberlands, L.L.C., has caused the foregoing instrument to be signed and sealed this 10th day of March, 2016.

PLUM CREEK MAINE TIMBERLANDS, LLC

WITNESS

By: Russell S. Hagen
Its Senior VP and CFO

STATE OF ~~MAINE~~ Washington (PAH)
County of King, ss. March 10, 2016

Personally appeared the above named Russell S. Hagen Senior VP & CFO of Plum Creek Maine Timberlands, L.L.C., and acknowledged before me the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said Plum Creek Maine Timberlands, L.L.C.

PAUL A. HILL II NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 10-29-18

Notary Public
Print or type name as signed Paul A. Hill II
My commission expires: 10/29/2018
Seal Residing in Seattle

CONSENT OF COMMISSIONER

Pursuant to Title 12 M.R.S. Section 1850 (1) the Commissioner of the Department of Agriculture, Conservation and Forestry hereby gives his consent to the above and foregoing Quitclaim Deed with Covenant, executed this 17 day of March, 2016.

STATE OF MAINE
Department of Agriculture, Conservation and Forestry

By: Walter E. Whitcomb
Its Commissioner

STATE OF MAINE
County of Kennebec, ss.

Date: 3/17/16

Then personally appeared the above-named Walter E. Whitcomb, Commissioner of the Maine Department of Agriculture, Conservation and Forestry and acknowledged the execution of the within Consent of Commissioner as his free act and deed in his capacity and the free act and deed of the State of Maine.

Before me,

SEAL

Notary Public/~~Attorney at Law~~
Print Name:
My Commission Expires:
Seal:

KATHY L. EASTMAN
Notary Public, Maine
My Commission Expires March 31, 2019

EXHIBIT A

Certain lots or parcels of land, easterly of US Route 201, so-called, also known as Canada Road, so-called, situated in West Forks Plantation, Johnson Mountain Township, and Parlin Pond Township, in the County of Somerset, State of Maine, being three (3) tracts known as the SOUTH TRACT, MIDDLE TRACT and NORTH TRACT and being more particularly bounded and described as follows:

SOUTH TRACT:

Beginning at a point, being on the Northeasterly sideline of US Route 201, so-called, also known as Canada Road, so-called, said point also being on the Southeasterly sideline of Tower Road, so-called, and being 50.00 feet, left of centerline Station 1101+49.3, as shown on the "Maine State Highway Commission Right of Way Map State Highway 267" , dated January 1955, S.H.C. File No. 13-78, Sheet 4 of 9, and recorded in the Somerset County Registry of Deeds, in Plan Book 13, Page 55, and being N 41°54'25" E, and 0.56 feet, from Set P&C, also being N 62°00'15" W, and 800.70 feet, along said sideline from a found Highway Monument, being 50.00 feet, left of centerline Station 1109+50, as shown on the said Highway Map, also being N 62°00'15" W, and 398.82 feet, along said sideline from a found 7/8" rebar with cap marked "RLS 444", as shown on the "Subdivision of Land The Harrison's" dated December 20, 2007, by Michael R. Sackett, PLS 1170, of Sackett & Brake Survey Inc., as recorded in the said Registry in Plan File 2008, Page 21, said Point also being at a coordinate of North 922,008.0238, and East 2,995,333.3864, and being the true Point of Beginning;

Thence on the following courses along the remaining lands of the Grantors herein, which is also on the southerly and westerly sideline of Tower Road, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

N 41°54'25" E, along said Road, 159.76', to a point;
N 52°25'59" E, along said Road, 885.33', to a point;
N 53°29'52" E, along said Road, 851.18', to a point;
N 56°57'42" E, along said Road, 698.67', to a point;
N 57°35'34" E, along said Road, 601.66', to a point;
N 50°09'12" E, along said Road, 436.24', to a point;
N 23°53'34" E, along said Road, 467.64', to a point;
N 00°52'05" W, along said Road, 337.39', to a point;
N 29°07'50" W, along said Road, 391.90', to a Set P&C;
N 61°43'29" E, along said Road, 513.56', to a point;
N 87°45'49" E, along said Road, 702.38', to a point;
S 73°15'25" E, along said Road, 534.60', to a point;
S 41°01'32" E, along said Road, 677.70', to a point;
S 31°25'27" E, along said Road, 1,194.87', to a point of intersection of the westerly sideline of Tower Road and the projection of the southerly sideline of Jerry's Way if extended, said point

being S 74°01'03" W, and 33.80' from the centerline of said Tower Road, so-called, which said Tower Road Right of Way continues southerly;

Thence running easterly, crossing Tower Road, so-called, on the following courses along the remaining lands of the Grantors herein, which is also on the southerly and easterly sideline of Jerry's Way, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

N 74°01'03" E, along said Road, 751.08', to a point;
N 67°41'02" E, along said Road, 394.14', to a Set P&C;
N 62°01'50" E, along said Road, 410.63', to a point;
N 37°33'28" E, along said Road, 346.72', to a point;
N 79°11'01" E, along said Road, 532.88', to a point;
N 59°00'17" E, along said Road, 277.82', to a point;
N 42°51'30" E, along said Road, 254.27', to a point;
N 51°49'31" E, along said Road, 455.42', to a point;
N 16°50'59" E, along said Road, 236.54', to a point;
N 38°45'52" E, along said Road, 520.13', to a point;
N 68°39'31" E, along said Road, 96.87', to a point;
S 55°32'26" E, along said Road, 137.51', to a point;
S 30°14'46" E, along said Road, 240.26', to a point;
N 83°31'28" E, along said Road, 310.16', to a point;
N 63°33'03" E, along said Road, 188.33', to a Set P&C;
N 25°54'56" E, along said Road, 251.57', to a point;
N 09°28'13" W, along said Road, 159.75', to a point;
N 24°00'09" E, along said Road, 539.19', to a point;
N 33°53'07" E, along said Road, 291.07', to a point;
N 11°08'45" E, along said Road, 421.30', to a point;
N 11°02'22" E, along said Road, 402.70', to a point;
N 19°16'00" W, along said Road, 110.63', to a point;
N 57°06'12" W, along said Road, 200.73', to a point;
N 03°45'47" E, along said Road, 194.88', to a point;
N 38°15'06" W, along said Road, 150.32', to a point;
N 71°38'11" W, along said Road, 165.83', to a point;
N 34°57'55" W, along said Road, 170.39', to a point;
N 13°14'18" E, along said Road, 207.02', to a point;
N 11°32'59" W, along said Road, 138.20', to a point;
N 45°30'41" W, along said Road, 230.84', to a point;
N 25°11'24" W, along said Road, 452.93', to a point;
N 20°40'39" W, along said Road, 264.71', to a point;
N 03°01'50" E, along said Road, 311.54', to a point;
N 22°54'43" W, along said Road, 311.45', to a Set N&W, at the end of said Jerry's Way, and being N67°05'17" E, and 33.00' from end of the centerline of said Jerry's Way;

Thence on the following courses along the remaining lands of the Grantors herein;

N 35°08'36" W, along said lands, 3,662.36', to a Set P&C;
N 02°37'43" E, along said lands, 1,361.52', to a Set P&C;
N 34°45'21" W, along said lands, 3,983.31', to a Set P&C;
S 41°42'25" W, along said lands, 1,284.37', to a Set P&C;
S 48°19'04" W, along said lands, 1,679.33', to a Set P&C, being S 70°55'47" E, and 46.06', from the centerline end of Lower Cold Stream Road, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;
N 70°55'47" W, along said lands, 2,156.23', to a Set P&C;
N 62°18'11" W, along said lands, 1,961.27', to a Set P&C;
N 43°23'44" W, along said lands, 2,486.40', to a Set P&C;
S 78°22'35" W, along said lands, 296.98', to a Set N&W, being N 41°33'40" E, and 33.00', from an angle point, in the centerline of Brenda's Way, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein, which said Brenda's Way so-called, ends N58°26'20"W, and 100.00' from said angle point;

N 58°26'20" W, along said lands, 927.50', to a point;
N 57°33'28" W, along said lands, 236.06', to a point;
N 69°37'23" W, along said lands, 510.23', to a point;
N 57°11'16" W, along said lands, 392.66', to a point;
N 69°05'46" W, along said lands, 401.14', to a point;
N 79°20'45" W, along said lands, 447.67', to a point;
N 50°31'50" W, along said lands, 494.95', to a Set N&W;
N 54°21'43" W, along said lands, 376.25', to a point;
N 22°18'22" W, along said lands, 466.10', to a point;
N 18°39'44" E, along said lands, 568.92', to a point;
N 26°53'35" W, along said lands, 133.48', to a point;
N 76°45'34" W, along said lands, 106.86', to a point;
N 21°28'37" W, along said lands, 564.47', to a point;
N 05°57'43" W, along said lands, 326.67', to a point;
N 54°24'28" W, along said lands, 364.34', to a point;
S 81°34'00" W, along said lands, 108.14', to a Set P&C;
N 45°54'55" W, along said lands, 2,217.97', to a Set P&C;
N 81°16'24" W, along said lands, 216.58', to a Set P&C;
N 18°35'11" W, along said lands, 497.45', to a Set P&C, at the land now or formerly of Central Maine Power Company, as described in the deed recorded in the said Registry in Book 665, Page 393, being on the southerly side of a 100.00' wide transmission line, also being S 01°32'14" W, and 102.55', from a Set P&C, at the southwesterly corner of the MIDDLE TRACT described herein below;

Thence N 78°48'20" E, along said Central Maine Power Company, crossing Cold Stream, so-called, and crossing Wilson Hill Road, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein, 3,592.95', to a Set P&C, at the westerly boundary of the State of Maine Public Reserve Lot, also being, S11°39'26" E, along said Public Reserve Lot, and 235.60', from a Set P&C, at the Point of Beginning or southeasterly corner of the MIDDLE TRACT described herein below;

Thence S 11°39'26" E, along said Public Reserve Lot, 1,772.15', to a found 5/8" rebar with cap marked "Maine Public Reserve Land";

Thence S 78°05'24" W, along the said the remaining lands of the Grantors herein, and crossing said Wilson Hill Road, so-called, 307.46', to a Set P&C, on the westerly sideline of said Wilson Hill Road, so-called, also being, N 78°05'24" E, and 37.17' from an angle point in the centerline of Wilson Hill Road, so-called;

Thence on the following courses along the said remaining lands of the Grantors herein, which is also on the said westerly sideline of said Wilson Hill Road, so-called;

S 35°48'48" W, along said Road, 140.59', to a point;
S 03°04'04" W, along said Road, 476.33', to a point;
S 45°41'48" E, along said Road, 532.26', to a point;
S 52°13'50" E, along said Road, 733.76', to a point;
S 81°43'56" E, along said Road, 289.39', to a point;
S 35°01'31" E, along said Road, 467.71', to a point, being S 68°07'05" W, and 33.89', from an angle point, in the centerline of said Wilson Hill Road, so-called;

Thence continuing on the following courses along the remaining lands of the Grantors herein;

S 08°44'18" E, along said lands, 421.71', to a point;
S 10°25'10" E, along said lands, 529.72', to a point;
S 10°59'42" W, along said lands, 295.02', to a Set P&C;
S 52°09'07" E, along said lands, 1,259.22', to a Set P&C;
N 72°52'03" E, along said lands, 729.42', to a Set P&C;
S 44°32'08" E, along said lands, 2,658.91', to a Set P&C;
S 65°53'07" E, along said lands, 3,187.32', to a Set P&C;
N 38°48'57" E, along said lands, 550.28', to a Set P&C;
N 21°13'38" W, along said lands, 1,005.38', to a Set P&C;
N 74°19'16" E, along said lands, 796.62', to a Set P&C;
N 17°10'44" W, along said lands, 738.77', to a Set P&C, on the southerly sideline of said Wilson Hill Road, so-called, also being, S 80°06'53" E, and 68.50' from an angle point in the centerline of Wilson Hill Road, so-called;

Thence on the following courses along the said remaining lands of the Grantors herein, which is also on the said southerly, southwesterly, and westerly sideline of said Wilson Hill Road, so-called;

N 71°05'13" E, along said Road, 93.93', to a point;
N 63°53'34" E, along said Road, 228.00', to a point;
N 45°52'24" E, along said Road, 236.78', to a point;
N 13°56'13" E, along said Road, 229.10', to a point;
N 25°22'01" E, along said Road, 719.59', to a point;
N 41°10'52" E, along said Road, 573.99', to a point;
N 16°15'17" E, along said Road, 324.16', to a point;
N 43°22'26" E, along said Road, 535.18', to a point;
N 20°50'11" E, along said Road, 201.30', to a point;
N 78°11'04" E, along said Road, 100.92', to a point;
S 41°32'30" E, along said Road, 89.95', to a point;
S 37°57'09" E, along said Road, 624.44', to a point;
S 84°50'13" E, along said Road, 527.72', to a point;
S 57°27'14" E, along said Road, 520.75', to a Set P&C;
S 32°43'35" E, along said Road, 256.75', to a point;
S 44°37'22" E, along said Road, 273.05', to a point;
S 29°16'42" E, along said Road, 876.89', to a point;
S 47°59'55" E, along said Road, 501.14', to a point;
S 54°52'34" E, along said Road, 287.71', to a point;
S 36°21'39" E, along said Road, 472.63', to a point;
S 60°16'47" E, along said Road, 537.09', to a point;
S 72°40'47" E, along said Road, 258.40', to a point;
S 41°44'54" E, along said Road, 242.83', to a point;
N 89°56'59" E, along said Road, 249.24', to a point;
S 44°24'18" E, along said Road, 341.41', to a point;
S 50°30'48" E, along said Road, 452.17', to a Set N&W;
S 52°07'54" E, along said Road, 351.60', to a point;
S 64°39'33" E, along said Road, 230.07', to a point;
S 52°21'22" E, along said Road, 341.63', to a point;
S 61°51'16" E, along said Road, 372.96', to a point;
S 52°50'16" E, along said Road, 260.65', to a point;
S 47°39'37" E, along said Road, 575.47', to a point;
S 25°55'54" E, along said Road, 326.26', to a point;
S 18°16'26" E, along said Road, 300.46', to a point;
S 54°33'39" E, along said Road, 315.04', to a point;
S 38°51'14" E, along said Road, 213.68', to a point;
S 53°25'59" E, along said Road, 822.98', to a Set P&C;
S 31°11'26" W, along said Road, 178.88', to a point;
S 45°31'34" W, along said Road, 220.59', to a point;

S 11°43'49" W, along said Road, 406.36', to a point;
S 20°54'58" W, along said Road, 286.07', to a point;
S 08°34'22" W, along said Road, 354.79', to a point;
S 12°12'55" E, along said Road, 213.38', to a point;
S 15°26'12" W, along said Road, 448.36', to a point;
S 05°00'35" W, along said Road, 325.74', to a point;
S 02°38'30" E, along said Road, 249.77', to a point;
S 35°37'40" W, along said Road, 271.31', to a point;
S 42°01'22" W, along said Road, 494.34', to a point;
S 08°32'23" E, along said Road, 247.98', to a point;
S 35°32'00" E, along said Road, 167.17', to a Set N&W, at the end of said Wilson Hill Road, and being S54°28'00"W, and 33.00' from end of the centerline of said Wilson Hill Road;

Thence S 14°08'34" E, along the said remaining lands of the Grantors herein, 2,686.53', to a Set P&C;

Thence S 07°53'09" E, along the said lands, 1,290.01', to a Set P&C;

Thence S 24°51'05" E, along the said lands, 1,706.47', to a point, on the northerly boundary line of the land now or formerly of Western Mountain Charitable Foundation "Hut Site" as described in the deed recorded in the said Registry in Book 4435, Page 147, and shown on the "Boundary Survey of the Kennebec River Gorge Route 201 to the Indian Pond Project (Harris Dam)", dated October 6, 2010 and recorded August 30, 2011, by SGC Engineering, LLS, PLS 2147, in Plan File 2011, Pages 77 (sheet 6, of 8), said point being S09°E±, and 10'±, from a Set P&C;

Thence S 71°56'15" W, along said land of Western Mountain Charitable Foundation, 486.21', to a found, 5/8" rebar with cap marked "SGC Engineering PLS 2147", as shown on said Boundary Survey of the Kennebec River Gorge, and being at the corner of the other land now or formerly of Central Maine Power Company as described in the deed recorded said Registry in Book 1416, Page 127;

Thence on the following courses along the said land of Central Maine Power Company (CMP), and as shown on said Boundary Survey of the Kennebec River Gorge, and Plan File 2011, Pages 78 (sheet 7, of 8);
S 71°56'15" W, along said other land of CMP, 445.79', to a Set N&W in a found wood post;
S 44°32'48" W, along said other land of CMP, and crossing Cold Stream, so-called, 1,059.44', to a Set N&W in a found wood post;
S 03°06'30" W, along said land of CMP, 700.72', to a Set N&W in a found wood post;
S 23°41'16" E, along said land of CMP, 1,698.08', to a wood post;
S 41°10'16" W, along said land of CMP, 1,299.55', to a rebar;
S 04°32'20" E, along said land of CMP, 1,600.25', to a wood post;
S 66°55'45" W, along said land of CMP, 355.24', to a wood post;
S 63°29'37" W, along said land of CMP, 561.64', to a wood post;

S 41°55'26" W, along said land of CMP, 649.55', to a wood post;
S 27°58'47" W, along said land of CMP, 730.93', to a wood post in a stone pile;
S 10°27'43" W, along said land of CMP, 693.30', to an angle point;
S 05°00'43" E, along said land of CMP, 1,042.38', to a Set N&W in a found wood post marked "CMP Co 1060" in a stone pile;
S 30°37'42" E, along said land of CMP, 1,086.65', to a Set P&C at a found rotten wood post in a stone pile;
S 72°49'02" W, along said land of CMP, 443.97', to an angle point, as shown on said Survey;
S 53°04'41" W, along said land of CMP, 944.89', to a Set P&C at a found rotten wood post;
S 20°47'20" W, along said land of CMP, 1,129.62', to a Set Cap on a found 5/8" rebar at the base of a rotten wood post, and being the boundary line of the land now or formerly of the Inhabitants of West Forks Plantation as described in the Deed recorded in the said Registry in Book 4472, Page 226, and as shown on the said Survey, and Plan File 2011, Pages 79 (sheet 8, of 8);

Thence N 61°44'41" W, along said land of West Forks Plantation, 730.70', to a Set P&C in found stone pile;

Thence S 61°07'37" W, along said land of West Forks Plantation, 758.81', to a point, said point being S 49°18'46" E & 6.45' from a Set P&C at the base of a wood post, and being the boundary line of the land now or formerly of West Forks Property, LLC as described in the Deed recorded in the said Registry in Book 4114, Page 084;

Thence N 49°18'46" W, along said land of West Forks Property, LLC, 682.56', to a Set P&C at the base of a wood post;

Thence S 53°52'24" W, along said land of West Forks Property, LLC, 89.05', to a Set P&C, and being the boundary line of the land now or formerly of Hawk's Nest Property, LLC, as described in the Deed recorded in the said Registry in Book 4080, Page 350;

Thence N 38°55'40" W, along said land of Hawk's Nest Property, LLC, 188.85', to a found ¾" rebar with plastic cap marked "SD Smith PLS 1354" in a stone pile and rotten wood post, and the land now or formerly of William P. McKay and Brenda E. Mckay, as described in the deed recorded in the said Registry in Book 1414, Page 006, and as shown on the "Plan of S.D. Warren Company to William & Brenda McKay land in West Forks", dated December 1987, by M. Johnson, and recorded in the said Registry in Book 1414, Page 008;

Thence N 58°11'06" E, along said land of Mckay, 216.74', to a Set P&C in found stone pile;

Thence N 37°48'16" W, along the land of said McKay, 775.80', to a Set P&C in found stone pile;

Thence N 44°09'04" W, along the land of said McKay, 839.89', to a Set P&C, and being at the corner of the land now or formerly of William P. McKay, as described in the Deed recorded in the said Registry in Book 814, Page 233;

Thence N 56°23'33" W, along the land of said McKay, 380.51', to a Set P&C;

Thence S 33°36'27" W, along the land of said McKay, 70.00', to a Set P&C, in found stone pile, and being at the corner of the land now or formerly of Alan D. Curry and Heidi W. Cushman-Curry as described in the Deeds recorded in the said Registry in Book 4613, Page 192 and Book 4712, Page 83;

Thence N 56°28'30" W, along the land of said Curry, 328.04', to a Set P&C, in found stone pile, and rotten wood post;

Thence on the following courses along the remaining lands of the Grantors herein;

N 52°52'31" W, along the remaining lands of the Grantors herein, 983.69', to a Set P&C;
N 33°51'58" W, along the remaining lands of the Grantors herein, 1,084.57', to a Set P&C;
N 11°16'19" W, along the remaining lands of the Grantors herein, 1,095.17', to a Set P&C;
N 28°15'16" W, along the remaining lands of the Grantors herein, 1,075.66', to a Set P&C;
N 44°58'15" W, along the remaining lands of the Grantors herein, 807.12', to a found ¾" rebar with cap marked "M.R. Sackett PLS1170", as shown on the said "Subdivision of Land The Harrison's" dated December 20, 2007, by Michael R. Sackett, PLS 1170, of Sackett & Brake Survey Inc., as recorded in the said Registry in Plan File 2008, Page 21;

Thence N 12°40'05" W, along said "Subdivision of Land The Harrison's", 1,471.06', to a found 7/8" rebar with cap marked "RLS 444";

Thence S 76°06'13" W, along said "Subdivision of Land The Harrison's", 2,193.19', to the said found 7/8" rebar with cap marked "RLS 444", and being at the said Northeasterly sideline of US Route 201, so-called, also known as Canada Road, so-called, as shown on the said "Maine State Highway Commission Right of Way Map State Highway 267" , dated January 1955, S.H.C. File No. 13-78, Sheet 4 of 9, and recorded in the Somerset County Registry of Deeds, in Plan Book 13, Page 55;

Thence N 62°00'15" W, along said sideline of US Route 201, so-called, 228.87', to a point, being at the corner of the land now or formerly of Katie Ladd and Jared D. Ladd as described in the Deed recorded in the said Registry in Book 4642, Page 354, also being S 27°18'41" W, and 1.30' from a found 5/8 rebar;

Thence N 27°18'41" E, along the land of said Ladd, 114.97', to a found 5/8" rebar;

Thence N 61°55'51" W, along the land of said Ladd, 100.00', to a found 5/8" rebar;

Thence S 29°09'14" W, along the land of said Ladd, 115.12', to a point, being on the said Northeasterly sideline of US Route 201, so-called;

Thence N 62°00'15" W, along said sideline of US Route 201, so-called, 66.26' to the point of beginning;

EXCEPTING AND RESERVING a certain lot or parcel of land being a **Cell Tower Site**, so-called, within the above described SOUTH TRACT as described in the Corrective Memorandum of Plum Creek Maine Timberlands, LLC to Maine RSA#1, Inc. dated January 9, 2015 and recorded in Book 4900, Page 142, and recorded in the Somerset County Registry of Deeds, which is approximately 1600 feet, easterly from US Route 201, so-called, also known as Canada Road, so-called, in West Forks Plantation , Somerset County, State of Maine, being more particularly bounded and described as follows:

Beginning at a point, being a Set P&C at the most southeasterly most corner of the said Cell Tower Site, being S 53°02'27" E, and 10,389.32' from the point of beginning of the SOUTH TRACT, described herein above, also being, N24°32'16"E, and 1,932.77' from a Set N&W in a found 3"x7"x1.2'tall, concrete monument, at or near the northwesterly corner of the land now or formerly of New England Telephone & Telegraph, as described in the Deed recorded in the Somerset County Registry of Deeds in Book 696, Page 395, and at or near the southwesterly corner of the land now or formerly of West Forks Plantation as described in the Deed recorded in the said Registry in Book 3146, Page 271, and on or near the easterly sideline of said US Route 201, so-called, also known as Canada Road, so-called, said point of beginning of the Cell Tower Site is at a coordinate of North 915,761.4939, and East 3,003,635.1187;

Thence S 83°25'08" W, along a Roadway Easement for said Cell Tower Site, 9.86 feet, to a point;
Thence S 84°32'44" W, along said Roadway Easement for said Cell Tower Site, 46.76 feet, to a point;
Thence N 87°10'47" W, along said Roadway Easement for said Cell Tower Site, 43.62 feet, to a point;
Thence N 81°18'50" W, along said Roadway Easement for said Cell Tower Site, and being along the end of the Utility Easement, 50.43 feet, to a point;
Thence N 82°57'06" W, along said Roadway Easement for said Cell Tower Site, 34.47 feet, to a point;
Thence N 85°14'35" W, along said Roadway Easement for said Cell Tower Site, 16.22 feet, to Set P&C;
Thence N 06°33'20" E, along the land being conveyed to the State of Maine, being the westerly line of said Cell Tower Site, 202.41 feet, to a Set P&C;
Thence S 83°25'36" E, along the land being conveyed to the State of Maine, being the northerly line of said Cell Tower Site, 200.00 feet, to a Set P&C;

Thence S 06°34'24" W, along the land being conveyed to the State of Maine, being the easterly line of said Cell Tower Site, 189.20 feet, the point of beginning.

The Cell Tower Site Containing 40,106 Square feet, or 0.9207 Acres, more or less.

The South Tract containing 3,730 Acres, more or less. (not including Cell Tower Site)

MIDDLE TRACT:

Beginning at a point, being a Set P&C, in a found stone pile, on the assumed Township boundary line between West Forks Plantation and Johnson Mountain Township, and N 78°00'00" E, along said Township boundary line, and, 7,284.64', from a found wood post marked "West Forks 1980 Johnson Mt" near the westerly sideline of said US Route 201, so-called, also known as Canada Road, so-called, said point also being at the northwesterly corner of the State of Maine Public Reserve Lot, also being N11°39'26" W, along said Public Reserve Lot, 235.60', from a Set P&C, at the northeasterly most corner of the SOUTH TRACT described herein above, said Point also being at a coordinate of North 946,096.0990, and East 2,989,887.2710, and being the true Point of Beginning;

Thence S 11°39'26" E, along said Public Reserve Lot, 135.60' to a Set P&C, at the land of said Central Maine Power Company as deseribed in said Book 665, Page 393, being on the northerly side of a 100.00' wide transmission line;

Thenee S 78°48'20" W, along said CMP, crossing Cold Stream, so-called, and crossing said Wilson Hill Road, so-ealled, 3,569.55' to a Set P&C, and being N 01°32'14" E, and 102.52', from a Set P&C, at the northwesterly eorner of the SOUTH TRACT described herein above;

Thence N 14°47'22" W, along the remaining lands of the Grantors herein, 2,484.95' to a Set P&C, and being S 15°32'07" E, aeross Capital Road, so-called, and 954.58', from a Set P&C, at the Point of Beginning of the southwesterly corner of the NORTH TRACT described herein below;

Thence N 36°15'37" E, along the remaining lands of the Grantors herein, and crossing Cold Stream, so-called, 1,237.74' to a Set P&C, on the westerly side of the East Side Spur Road, and being S 06°48'28" E, across said Capital Road, so-ealled, and 774.41', from a Set P&C, at the southeasterly corner of the NORTH TRACT deseribed herein below;

Thenee on the following courses along the said remaining lands of the Grantors herein, which is also on the said westerly sideline of East Side Spur Road, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

S 35°02'30" E, along said Road, 277.98' to a point;
S 18°37'18" E, along said Road, 137.72', to a point;
S 05°35'47" E, along said Road, 102.03', to a point, being S 78°41'54" W, and 33.16', more or less, from the centerline end of said East Spur Road, so-ealled;

Thence on the following courses along the remaining lands of the Grantors herein;

N 78°41'54" E, along said lands, 55.29', to a set P&C;

N 78°41'54" E, (continuing) along said end of Road, lands, and crossing said Wilson Hill Road, so-called, 4,601.22', to a found wood post marked "Scott PL", and being the northwesterly corner of the State of Maine Public Reserve Lot;

Thence S 15°04'01" E, along the said Public Reserve Lot, 2,641.99', to a Set P&C in a found stone pile and wood post, and being the assumed Township boundary line between West Forks Plantation and Johnson Mountain Township;

Thence S 77°09'14" W, along the said Public Reserve Lot, and being along the said Township boundary line, 2,143.69', to the point of beginning;

The Middle Tract containing 365 Acres, more or less.

NORTH TRACT:

Beginning at a point, being a Set P&C, and being N 15°32'07" W, across said Capital Road, so-called, and 954.58', from a Set P&C, at the northwesterly most corner of the MIDDLE TRACT described herein above, said point also being at a coordinate of North 948,592.6260, and East 2,985,523.0410, and the true Point of Beginning;

Thence on the following courses along the remaining lands of the Grantors herein;

N 36°41'48" W, along said lands, 2,045.49', to a set P&C;
N 16°20'03" W, along said lands, 716.78', to a Set P&C;
N 16°37'51" E, along said lands, 1,529.63', to a Set P&C;
N 10°24'56" W, along said lands, 3,325.90', to a Set N&W in ledge;
N 37°14'07" E, along said lands, 2,191.42', to a Set P&C;
N 38°29'05" E, along said lands, 2,608.35', to a Set P&C;
N 03°16'24" E, along said lands, 546.86', to a Set P&C;
N 45°51'39" E, along said lands, 306.58', to a Set N&W, being S38°47'32"E, and 33.00' from an angle point, in the centerline of Old Cold Stream Road, so-called being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

Thence on the following courses along the remaining lands of the Grantors herein, which is also on the easterly sideline of said Old Cold Stream Road;

N 51°12'28" E, along said Road, 265.71', to a point;
N 30°19'38" E, along said Road, 461.72', to a point;
N 49°12'42" E, along said Road, 408.13', to a point;
N 29°21'45" E, along said Road, 305.51', to a point;
N 19°24'38" E, along said Road, 353.89', to a point;
N 42°07'17" E, along said Road, 206.00', to a point;
N 55°30'44" E, along said Road, 209.36', to a point;
N 26°00'16" E, along said Road, 551.40', to a point;
N 28°50'34" E, along said Road, 214.42', to a point;
N 06°21'49" E, along said Road, 186.88', to a Set P&C, being S 82°55'51" E and 33.00' from an angle point, in the centerline of Old Cold Stream Road, so-called;
N 07°46'29" E, along said Road, 342.07', to a point;
N 15°11'02" W, along said Road, 315.51', to a point;
N 03°34'55" E, along said Road, 314.54', to a point;
N 24°55'43" E, along said Road, 500.54', to a point;
N 12°49'10" E, along said Road, 302.27', to a point;
N 01°12'17" E, along said Road, 400.75', to a point;
N 11°53'31" E, along said Road, 232.53', to a point;
N 09°52'55" W, along said Road, 295.20', to a point;
N 06°48'15" W, along said Road, 234.43', to a point;

N 15°12'36" W, along said Road, 221.39', to a point;
N 01°39'15" E, along said Road, 470.88', to a point;
N 20°26'55" E, along said Road, 119.84', to a set P&C, at the end of said Old Cold Stream Road, so-called, and being S 69°33'05" E, and 33.00' from the end of the centerline of said Old Cold Stream Road, so-called;

Thence N 01°36'14" E, along the remaining lands of the Grantors herein, 3,421.80' to a Set P&C;

Thence N 32°49'00" W. along said lands, 587.55' to a set N&W, being N 32°49'00" W, and 35.26' from end of the centerline of Cook Stove Pond Road, so-called being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

Thence on the following courses along the remaining lands of the Grantors herein, which is also on the northerly sideline of said Cook Stove Pond Road, so-called, so-called being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

S 36°43'04" W, along said Road, 307.73', to a point;
S 29°18'53" W, along said Road, 476.92', to a point;
S 67°02'15" W, along said Road, 515.25', to a point;
S 59°11'07" W, along said Road, 382.14', to a point;
S 79°01'23" W, along said Road, 420.69', to a point;
N 77°50'36" W, along said Road, 512.59', to a point;
N 68°47'10" W, along said Road, 334.15', to a point;
N 54°53'42" W, along said Road, 528.85', to a point;
N 70°14'10" W, along said Road, 660.72', to a point;
S 81°15'39" W, along said Road, and crossing said Road, 274.30', to a point, in the centerline of said Road;

Thence S 88°52'16" W, crossing said Road, and along the remaining land of the Grantors herein, 607.14' to said Set P&C;

Thence S 88°41'39" W, along said lands, 1,803.24' to a Set N&W, on the southeasterly sideline of said Cook Stove Pond Road, so-called, also being S 49°59'10" E, and 51.78' from an angle point in the centerline of said Cook Stove Pond Road, so-called;

Thence N 49°59'10" W, along the said lands, and crossing said Cook Stove Pond Road, so-called, 3,252.05' to a Set N&W, being S 87°09'12" E, and 33.00' from the end of the centerline of Upper Parlin Mountain Road, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

Thence on the following courses along the remaining lands of the Grantors herein, which is also on the easterly sideline of said Upper Parlin Mountain Road, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

N 02°50'48" E, along said Road, 553.02', to a point;
N 28°09'27" W, along said Road, 168.04', to a point;
N 53°29'27" W, along said Road, 145.28', to a point;
N 23°32'49" W, along said Road, 422.16', to a point;
N 45°20'20" W, along said Road, 263.72', to a point;
N 07°25'28" E, along said Road, 275.84', to a point;
N 37°06'12" E, along said Road, 239.39', to a point;
N 22°31'33" E, along said Road, 664.28', to a point;
N 37°21'09" E, along said Road, 431.96', to a point;
N 16°00'31" E, along said Road, 358.29', to a point;
N 31°31'34" E, along said Road, 323.98', to a point;
N 08°24'52" W, along said Road, 324.93', to a point;
N 24°06'00" W, along said Road, 371.72', to a point;
N 41°54'37" W, along said Road, 513.85', to a point;
N 35°28'32" W, along said Road, 244.01', to a Set P&C, being S 66°14'27" E, and 64.51' from the centerline intersection of Upper Parlin Mountain Road, so-called, and Small Spur Road so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

Thence on the following courses along the remaining lands of the Grantors herein, which is also on the southerly sideline of said Small Spur Road, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

N 82°59'38" E, along said Road, 406.06', to a point;
N 78°38'31" E, along said Road, 347.99', to a point;
N 81°33'07" E, along said Road, 301.86', to a point;
N 39°03'29" E, along said Road, 395.65', to a point;
N 47°54'19" E, along said Road, 330.84', to a Set P&C, being S 42°05'41" E, and 33.00' from the end of the centerline said Small Spur Road, so-called;

Thence on the following courses along the remaining lands of the Grantors herein;

N 49°34'23" E, along said lands, 3,119.32', to a Set P&C;
N 32°55'46" E, along said lands, 658.09', to a point;
N 68°46'44" E, along said lands, 449.26', to a point;
N 23°10'56" E, along said lands, 197.06', to a point;
N 00°58'29" W, along said lands, 174.85', to a point;
N 03°44'20" W, along said lands, 238.31', to a point;
N 66°35'17" E, along said lands, 112.88', to a point;

N 52°21'47" E, along said lands, 289.05', to a point;
N 42°37'01" E, along said lands, 178.07', to a point;
N 73°37'16" E, along said lands, 228.26', to a point;
N 33°37'07" E, along said lands, and erossing Lone Jack Road, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein, 342.73', to a point, on the easterly sideline of said Lone Jack Road, so-called;

Thence N 32°00'22" W, along said Road, 181.16', to a Set P&C, being N 57°59'38" E, and 33.00' from an angle point in the centerline of said Lone Jack Road, so-called;

Thence along the following courses along the remaining lands of the Grantors herein;

N 44°24'11" E, along said lands, 1,937.62', to a Set P&C;
N 06°15'20" E, along said lands, 576.06', to a Set P&C;
N 16°54'40" W, along said lands, 445.04', to a point;
N 03°21'08" W, along said lands, 501.45', to a point;
N 04°29'57" E, along said lands, 411.58', to a point;
N 08°06'00" W, along said lands, 278.33', to a point;
N 25°48'11" W, along said lands, 465.92', to a point;
N 28°11'22" W, along said lands, 192.20', to a Set P&C;
S 73°34'56" E, along said lands, 160.38', to a point;
N 73°09'02" E, along said lands, 229.68', to a point;
S 70°25'55" E, along said lands, 202.77', to a point;
S 89°58'57" E, along said lands, 299.94', to a point;
N 64°44'58" E, along said lands, 557.68', to a point;
N 36°49'44" E, along said lands, 233.15', to a point;
N 10°10'25" E, along said lands, 244.11', to a point;
N 07°15'02" E, along said lands, 323.93', to a point;
N 29°05'32" E, along said lands, 225.54', to a point;
N 80°19'48" E, along said lands, 82.47', to a point;
S 55°31'58" E, along said lands, 404.77', to a point;
N 80°21'57" E, along said lands, 423.72', to a point;
S 80°46'47" E, along said lands, 290.13', to a point;
N 71°02'05" E, along said lands, 308.51', to a point;
N 32°57'17" E, along said lands, 216.22', to a point;
N 18°52'17" E, along said lands, 218.89', to a point;
N 50°25'32" E, along said lands, 158.51', to a point;
N 45°45'30" E, along said lands, 489.47', to a point;
N 87°06'47" E, along said lands, 281.19', to a point;
N 57°56'45" E, along said lands, 226.56', to a point;
N 80°30'32" E, along said lands, 359.01', to a point;
N 86°54'05" E, along said lands, 206.31', more or less, to a point, in a beaver flowage, and on the assumed Township boundary line between Misery Township and Parlin Pond Township,

being a point, N14°38'56"W, and 110.97', from a Set P&C on the south side of the beaver flowage, said point, is S72°E±, and 49'±, from a Set N&W in a 24" beech tree, and 40' more or less, East of the end of a logging road;

Thence S 14°38'56" E, along the said Township boundary, and being along other lands of the Grantors, and crossing the beaver flowage, 110.97' to a Set P&C;

Thence continuing S 14°38'56" E, along said Township boundary, and being along said other lands of the Grantors herein, and 2,995.75' to a set P&C, at the Moosehead Region Conservation Easement granted by Plum Creek Maine Timberlands, L.L.C. to Forest Society of Maine and to State of Maine through the Department of Conservation, Bureau of Parks and Lands, dated May 14, 2012, and recorded in the said Registry in Book 4523, Page 222, which boundary line is mentioned on Section 2, Line 25, d) "Cold Stream Pond" (see Page 278);

Thence along the following courses along the said remaining lands of the Grantors herein, which is also along the said Moosehead Region Conservation Easement, and being straight meander lines generally at least 500' from the high water mark of Cold Stream Pond;

S 31°00'26" W, along said Conservation Easement, 843.91', more or less, to a Set P&C;
S 15°27'45" E, along said Conservation Easement, 640.22', to a Set P&C;
S 19°38'40" W, along said Conservation Easement, 1,234.19', to a Set P&C;
S 61°07'56" W, along said Conservation Easement, 903.81', to a Set P&C;
S 19°14'17" W, along said Conservation Easement, 1,101.20', to a Set P&C;
S 47°37'14" E, along said Conservation Easement, 664.88', to a Set P&C;
S 20°17'26" W, along said Conservation Easement, 1,650.00', to a point;
S 73°04'49" E, along said Conservation Easement, and crossing Cold Stream, 907.91', to a Set P&C;
N 69°17'11" E, along said Conservation Easement, 884.06', to a Set P&C;
S 73°21'05" E, along said Conservation Easement, 579.41', to a point;
N 44°14'51" E, along said Conservation Easement, 578.81', to a Set P&C;
N 33°48'06" E, along said Conservation Easement, 767.12', more or less, to a Set P&C, on the said assumed Township boundary line between Misery Township and Johnson Mountain Township;

Thence S 13°02'10" E, along the said Township boundary, and being along other lands of the Grantors, and crossing Cold Stream Mountain Road North, so-called, 567.61', to a Set P&C, being S 13°02'10" E, and 51.55' from the end of the centerline of said Cold Stream Mountain Road North, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

Thence S 04°31'28" W, along the remaining lands of the Grantors herein, and crossing Cold Stream Mountain Road North, so-called, 4,898.67', more or less, to a Set P&C,

being S 39°50'27" W, and 57.09' from an angle point in the centerline intersection of said Cold Stream Mountain Road North, so-called;

Thence along the following courses along the said remaining lands of the Grantors herein;

S 18°10'35" E, along said lands, 280.34', to a point;
S 25°35'14" E, along said lands, 252.55', to a point;
S 01°21'44" E, along said lands, 267.49', to a point;
S 11°22'07" E, along said lands, 323.30', to a point;
S 28°15'03" W, along said lands, 270.69', to a point;
S 57°23'48" W, along said lands, 363.09', to a point;
S 68°10'09" W, along said lands, 367.14', to a point;
S 39°11'35" W, along said lands, 538.88', to a point;
S 45°39'00" W, along said lands, 465.79', to a Set P&C;
S 60°01'29" W, along said lands, 2,059.12', to a Set P&C;
S 41°40'17" E, along said lands, 1,001.78', to a Set P&C;
S 04°38'42" E, along said lands, 1,703.93', to a Set P&C, being N 08°36'22" E, and 33.00' from the end of the centerline of the Cold Stream Mountain Road South, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

Thence on the following courses along the remaining lands of the Grantors herein, which is also on the southerly and westerly sideline of said Cold Stream Mountain Road South, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

N 81°23'38" W, along said Road, 84.62', to a point;
S 73°38'31" W, along said Road, 400.75', to a point;
S 10°15'53" W, along said Road, 289.70', to a point;
S 10°04'11" E, along said Road, 209.39', to a point;
S 19°51'24" W, along said Road, 206.00', to a point;
S 01°06'55" E, along said Road, 230.96', to a point;
S 20°32'35" E, along said Road, 209.56', to a point;
S 18°40'09" E, along said Road, 544.77', to a point;
S 09°41'21" E, along said Road, 733.93', to a point;
S 06°29'24" W, along said Road, 511.32', to a point;
S 12°26'49" E, along said Road, 488.96', to a Set P&C;
S 00°19'02" W, along said Road, 196.01', to a point;
S 32°59'31" W, along said Road, 250.27', to a point;
S 15°23'09" W, along said Road, 260.28', to a point;
S 03°17'20" E, along said Road, 434.86', to a point;
S 08°25'32" E, along said Road, 347.41', to a point;
S 20°06'25" E, along said Road, 407.54', to a point;
S 15°48'49" W, along said Road, 532.79', to a point;

S 14°34'03" W, along said Road, 336.44', to a Set N&W;
S 12°40'02" W, along said Road, 596.54', to a point;
S 05°47'40" W, along said Road, 403.62', to a point;
S 10°29'38" E, along said Road, 400.47', to a point;
S 09°34'19" W, along said Road, 286.26', to a point;
S 05°06'48" W, along said Road, 230.73', to a point;
S 05°21'50" W, along said Road, 221.60', to a point, being N 68°47'48" W, and 34.30' from an angle point at the end of the centerline of the Cold Stream Mountain Road South so-called, and the intersection of the end of the centerline of the Mountain Brook Road, so-called;

Thence on the following courses along the remaining lands of the Grantors herein, which is also on the westerly sideline of said Mountain Brook Road, so-called, being a 66.00' wide Right of Way for Ingress-Egress, which said Right of Way is also being conveyed herein;

S 37°02'33" W, along said Road, 176.30', to a point;
S 63°49'01" W, along said Road, 291.17', to a point;
S 70°41'16" W, along said Road, 179.16', to a point;
S 50°44'03" W, along said Road, 227.46', to a point;
S 46°35'08" W, along said Road, 420.48', to a point;
S 66°17'50" W, along said Road, 367.23', to a point;
S 47°29'22" W, along said Road, 529.24', to a point;
S 33°42'44" W, along said Road, 293.86', to a Set P&C;
S 26°54'57" W, along said Road, 194.42', to a point;
S 31°48'44" W, along said Road, 372.56', to a point;
S 55°05'03" W, along said Road, 474.81', to a point;
S 69°12'37" W, along said Road, 261.10', to a point;
S 56°58'05" W, along said Road, 620.77', to a point;
S 35°14'48" W, along said Road, 359.07', to a point;
S 55°54'27" W, along said Road, 272.54', to a point;
S 27°36'54" W, along said Road, 361.86', to a point;
S 43°26'41" W, along said Road, 483.15', to a point;
S 49°34'04" W, along said Road, 303.09', to a point;
S 25°38'53" W, along said Road, 220.36', to a point;
S 05°43'02" W, along said Road, 548.00', to a point;
S 30°35'34" W, along said Road, 364.93', to a point;
S 23°33'05" W, along said Road, 417.48', to a point;
S 55°37'56" W, along said Road, 251.61', to a point;
S 28°34'31" W, along said Road, 79.69', to a Set P&C;
S 06°51'01" E, along said Road, 503.70', to a point;
S 19°22'24" E, along said Road, 737.36', to a point;
S 00°30'17" E, along said Road, 428.77', to a point;
S 05°41'53" W, along said Road, 210.73', to a point;
S 22°05'25" E, along said Road, 179.52', to a point;

S 21°46'53" W, along said Road, 143.55', to a point;
S 18°02'44" E, along said Road, 284.92', to a point;
S 01°10'14" W, along said Road, 240.66', to a point;
S 70°05'39" W, along said Road, 351.84', to a point;
S 12°40'48" W, along said Road, 566.96', to a point;
S 07°24'22" E, along said Road, 252.50', to a point;
S 35°16'54" E, along said Road, 215.59', to a point;
S 17°37'01" E, along said Road, 295.16 ', to a point;
S 38°14'53" E, along said Road, 673.47', to a point;
S 33°02'52" E, along said Road, 296.80', to a point;
S 85°57'55" E, along said Road, 349.16', to a point;
S 59°31'02" E , along said Road, 273.88', to a point;
S 56°42'54" E, along said Road, 160.82', to a Set P&C, being N 41°10'12" E, and 33.32' from an angle point at the centerline of said Mountain Brook Road, so-called, and being N 06°48'28" W, across said Capital Road, so-called, and 774.41', from a Set P&C, at the northeasterly corner of the MIDDLE TRACT described herein above;

Thence S 46°35'56" W, along the remaining lands of the Grantors herein, and crossing Cold Stream, so-called, 1,233.12' to the point of beginning;

The North Tract containing 4,064 Acres, more or less.

The total area being conveyed for the SOUTH TRACT, MIDDLE TRACT, and NORTH TRACT (excluding the Cell Tower Site) is 8,159 Acres, more or less.

The basis of bearing for this description is GRID NORTH based on the Maine State Plane Coordinate, also known as the, Maine State Coordinate System West 1802 Zone, NAD 83 (Cors96) Epoch 2002, using a Trimble GeoExplorer 6000 GNSS (GPS) receiver. The 2014 magnetic declination was found to be 16°± west of Grid North.

All said "Set P&C" are 5/8" rebar with a 2" aluminum cap marked "BOUNDARY MARKER ME. BUREAU OF PARKS & LANDS PLS 1303".

All said "Set N&W" are ¼" nails set in a drill hole of ledge or boulders and a 2" aluminum washer marked "BOUNDARY MARKER ME. BUREAU OF PARKS & LANDS PLS 1303".

This description is based on the "Boundary Survey Map for the Cold Stream Forest Project Being the Land Conveyed by Plum Creek Maine Timberlands, LLC to the State of Maine Bureau of Parks & Lands for the The Trust for Public Land" dated September 21, 2015, prepared by Robert A. Yarumian II, PLS 1303 of Maine Boundary Consultants, Moderation Center, 8 River Road, P.O. Box 67, Buxton, Maine, 04093, and conforms to the Maine Board of Licensure for Professional Land Surveyors, Rules, of April 2001, Chapter 90, Standards of Practice.

EXHIBIT B

The Property is conveyed subject to an easement in the public for any public roads heretofore laid out or established and now existing over, along or across any portion of the Property; and to all additional easements, reservations, restrictions, encumbrances and water rights, if any, apparent or of record; and further

SUBJECT TO:

(i) liens for taxes, assessments and other governmental charges which are not yet due and payable;

(ii) all land use (including environmental and wetlands), building and zoning laws, regulations, codes and ordinances affecting the Property;

(iii) any rights of the United States of America, the State in which the Property is located or others in the use and continuous flow of any brooks, streams or other natural water courses or water bodies within, crossing or abutting the Property, including, without limitation, riparian rights and navigational servitudes;

(iv) title to that portion of the Property, if any, lying below the mean high water mark of abutting tidal waters, navigable rivers and/or great ponds;

(v) all easements, rights-of-way, water rights, licenses and other such similar encumbrances apparent or of record;

(vi) all existing public and private roads and streets and all railroad and utility lines, pipelines, service lines and facilities;

(vii) all encroachments, overlaps, boundary line disputes, shortages in area, persons in possession, cemeteries and burial grounds and other matters not of record which would be disclosed by an accurate survey or inspection of the Property; and

(viii) any loss or claim due to lack of access to any portion of the Property; and further

SUBJECT TO all easements, rights-of-way, and other encumbrances of record at the time of Grantor's acquisition and, for the access and utility easements noted therein, that certain Memorandum of Lease made by Plum Creek Maine Timberlands, L.L.C., as Landlord, and Maine RSA #1, Inc., as Tenant, dated June 18, 2010 and recorded in Book 4292, Page 203 in the Somerset County Registry of Deeds, as corrected by that certain Corrective Memorandum dated January 9, 2015 and recorded in Book 4900, Page 142 of the Somerset County Registry of Deeds.

Doc 3076 Bk 5011 Pg 26
Recorded: Somerset County Mar 24,2016 02:28P
Deputy Register of Deeds Laura L Price

Filed for record at the request of and after
recording return to:
PLUM CREEK MAINE TIMBERLANDS, L.L.C.
c/o Weyerhaeuser Company
P.O. Box 9777, Mailstop CH 1J25
Federal Way, WA 98063-9777
Attn: Paul Hill
File No. 914-19.14-0010

Doc 3353 Bk 5012 Pg 317
Recorded: Somerset County Mar 30,2016 10:31A
Deputy Register of Deeds Laura L Price

RECIPROCAL EASEMENT AGREEMENT

This Reciprocal Easement Agreement (the "Easement") is made as of this 23 day of March, 2016, by and between PLUM CREEK MAINE TIMBERLANDS, L.L.C., a Delaware limited liability company with its principal office located at 33663 Weyerhaeuser Way South, Federal Way, Washington 98003, hereinafter referred to as "Plum Creek," and the State of Maine acting by and through its Department of Agriculture, Conservation, and Forestry, Bureau of Parks Lands, hereinafter referred to as "Owner." (Collectively Plum Creek and Owner may be referred to as "Party" or "Parties")

W I T N E S S E T H:

WHEREAS, Plum Creek owns and/or has transferred on near or even date herewith property located in the Townships of Chase Stream, Johnson Mountain, Long Pond, Misery, Parlin Pond, Sandwich Academy, Sapling, and West Forks Plantation, all in Somerset County, Maine as the same was described in three deeds from S.D. Warren Company to SDW Timber II, L.L.C., n/k/a Plum Creek Maine Timberlands, L.L.C., dated November 5, 1998, and recorded in the following three deeds in Somerset County Registry of Deeds in Book 2490, Page 228 (Parlin Pond Parcel); Book 2491, Page 67 (West Forks Parcel); and Book 2490, Page 81 (Johnson Mountain Parcel), as the Johnson Mountain Parcel was affected by Corrective and Confirmatory Quitclaim Deed made by S.D. Warren Company to Plum Creek Maine Timberlands, L.L.C. dated July 25, 2014 and recorded in Book 4814, Page 137. SDW Timber II, L.L.C. changed its name to Plum Creek Maine Timberlands, L.L.C. as cited by instrument dated November 30, 1998 and recorded September 23, 1999 in Book 2605, Page 151 (the "Plum Creek Land");

WHEREAS, Plum Creek conveyed a portion of the Plum Creek Land located in the Townships of Johnson Mountain, Parlin Pond, and West Forks Plantation, all in Somerset County, Maine shown as the "Cold Stream Forest" on a set of plans entitled, "Boundary Survey Map of the Cold Stream Forest being the land conveyed by Plum Creek Maine Timberlands, LLC to the State of Maine Bureau of Parks and Lands" prepared by Maine Boundary Consultants, dated

**This document is being re-recorded to correct the Plan page numbers on Page 2.

14

September 21, 2015 as Plan Nos. File 2016 (the "Cold Stream Plans") to Owner (such property, the "OWNER Land"); Pgs. ~~32-34~~ 32-38 **

WHEREAS, after the conveyance of the Cold Stream Forest, Plum Creek retains ownership in the Plum Creek Land not conveyed to Owner as described above (hereinafter be referred to as the "Plum Creek Remaining Land")

WHEREAS, Plum Creek reserved to itself from the conveyance of the Owner Land, that certain approximately 40,106 square foot, or 0.9207 acre, parcel of land shown on the Cold Stream Plan as the "Cell Tower Site" (the "Cell Tower Site");

WHEREAS, Plum Creek and OWNER have agreed to convey to each other rights to use right-of-ways over roads on their respective property all as more particularly set forth herein, on the terms and conditions set forth herein; and

WHEREAS, OWNER has agreed to convey to Plum Creek an easements for ingress, egress and utilities to the Cell Tower Site.

NOW THEREFORE, in consideration of one dollar ($1.00) and other good and valuable consideration paid, the receipt and sufficiency of which is hereby acknowledged, the parties hereby agree as follows:

NOW, THEREFORE,

1. Location of Easements.

The Easements are all shown on the Cold Stream Plan:

A. that certain existing road shown as Capital Road (the "Capital Roadway") which crosses a portion of the Plum Creek Remaining Land located in the Township of Johnson Mountain, Somerset County, State of Maine, which runs easterly from US Route 201, so-called, also known as, Canada Road, so-called, southerly of Marshall Yard, so-called, across Cold Stream, past Mountain Brook Road, so-called, East Side Spur Road, so-called, Wilson Hill Road, so-called, and Cold Stream Mountain Road South, so-called, for about 2.8 miles, and ends fifty feet, beyond Cold Stream Mountain Road South, so-called said easement being fifty (50') feet on each side of the centerline of the existing Capital Roadway (the "Capital Road Access Easement Area");

B. those eighteen (18) certain existing roads (the "PC Roadways"), which cross a portion of the Plum Creek Remaining Land located in the Townships of Johnson Mountain, Parlin Pond, and West Forks Plantation, all in Somerset County, State of Maine, said easement being thirty-three (33') feet on each side of the centerline of the existing PC Roadways further described as follows:

1) TOWER ROAD: A Right of Way which runs easterly and southerly from US Route 201, so-called, also known as, Canada Road, so-called, along the

boundaries of the SOUTH TRACT, for about 1.6 miles, to Jerry's Way, so-called.

2) JERRY'S WAY: A Right of Way which runs easterly and northerly from Tower Road, so-called, along the boundaries of the SOUTH TRACT, for about 1.9 miles, to the end of the improved road.
3) LOWER COLD STREAM ROAD: A Right of Way which runs easterly from US Route 201, so-called, also known as, Canada Road, so-called, past Brenda's Way, so-called, for about 1.9 miles, to the SOUTH TRACT.
4) BRENDA'S WAY: A Right of Way which runs northerly from Jerry's Way, so-called, for about 1.1 miles, to the SOUTH TRACT parcel described herein, and runs along the SOUTH TRACT for only 100 feet.
5) EAST SIDE SPUR ROAD: A Right of Way which runs southerly from Capital Road, so-called, for about 430 feet, to and along the MIDDLE TRACT for about 550 feet, to the MIDDLE TRACT.
6) WILSON HILL ROAD: A Right of Way which runs southerly from Capital Road, so-called, for about 0.5 miles, to the MIDDLE TRACT, then within the MIDDLE TRACT, for about 0.7 miles, to and across the Central Maine Power Company Transmission Line, then within the SOUTH TRACT, for about 0.4 miles, then southeasterly, for about 0.5 miles, along the SOUTH TRACT for about 1.6 miles, then northeasterly and southeasterly along the SOUTH TRACT for about 3.4 miles, to the end of the improved road.
7) MOUNTAIN BROOK ROAD: A Right of Way which runs northerly from Capital Road, so-called, for about 274 feet, to and along the NORTH TRACT, easterly of Cold Stream, for about 2.7 miles, to COLD STREAM MOUNTAIN ROAD SOUTH, so-called.
8) COLD STREAM MOUNTAIN ROAD SOUTH: A Right of Way which runs northerly from Capital Road, so-called, past Mountain Stream Road, so-called, for about 1.5 miles, to Mountain Brook Road, so-called, and to and along the NORTH TRACT, easterly of Cold Stream, about 1.6 miles, which ends about 1124 feet, past the intersection of the snowmobile trail which leads to the bridge crossing of Cold Stream.
9) MOUNTAIN STREAM ROAD: A Right of Way which runs northerly from Cold Stream Mountain Road South, so-called, for about 3.7 miles, to Cold Stream Mountain Road North.
10) COLD STREAM MOUNTAIN ROAD NORTH: A Right of Way which runs easterly from Mountain Stream Road, so-called, for about 0.6 miles, to the NORTH TRACT.
11) PARLIN MOUNTAIN ROAD SOUTH: A Right of Way which runs northerly from US Route 201, so-called, also known as, Canada Road, so-called, (south of Parlin Pond) past Cook Stove Pond Road, so-called, for about 1.4 miles, to Upper Parlin Mountain Road, so-called.
12) COOK STOVE POND ROAD: A Right of Way which runs southeasterly and northeasterly from Parlin Mountain Road South, so-called, for about

1.8 miles, to the NORTH TRACT, for about 0.9 miles, then after looping around Cook Stover Pond, along the NORTH TRACT, for about 0.8 miles to end of the improved road.

13) UPPER PARLIN MOUNTAIN ROAD: A Right of Way which runs easterly and southerly past Small Spur Road, so-called, and along the NORTH TRACT, for about 1.6 miles, to the end of the improved road.
14) SMALL SPUR ROAD: A Right of Way which runs easterly from Upper Parlin Mountain Road, so-called, along the NORTH TRACT, for about 0.3 miles, to the end of the improved road.
15) PARLIN MOUNTAIN ROAD NORTH: A Right of Way which runs southeasterly from US Route 201, so-called, also known as, Canada Road, so-called, (north of Parlin Pond), for about 1.5 miles, to Hawk Road, so-called.
16) HAWK ROAD: A Right of Way which runs easterly from Parlin Mountain Road North, so-called, for about 1.9 miles, to intersection of Smith Pond Road, so-called, and Lone Jack Road, so-called.
17) LONE JACK ROAD: A Right of Way which runs southerly from the intersection of Smith Pond Road, so-called, and Hawk Road, so-called, for about 0.9 miles to the NORTH TRACT.
18) OLD COLD STREAM ROAD: A Right of Way which runs northeasterly from US Route 201, so-called, also known as, Canada Road, so-called, (north of Capital Road, so-called) from about 1.6 miles to the NORTH TRACT, then along the NORTH TRACT about 1.3 miles the end of the improved road.

The total miles of Right of Ways that cross the remaining land of Plum Creek as described in Paragraphs 1.A. and 1.B. above and provide access to the SOUTH TRACT, MIDDLE TRACT, and NORTH TRACT are 39.8 miles (the "Plum Creek Access Easement Areas").

C. Those four (4) certain existing roads (the "Owner Roadways"; the Capital Roadway, the PC Roadways and the Owner Roadways being referred to collectively as the "Roadways"), which cross a portion of the OWNER Land located in the Townships of Johnson Mountain, Parlin Pond, and West Forks Plantation, all in Somerset County, State of Maine, said easement being thirty-three (33') feet on each side of the centerline of the existing Owner Roadways, said Right of Ways are generally described as follows:

1) WILSON HILL ROAD: A Right of Way through the SOUTH TRACT and MIDDLE TRACT, which starts about 0.5 miles southerly of Capital Road, so-called, and through the MIDDLE TRACT, for about 0.7 miles, to Central Maine Power Company Transmission Line, and then through the SOUTH TRACT, for about 0.4 miles.
2) COLD STREAM MOUNTAIN ROAD NORTH: A Right of Way through the NORTH TRACT, which runs westerly, northerly and easterly, from a point about 0.6 miles westerly of the end of Mountain Stream Road, so-

called, past Old Cold Stream Road, so-called, for about 1.8 miles, and ends at the Misery Township boundary line.

3) OLD COLD STREAM ROAD: A Right of Way through the NORTH TRACT, which runs westerly from Cold Stream Mountain Road North, for about 0.5 miles, to Lone Jack Road, so-called.
4) LONE JACK ROAD: A Right of Way through the NORTH TRACT, which runs northerly from Old Cold Stream Road, so-called, for about 1.2 miles.
5) COOK STOVE POND ROAD: A Right of Way through the NORTH TRACT, which runs northerly, easterly and southerly around Cook Stove Pond, for about 0.9 miles.

The total miles of Right of Ways conveyed over the Owner's Land included over the SOUTH TRACT, MIDDLE TRACT, and NORTH TRACT are 6.9 miles (the "OWNER Access Easement Areas"; together the Capital Road Access Easement Area, the Plum Creek Access Easement Areas, and the OWNER Access Easement Areas shall be referred to as the "Access Easement Areas").

D. that certain existing road crossing a portion of the OWNER Land located in West Fork Plantation, Somerset County, State of Maine, beginning at where Tower Road intersects Jerry's Way, which runs southerly and westerly for about 0.7 miles, to the Cell Tower Site, labeled as part of Tower Road, said easement being thirty-three feet (33') on each side of the center line of existing Tower Road ("Cell Tower Access Easement Area"); and

E. That certain utility easement located in West Fork Plantation, Somerset County, State of Maine, beginning on the border of the Owner Land adjacent to the land of the Inhabitants of West Forks Plantation and running northward to the Cell Tower Site, labeled Proposed "Utility Easement," said easement being twenty feet (20') wide "Cell Tower Utility Easement Area").

2. Easement Grants.

A. Access Easement Grant. Plum Creek hereby grants to OWNER, and its successors and assigns, and OWNER hereby grants to Plum Creek, and its successors and assigns, a permanent non-exclusive easement and right-of-way, for ingress, egress, use and maintenance of those Access Easement Areas, all pursuant to the terms and conditions hereinafter set forth (the "Access Easements").

B. Cell Tower Site Easement Grant.

(i) Cell Tower Access. OWNER hereby grants to Plum Creek, its lessees, licensees, contractors, agents, successors, and assigns, a non-exclusive easement and right-of-way, for ingress, egress, use and maintenance of the Cell Tower Access Easement Area, pursuant to the terms and conditions hereinafter set forth ("Cell Tower Access Easement").

(ii) Cell Tower Utilities. Owner hereby grants to Plum Creek, its lessees, licensees,

contractors, agents, successors, and assigns, a non-exclusive easement for installing, repairing and replacing utilities in the Cell Tower Utility Easement Area, pursuant to the terms and conditions hereinafter set forth ("Cell Tower Utility Easement," the Cell Tower Access Easement and the Cell Tower Utility Easement being referred to together as the "Cell Tower Easements").

C. Purpose.

(i) Access Easements. The Access Easements are for all purposes of vehicular (but not including unregistered vehicles, ATV, snowmobile, bicycle or horse) travel, and for the public to use for recreational vehicular (but not including unregistered vehicles, ATV, snowmobile, bicycle or horse) purposes, to access the lands of the Parties located as shown on the Cold Stream Plan. Each Party shall notify the other Party before using the Roadways for commercial activity involving heavy trucking, so that the parties can agree upon the condition of the Roadways before and after such commercial activity and that maintenance costs due to a party's commercial use can be allocated appropriately under the terms herein. Notwithstanding the foregoing, commercial guides including, without limitation outfitters, traditional outdoor guides, commercial sporting camps, non-profit camping and educational and scientific institutions, and rafting companies, and their respective customers, may use the Roadways for commercial recreational purposes without prior notification.

(ii) Cell Tower Access. The Cell Tower Access Easement is for all purposes of vehicular (but not including unregistered vehicles, ATV, snowmobile, bicycle or horse) travel to and from the Cell Tower Site for so long as the Cell Tower Site is used by Plum Creek, its successors and assigns, for a communication tower or similar use of substantially the same impact.

(iii) Cell Tower Utilities. The Cell Tower Utility Easement is for the purposes of installing and maintaining utilities to serve the Cell Tower Site for so long as the Cell Tower Site is used by Plum Creek, its successors and assigns, for a communication tower or similar use of substantially the same impact.

D. Relocation. Each Party reserves unto itself, its successors and assigns the right at its expense to relocate any Roadway located on its land subject to the condition that, except for distance and curvature, such relocated Roadway provides the same type and quality of Roadway as exists at the time of such relocation.

E. Road Crossing. Each Party reserves unto itself, its successors and assigns, the right at all times and for any purpose to go upon, cross and recross, at any place on grade or otherwise, the Access Easements and the Cell Tower Easements (collectively, the "Easements") and to use the Easements in a manner that will not unreasonably interfere with the rights granted herein. Each Party and its successors and assigns shall have the right to use the Easements in accordance with this grant, provided that such use shall not unreasonably interfere with the other Party's timber

operations and off public highway hauling of timber or, as applicable, Cell Tower Site operations. Each Party's (and, with respect to the Roadways, the public's) use of the Easements shall at all times be in compliance with applicable laws, ordinances and regulations.

F. Gates and Closures. It is the intent of the Parties to afford recreational vehicular access along the Roadways described herein at all reasonable times, but each Party retains the right, at its discretion (at any time and from time to time), to temporarily post, gate and close a Roadway for any purpose associated with its timber management operations, including but not limited to public safety or environmental concerns. Prior to Closure, each Party shall notify the other Party of the reason and anticipated duration of any such posting, gating or closing. OWNER, if it is the State of Maine, shall have the right to limit public access under this Easement for the purpose of limiting damage to the Roadway and adjacent property and resources, to protect public safety and in the interest of recreation management.

3. Third Parties. Either Party may grant to third parties, by easement, lease, license or otherwise, upon such terms as it chooses, any or all of the rights reserved by it herein, including but not limited to the right to vehicular access for commercial purposes in addition to those expressly permitted above; provided that such grant shall be subject to the terms and conditions of this Easement and shall not unreasonably interfere with the rights granted here.

4. Maintenance. The Parties recognizes that the Roadways have been constructed and maintained for logging and other administrative purposes. Either Party's exercise of the rights granted hereunder shall not interfere with the other Party's forestry or other operations. Each Party shall each be entitled to maintain the Roadways, but no Party has an obligation to maintain the Roadways for the benefit of any other public user of the Roadways. Each Party is responsible for performing such maintenance as relates solely to that party's own use, if any, of the Roadways. Each Party must obtain the approval from the other Party prior to conducting any maintenance, construction or reconstruction activities.

5. Construction and Improvement. Unless the Parties hereto agree in writing to share the cost of improvements, including maintenance, construction and reconstruction, to the Easements in advance of such improvements being made, the costs of said improvements shall be borne solely by the improving party. Nothing in this Section may be construed as relieving either party of its responsibility, as set forth herein, to perform such maintenance as relates solely to that Party's own use, if any, of the Easements.

6. Right-of-Way Timber. Each Party reserves unto itself all timber now on or hereafter growing within the Easements described herein.

7. Commercial Use of Easement. Each Party must first notify the other Party prior to using the Roadways granted herein for any commercial purposes. (OWNER acknowledges that Plum Creek uses the Easements for commercial timber operations and operating a communications tower.) Upon such notification, the following commercial insurance requirements shall apply.

A. Commercial Insurance. Prior to any commercial use of the Roadways granted herein, the Party using the Roadway shall obtain and maintain, throughout the period of such commercial use, liability insurance issued in a form and by an insurance company acceptable to the other Party. Coverage requirements shall be as follows and have an **AM Best's Key Rating Guide of B+ VI (financial class) or better rating:**

i. Commercial General Liability Insurance to include minimum limits of $1,000,000 per occurrence and $1,000,000 annual aggregate Combined Single Limit Bodily Injury, Death and Property Damage. Extension of coverage to include Comprehensive Form, Premises and Operations, Contractual Liability, Products and Completed Operations, Independent Contractors, Personal Injury, Broad Form Property Damage, Cross Liability, and Pollution arising out of heat, smoke or fumes from a Hostile Fire. Additionally, the policy shall not exclude X, C or U (Explosion, Collapse, or Underground).

ii. Comprehensive Automobile Liability insurance covering owned, non-owned, hired and other vehicles, with a combined single limit of $1,000,000 per occurrence Combined Single Limit Bodily Injury, Death and Property Damage.

iii. Employer's Liability Insurance, for employee bodily injuries and death, with a minimum limit of $1,000,000 each occurrence. In the event the Party using the Roadway has no employees, such Party shall not be required to carry Employer's Liability Insurance.

iv. Worker's Compensation Insurance, with statutory limits as are required by the Workers' Compensation Law in the State in which work is being performed hereunder. If the Party using the Roadway qualifies for a state exemption from workers' compensation insurance as an "owner/executive/partner" and if the other Party consents to such exemption prior to the execution of this agreement, such Party may elect to be exempted from such coverage; provided, however, such Party shall obtain and maintain during the term and any extension hereof, workers' compensation insurance in an amount of not less than statutory limits for any and all employees of such Party. If such Party loses such exemption or otherwise fails to comply with applicable workers' compensation law during the term of this agreement, that Party shall refrain from exercising its rights under this agreement until the required workers' compensation insurance is obtained.

v. The policies specified above shall include an endorsement which shall name the Party upon whose land the Roadway is and if that Party is Plum Creek, it shall also name Weyerhaeuser Company, together with its subsidiaries and affiliates (collectively the "Weyerhaeuser Companies") as additional insureds on a primary basis for the term of this agreement. The additional insured endorsement must be ISO CG20 10 11 85 (or other form with like wording).

vi. The policies specified above shall include an endorsement which

shall provide that the covered party, at the address above, will be given a 30 - day written notice prior to cancellation, coverage modification or other material change in the policy. No such cancellation, modification or change shall affect the obligation of the Party using the Roadway to maintain the insurance coverages required by this agreement.

vii. All liability coverages must be on an "occurrence" basis as opposed to "claims made."

viii. All such insurance shall be in a form and company acceptable to the Party in whose benefit the insurance runs and sufficient to protect the Party using the Roadways, contractors and its subcontractors, to the extent that they are involved in the work, and protecting the Party in whose benefit the insurance runs from and against the claims of third persons, and to cover claims by either Party, their contractor and subcontractors for which such Party has assumed liability under this easement agreement.

ix. Prior to any commercial use of the Roadways herein granted, such Party shall furnish to the other Party a certificate of insurance dated and signed by a stated, authorized agent for the insuring company or companies, in a form acceptable to that Party and containing a representation that coverage of the types listed herein is provided with the required liability limits and the stated endorsements. The Party in whose benefit the insurance runs reserves the right to require a certified copy of the policy(ies) or to examine the actual policy(ies). Said certificate(s) of insurance shall be issued to the Party at the address above.

x. If either Party retains the services of any contractor, that Party shall cause each contractor to maintain insurance coverages and limits of liability of the same type and the same amount as are required under this Easement. That Party shall obtain, prior to the commencement of the contractor's services, the required certificates of insurance and additional insured endorsements.

xi. All persons using said Roadways for any purpose shall obtain and maintain a policy of Automobile Liability Insurance in a form generally acceptable in the State of Maine and customary in the area of said Easement and right-of-way.

In the event that the State of Maine is or becomes a party to this Easement, the other Party agrees that the insurance provisions under this Paragraph 7 (other than Paragraph 7(x), which will apply), shall not apply as the State of Maine is self-insured; provided, however, in the event this Easement is later assigned to any other party, the entirety of Paragraph 7 will be enforceable against such party. The remaining provisions shall remain in full force and effect.

8. Indemnification. Each Party shall assume all risk of, and indemnify and hold harmless, and at its expense defend the other Party from and against any claims, loss, cost, legal actions, liability or expense on account of personal injury to or death of any persons whatsoever, including but not limited to such Party, their employees, agents, or contractors, or damage to or destruction of property to whomsoever belonging, including but not limited to property of the other Party, their employees, agents or contractors, or any fire, resulting partly or wholly, directly or indirectly from the exercise of the rights herein granted; provided, however, that either Party's undertaking herein contained shall not be construed as covering personal injury to or death of persons, or damage to or destruction of property resulting from the gross negligence or willful misconduct of the other Party.

In the event that the State of Maine is or becomes a Party to this Easement, the provision under this Paragraph 8 shall be unenforceable. Provided, however, in the event this Easement is later assigned to any other party, this provision shall be enforceable against such party. The remaining provisions shall remain in full force and effect.

9. Liability for Public Use; Termination of Easement. In the event the State of Maine is a Party to this Agreement, the other party hereto claims all of the rights and immunities against liability for injury to the public to the fullest extent of the law under Title 14 M.R.S.A. Section 159-A, *et seq.* as amended and successor provisions thereof (Maine Recreational Use Statute), under the Maine Tort Claims Act, and under any other applicable provision of law and equity.

At any time that the other Party reasonably anticipates that it will, or reasonably determines that it has, become subject to liability arising from the exercise of rights granted under this Easement by members of the public which is greater than such liability as it existed as of the date of execution of this Easement, such Party shall notify the State of Maine in writing, describing the nature of the change in liability (and if prospective, the expected date of the change). Until such time as the State of Maine, or a third party is able to provide protection from liability that is equivalent to that which existed at the time of the execution of this Easement, the other Party may, by advance written notice to the State of Maine, limit the rights granted herein to use of the Roadways by the State of Maine for commercial forestry (subject to the terms and conditions contained herein) and administrative purposes only, and the other Party may prohibit vehicular access across such Roadways by the public from the date of such notice until such time as such

equivalent protection is afforded to such Party. Within 60 days following the notice, representatives of the Parties hereto shall meet to discuss mutually agreeable arrangements that, if implemented, would result in reduction of such liability to the level that existed as of the date of execution of this Easement. If agreement cannot be reached within a reasonable time regarding such arrangements and their implementation, the parties will participate in non-binding mediation with a neutral third party selected by mutual agreement. If the parties remain unable to reach mutual agreement within five years after the initial written notice, the rights granted in this Easement for the State of Maine to allow members of the public to use the Roadways shall terminate upon the recording of a notice of termination in the Registry of Deeds, but not with respect to the State of Maine's rights for administrative purposes.

10. Liens. Each Party shall use good faith efforts to keep the other Party's property free from mechanics or materialmens liens arising in any manner out of the activities of such Party and shall promptly discharge any such liens that are asserted.

11. Rights and Obligations. The rights and obligations hereunder shall inure to the benefit of and be binding upon the successors and assigns of the parties hereto.

12. Notices. All notices or other communications made pursuant hereto shall be in writing and shall be deemed properly delivered, given or served when (i) personally delivered against a receipted copy or (ii) mailed by certified or registered mail, postage prepaid, to the following addresses (or sent by facsimile and then delivered in above-described manner within forty-eight (48) hours):

Plum Creek	Plum Creek Maine Timberlands, L.L.C. 49 Mountain Avenue Fairfield, Maine 04937 Attn: General Manager Telephone: 207-453-2527 Facsimile: 207-453-2963
With a copy to:	Plum Creek Maine Timberlands. L.L.C. c/o Weyerhaeuser Company P.O. Box 9777, Mailstop CH 1J25 Federal Way, WA 98063-9777 Attn: Director, Law Telephone: 206-467-3600 Facsimile: 206-467-3799

Owner: State of Maine
Department of Agriculture, Conservation and Forestry
Bureau of Parks and Lands,
22 State House Station, Augusta, Maine 04333-0022
Attn: Commissioner

All notices so mailed shall be deemed received seventy-two (72) hours after deposit in the United States mail. Either party may change its address for the purposes of this paragraph by giving five (5) days prior written notice of such change to the other party in the manner provided in this paragraph.

13. Governing Law. This Easement shall be interpreted, construed and enforced according to the laws of the State of Maine.

IN WITNESS WHEREOF, the parties hereto have executed this instrument as of the day and year first above written.

[Signatures on following two pages]

Plum Creek:

PLUM CREEK MAINE TIMBERLANDS, L.L.C.

By: _____
Name: Russell S. Hagen
Title: Senior VP and CFO

ACKNOWLEDGEMENT

STATE OF WASHINGTON)
COUNTY OF KING)ss

On this 10th day of March, 2016 before me personally appeared Russell S. Hagen to me known to be the Senior Vice President and Chief Financial Officer of Plum Creek Maine Timberlands, L.LC., the limited liability company that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said limited liability company for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument on behalf of the limited liability company.

lN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

PAUL A. HILL II NOTARY PUBLIC COMMISSION EXPIRES 10-29-18 STATE OF WASHINGTON

_____
Notary Public in and for the
State of Washington
Residing at: Seattle
My commission expires: 10/29/2018
Printed name: Paul A. Hill II

OWNER:

STATE OF MAINE
Department of Agriculture, Conservation and Forestry

By: Walter E. Whitcomb
Its Commissioner

STATE OF MAINE
County of Kennebec, ss.

Date: 3/17/16

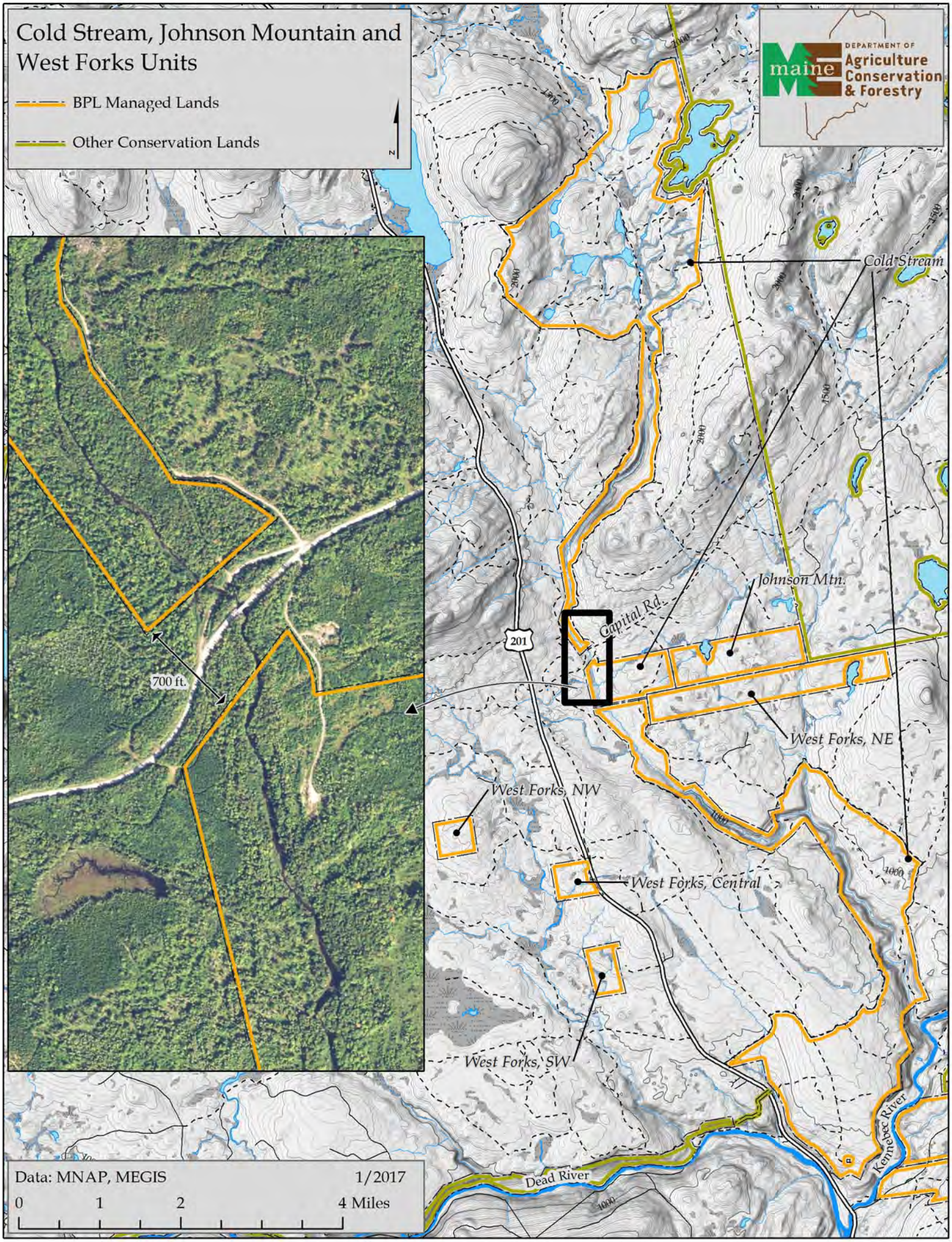
Then personally appeared the above-named Walter E. Whitcomb, Commissioner of the Maine Department of Agriculture, Conservation and Forestry and acknowledged the execution of the within Consent of Commissioner as his free act and deed in his capacity and the free act and deed of the State of Maine.

Before me,

SEAL

Notary Public/~~Attorney at Law~~
Print Name:
My Commission Expires:
Seal:

KATHY L. EASTMAN
Notary Public, Maine
My Commission Expires March 31, 2019


Cold Stream, Johnson Mountain and West Forks Units
BPL Managed Lands
Other Conservation Lands
N
DEPARTMENT OF
maine
Agriculture
Conservation
& Forestry
Cold Stream
Johnson Mtn.
Capital Rd.
201
700 ft.
West Forks, NE
West Forks, NW
West Forks, Central
West Forks, SW
Dead River
Kennebec River
Data: MNAP, MEGIS
1/2017
0
1
2
4 Miles

Mile Ten Owners Road Association

C/O Jeff King (President)
367 Bar Harbor Road
Trenton, Maine 04605
Telephone 207-667-5045
jeff@kingelectricme.com

September 19, 2018

To whom it may concern,

The Board of Directors of the Mile Ten Owners Road Association has voted on a resolution in opposition to the Central Maine Power New England Clean Energy Connect (NECEC) proposal. The Mile Ten Owners Road Association has 70 members, all of whom are private landowners between Mile 5 and Mile 10 of the Spencer Road near the proposed powerline construction corridor.

As an association we are compelled to oppose this project for the following reasons:

1. Massachusetts and Canada are the main beneficiaries of this project, rather than providing clean, more affordable energy for Mainers.
2. The environmental damage created by clearcutting thousands of acres in one of the last remaining contiguous forests in the United States east of the Mississippi River is irreversible and opens the door for future large-scale projects.
3. This project would have a negative impact on our members property values. Most of our owners enjoy pristine wilderness views that will be obstructed with a direct line of sight of the proposed project.
4. The cost of this project could suppress new investment in clean, renewable energy (ie. wind or solar) in Maine.
5. The 140-mile project would be harmful to native brook trout habitat and other wildlife as it clears thru 263 wetlands, 115 streams, and 12 inland waterfowl/wading bird habitat areas.

We as a board endorse this resolution to oppose CMP's NECEC proposal and join groups such as Maine's Environment and Natural Resources Committee, Maine's Energy Utilities, and Technology Committee, the Natural Resources Council of Maine, and many other property owners in the area.

Jeff King President
Ed Bailey Vice President
Andrew Hanf Sec/Treasurer
Ken Vining
James Michaud
Adam Newcomb
Bill Bennett

Signed,

Duane Hanson

T5 R7 BKP WKR

Here are links our photos and videos on Facebook taken from this area by my wife Sally Kwan.

View from No. 5 Mountain, photo

https://www.facebook.com/photo.php?fbid=687490151619543&set=a.355579474810614&type=3&__xts__%5B0%5D=68.ARD4fZVTkF099mLlByBQ-2kqvRaXmlXYj_BDsLOFk92d5EjucV60XpnmngdgQMKaP_k8-yZTP2S9FYIXMzBImv4-EJUOxeS4WvHyXz2aX1pFgf3oycYEXuEsZfXgQtQiEvdjHUQhqpnYclZaOQ3lnuARMqXh9-nCGD8PBlFGNcCQaXUqe8Hv&__tn__=EHH-R

No. 5 Mountain from Whipple Pond, photo

https://www.facebook.com/photo.php?fbid=672086203159938&set=a.672083993160159&type=3&size=2000%2C1332

Cow Moose on Whipple Pond, photo

https://www.facebook.com/photo.php?fbid=308144212887474&l=399f3cae02

Spruce Grouse, photo

https://www.facebook.com/photo.php?fbid=319852481716647&l=1f5603b98b

Wood Turtle at Bitter Brook, photos

https://www.facebook.com/photo.php?fbid=686162295085662&set=a.355579474810614&type=3&size=1944%2C1458

and

https://www.facebook.com/photo.php?fbid=686162265085665&set=a.355579474810614&type=3&size=1944%2C1458

Duane holding a Brook Trout, photo

Native Fish Coalition
PO Box 332
Windham, ME 04062
NativeFishCoalition.org
info@NativeFishCoalition.org

October 15, 2018

Maine Department of Environmental Protection
17 State House Station
28 Tyson Drive
Augusta, Me 04333-0017
NECEC.DEP@maine.gov

Re: Comments Regarding Proposed Central Maine Power Transmission Line Construction

Dear Maine Department of Environmental Protection,

I am writing on behalf of Native Fish Coalition. Our intent is to provide comments on Central Maine Power's New England Clean Energy Connect, a proposal to build a 145-mile, high-voltage, direct current transmission line through the state from the Maine/Quebec border.

Native Fish Coalition (NFC) is a non-profit conservation organization whose mission is to protect, preserve and restore native fish. We are a 501(c)(3) national organization incorporated in Maine. The Maine chapter has a Board of Directors and Advisory Council as well as members, partners and volunteers. Native brook trout are a focal species for Maine NFC.

The Maine chapter of Native Fish Coalition opposes the proposal as submitted based on the following:

1. The project path as proposed creates a new 53-mile transmission corridor through the heart of Maine's native brook trout country in Somerset and Franklin Counties, including passing through the newly acquired Cold Stream Forest public land, home to seven State Heritage Fish waters; the Kennebec Gorge, the most significant brook trout river fishery east of Rangeley; and near Beattie Pond, a remote pond on Passamaquoddy tribal lands and a designated State Heritage Fish water.
2. The proposal would also require new vegetative clearing and expanding transmission line development within 92 miles of existing corridors, much of which will negatively impact native brook trout habitat. In aggregate, the proposed 145-mile line will be built across 263 wetlands and 115 streams, many of which contain native brook trout.

3. Creating new transmission lines, widening existing lines and building access roads will require deforestation that will degrade coldwater habitat and water quality required to maintain native brook trout populations by eliminating shade trees and causing bank destabilization in riparian zones.
4. Maintaining adequate riparian buffers is critical to the protection of water temperatures, water quality, and inputs of coarse woody debris necessary to support conditions required by brook trout and other aquatic life. The minimal buffer proposed in the plan will not be adequate to protect coldwater resources.
5. Spraying of herbicides to facilitate vegetation clearing threatens native brook trout populations by degrading water quality and imperiling aquatic ecosystems as chemicals wash into streams and ponds.

Thank you for the opportunity to submit comments on this proposal.

Sincerely,

Emily Bastian
Maine State Chair, Native Fish Coalition
CC: Maine NFC Board and Advisory Council

582 Franklin Street
Cambridge, Massachusetts
02139-2924

October 7, 2018

Philip A. Curtis
LUPC
22 State house Station
Augusta, Maine 04337

Dear Mr. Curtis,

As a taxpayer in the Forks Plantation, I have been apalled to watch the unfolding plans to route the CMP power corridor over the Kennebec.

The area in question is one of the last undeveloped scenic stretches of wild river in the State of Maine. It seems crazy not to route the power line over the existing dam at Indian Pond.

The amount of money needed for this diversion sounds large, but taken in the overall scheme of things it amounts to less than pennies on the dollar, especailly given the long amortization of the costs of a project like this.

The industry can afford it, and future generations would be grateful, instead of asking "What were they thinking?"

I hope the LUPC is able to assert itself in this matter to save as much of the unspoiled beauty of this area as possible.

Sincerely ,

Fred Scholz

Fred Scholz

Piscator Corporation
The Forks Plantation

582 Franklin Street
Cambridge, Massachusetts
02139-2924

October 7, 2018

Everett Worcester
Chair LUPC
22 State House Station
Augusta, Maine 04337

Dear Mr. Worcester,

As a taxpayer in the Forks Plantation, I have been apalled to watch the unfolding plans to route the CMP power corridor over the Kennebec.

The area in question is one of the last undeveloped scenic stretches of wild river in the State of Maine. It seems crazy not to route the power line over the existing dam at Indian Pond.

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The industry can afford it, and future generations would be grateful, instead of asking "What were they thinking?"

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Sincerely ,

Fred Scholz

Fred Scholz

Piscator Corporation
The Forks Plantation

TOWN OF MOOSE RIVER
P.O. BOX 267
JACKMAN, ME 04945

October 14, 2018

To whom it may concern,

The citizens of the Town of Moose River and Board of Selectman have voted to oppose the CMP NECEC project due to our grave concerns about the projects impacts.

If approved, the New England Clean Energy Connect (NECEC) corridor will forever impact our region, our environment, our tourist industry, our forest products industry, our economy, our families' future, our seasonal residents' future, and our very way of life. This region continues to attract generations of visitor because they want to experience the natural beauty of the upper Kennebec and Moose River Waterways, and the surrounding wilderness of western Maine. This region offers a unique respite from the challenges and stress of life in the city, and we want it to stay that way for future generations of residents and visitors.

Some local sightlines will be spared, but the proposed transmission towers and lines will be visible from nearly every summit of nearly every peak in the Moose River Valley. They will cross some of the region's most pristine wilderness numerous times, hang over brooks, streams, rivers, and seasonal waterways crucial to all species of wildlife. The herbicides used to maintain the corridor will leach into the region's waterways, aquifers, and water tables. Our water is drawn from Big Wood Pond and it is fed by the Moose River. We do not need any more Herbicides than we already have polluting our drinking water. The environmental impact of the permanent deforestation component alone should alarm you as leaders of our town. Loss of oxygen to the valley, loss of shade to the fish, loss of canopy for birds and wildlife, loss of habitat for birds and mammals including deer yards and the loss of the unscarred views that make our area so special.

The NECEC project will have potential impacts on the safety and security of The United States of America. The project will leave a wide open 150-300 foot hole in the northern border of our country requiring additional resources to guard to prevent illegal activities. The project will also make us less energy independent and more reliant on a foreign country for our energy needs. Giving foreign countries control of our power supply is not responsible nor in the best interest of our country.

This project will inevitably lead to more powerlines, an unknown number of wind turbines and other future developments that are industrial in nature and detrimental to our area and its' wild untamed charm that keeps us here and brings in tourists and future residents.

Our area is not logistically equipped to handle the scope of the proposed project. The short term economic gains will be outweighed by the long term losses to our economy. The limited lodging, gathering places, eateries, and fuel pumps will be inundated by out of area workers, leaving little to no room for our longtime residents and tourists will look for alternative places to ride, boat, fish, hike, hunt, snowmobile, ATV, and get away from it all. Many of them will not come back once they find new places to recreate.

Another major issue is the current level of healthcare available to the workers during this multi-year project. The remote region of the corridor presents its own unique rescue challenges, and the level of medical treatment available may prove quite inadequate in the event of simultaneous traumatic injuries to multiple workers and residents. This would be an additional financial burden on our taxpayers. The remote locations could lead to a potential loss of life or property if the Fire Department and Ambulance are unable to respond to multiple calls simultaneously. There are no licensed nurses to support the one physician and one physician's assistant covering the clinic.

These impacts along with many others show how this project will be an economic burden on us that will have no lasting benefits to our citizens, only benefits for out of state and foreign companies while we are negatively impacted.

Respectfully submitted,

The residents and Selectmen of Moose River

October 31, 2018

From:
Rod Nadeau, Ph.D.
65 Smithwood Drive
North Yarmouth, ME 04097

To:
Maine Land Use Planning Commission
22 State House Station
Augusta, Maine 04333-0022

Re: New England clean energy connect project case# 2017-00232

I am writing this letter to express my concern and opposition to the new AVANGRID (CMP) 145 mile transmission line corridor that is proposed to be built over the Western Mountains region and across the Kennebec River in the West Forks area in Somerset County.

Commented [HS1]: Please email it directly to DEP.LUPC.PUC. MASS DPU and SCC

Professionally, I've been a registered Maine Guide since 1987 and I hold designations in Whitewater, Recreation, Sea Kayaking, and Commercial Boat Operation. I'm now in my 20th year working full time as an Adventure-Based Counselor having led countless wilderness adventures over the years. Personally, being born and raised in Maine, I've been enjoying our wilderness since the 1960's when I lived in Farmington. As a Maine Guide and a resident of Maine, I have a thorough understanding and appreciation for the Maine wilderness. I therefore have serious concerns over the pending risks and perils that may destroy the wilderness if this 145-mile transmission line is allowed to be built.

I echo the concerns numerous folks have already testified their deep concern over the negative impact the transmission line would have on both the environment and Maine's economy. However, for sake of brevity, I will testify solely on my primary concern: ***the devastating negative impact the transmission line would have on the therapeutic value of the Maine wilderness.***

As an Adventure-Based Counselor, I purposefully take my clients into the Maine wilderness to expose them to the therapeutic nature of wilderness settings. Human contact with nature offers a range of health benefits. So, if you scar the Maine wilderness with this 145-mile-long powerline, you will diminish our opportunities to reap the health benefits of a vast region of wildness. We, therefore, need to save our Maine wilderness to preserve its therapeutic value.

The health benefits via contact with nature:

A recent comprehensive review of the literature by Frumkin, et al. (2017) provides an excellent evidenced-based summary of the health benefits of human contact with nature. This study not only outlines the health benefits of exposure to nature, it also provides supporting research for each health claim:

1. Reduced stress
2. Better sleep

3. Improved mental health
    a. Reduced depression
    b. Reduced anxiety
4. Greater happiness, well-being, & life satisfaction
5. Reduced aggression
6. Reduced ADHD symptoms
7. Increased prosocial behavior & social connectedness
8. Lower blood pressure
9. Improved post-operative recovery
10. Improved birth outcomes
11. Improved recovery from congestive heart failure
12. Improved child development (cognitive & motor)
13. Improved pain control
14. Reduced obesity
15. Reduced diabetes
16. Better eyesight
17. Improved immune function
18. Improved general health in adults, children, & cancer survivors
19. Reduced mortality
20. Improved asthma & allergies

Furthermore:

- Folks who walk/run in natural settings report less anger & sadness directly after activity in comparison to those who walk/run in built environments (Bowler, 2010)
- Participants in a study reported that being in nature made them feel more alive – beyond the effects of activity & social interaction (Ryan et al., 2010)
- The New York State Department of Environmental Conservation website lists eight similar health benefits from exposure to forests (https://www.dec.ny.gov/lands/90720.html)

Nature Deficit Disorder:

- Louv (2005) suggests there's an increasing number of youth suffering from *nature deficit disorder* – the notion that spending less time outdoors contributes to a wide array of behavioral problems.
- Other research has found that children who report more time outdoors are more physically active and less sedentary, and show enhanced psychosocial health in comparison to kids who spend less time outdoors (Larouche et al., 2017)

The implication here – we need to preserve our aesthetically beautiful Maine wilderness in hopes that we can lure kids into the wild for sake of their physical and mental health. If we scar the wilderness with a transmission line it will be less appealing for kids (and adults) to venture into wild places and it will diminish the therapeutic value of the region. While participants are in a wilderness setting the therapeutic benefits are tangible as they are away from technology and you can see the positive changes in vivo. However, on numerous occasions, I have witnessed a diminished therapeutic experience during wilderness excursions when we encountered a built structure such as a powerline, logging road, or building. Unfortunately, during a therapeutic wilderness

adventure, as soon as participants interface with the built environment, you can see them transported instantly back into their dysfunctional way of life back home with involvement with social media, substance use, criminal activity, etc. In essence, the pro-social therapeutic change process comes to a screeching halt while participants relapse into the older dysfunctional patterns that were problematic and the impetus for them to escape into the wild in the first place. Hence, if you allow this 145-mile transmission line to be built, you will be ruining the therapeutic potential for the Western Mountains region of Maine.

Green Space:

- There is increasing evidence demonstrating many benefits of exposing children to nature including reduced stress, greater physical health, more creativity, and better concentration in the classroom (Novotney, 2008).
- A national study found that "green" outdoor activities reduced attention-deficit hyperactivity disorder symptoms significantly more than activities in built outdoor and indoor settings (Kuo & Taylor, 2004).

Conclusion:

If you scar the Maine wilderness with a 145-mile transmission line corridor, the Western Mountains region will lose its therapeutic value. Please don't be short sighted and sell our wilderness for a short-term gain only for a long term devastating loss. Once you carve up the wilderness, it's lost for generations, if not forever. My sincerest hope is that you keep Maine wild, scenic, and therapeutic for generations to enjoy by NOT scaring our wilderness with a145 mile transmission line corridor. Please oppose the New England clean energy connect project case# 2017-00232

Respectfully,

Rod Nadeau, Ph.D.

65 Smithwood Drive., North Yarmouth, ME 04097 Rod@maine.rr.com 207.653.2131

References:

Bowler DE, Buyung-Ali LM, Knight TM, Pullin AS. (2010). A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health* 10:456

Frumkin, H, Bratman, G.B., Breslow, S.J., Cochran, B., Kahn Jr., P.H., Lawler, Levin, P.S., Tandon, P.S., Varanasi, U., Wolf, K. L., & Wood, S.A. (2017). Nature Contact and Human Health: A Research Agenda. *Environmental Health Perspectives*, Jul; 125(7).

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Ryan RM, Weinstein N, Bernstein J, Brown KW, Mistretta L, Gagné M (2010). Vitalizing effects of being outdoors and in nature. *Journal of Environmental Psychology, 30*:159–168.

65 Smithwood Drive., North Yarmouth, ME 04097 Rod@maine.rr.com 207.653.2131

Hinkel, Bill

From: Melany McAllister <melrmc58@gmail.com>
Sent: Monday, November 19, 2018 8:55 AM
To: Hinkel, Bill
Subject: [EXTERNAL SENDER] Say No to NECEC

Dear Bill, I am writing to let you know I oppose this proposed project. The more I learn about CMPs project, the more apparent it becomes that the only thing green is the $$$. As it's been stated before, and bears repeating; We became a state in 1820, the Great State of Maine. Part of what makes us great is our love 9f nature and the great outdoors. Our wilderness mentality! We are not beholden to Mass. So let them take this project to Vermont. Leave our way of life alone. Maine, the way life should be. I am the daughter, niece, and cousin of men who served this State and this area as Maine State Game Wardens, Department of Inland Fisheries and Wildlife. I find this project appalling. Thank you. Sincerely, Melany R McAllister 9 Coburn East Apt.#1 Jackman Maine 04945

Hinkel, Bill

From: grams29@tds.net
Sent: Tuesday, December 04, 2018 11:15 AM
To: Hinkel, Bill
Subject: [EXTERNAL SENDER] Letter to the Editor

From reading my letter to the editor you can probably tell how concerned I am about this proposed project. I have gotten the following letter published in three newspapers perhaps four.

Thanks
Marilyn Rogers-Bull

To the Editor:

This is the letter that I sent to the Editor last week.

Would like to thank the people who have written letters to the Editor, that do not want to have a CMP Corridor through Maine.

I am one of a few, from the Dead River, Flagstaff area, who can remember about getting driven from our land and homes by CMP sixty nine years ago. Their project that time was to build a dam and flood the area, which they did. It had been talked about for years, but finally in the 40's officials from CMP came to the homes of people in Dead River and Flagstaff to buy their land and homes, and told they would have to move. No one was happy that this was happening.

But CMP won that time and flooded the area, I have pictures of the tops of the houses of those who had refused to sell, sticking out of the new lake. I have many sad memories of the whole process. Many men were called there to cut all the trees, and fires got started , we were surrounded by raging fires on more than one occasion, it was not pleasant!

According to the map in todays paper, that shows where this corridor will go through Maine, it will pass near where one of my sons and two of my brothers have camps on Flagstaff Lake. I cannot explain the peace and quite that is in that vicinity that passes all understanding.... Perhaps it is because it is near to where I grew up in Flagstaff, but I call it "Up in God's Country!

And so my small voice for the wilderness begs you, Please, don't let this CMP Corridor become a reality in our beautiful, special State of Maine!

Marilyn Rogers-Bull Phone number 643-[redacted] This is the second letter I have sent, the first one was

on Sept. on September 8th, 2018.

Solon, Maine My hometown was Flagstaff, Maine

Town of Jackman

369 Main Street
Jackman, Maine
04945

207-668-2111

Maine Land Use Planning Commission
43 Lakeview St.,
Greenville, ME 04441

December 14, 2018

To whom it may concern,

Pursuant to a vote of the citizens of the Town of Jackman at a Special Town Meeting on November 28, 2018, which was called on by a petition of the voters, the Selectmen were authorized to submit a letter of opposition to the CMP, New England Clean Energy Connect, 145 Mile Hydro-Transmission Line Project from the Quebec border through the State of Maine.

Under Article 2 of the Warrant for that Special Town Meeting, to see if the Town will vote to oppose the transmission line project, the vote was 78 in favor of the vote to oppose the project and 11 not in favor of the vote to oppose the project.

The Selectboard recently chose to become an intervenor with the MPUC in order to be notified of related ongoing actions so that the selectboard may in involved with discussions and decisions that affect the Greater Jackman area.

Respectfully,

Victoria D. Forkus

Victoria D. Forkus
Town Manager - Jackman, Maine
369 Main Street
Jackman, ME 04945

O: 207-668-2111
F: 207-668-4125

Hinkel, Bill

From: Godsoe, Benjamin
Sent: Monday, January 07, 2019 8:05 AM
To: Hinkel, Bill
Subject: FW: [EXTERNAL SENDER] comment

Hi Bill, I think this may be relevant to the NECEC process. -Ben

From: Steven Rice [mailto:srice@rsu18.org]
Sent: Friday, January 04, 2019 10:49 PM
To: Godsoe, Benjamin <Benjamin.Godsoe@maine.gov>
Subject: [EXTERNAL SENDER] comment

I'm not sure how the people of Maine or the leaders of Maine could let this happen. I understand that as a Mainer my state taxes will not be reduced because the state will not benefit monetarily. As a CMP customer my bill will not be reduced. As an outdoor enthusiast my options will be reduced.

When the Kibby Mountain wind turbines were going in I remember hearing Mainers will benefit. The project will provide jobs to the local economy. One weekend I was driving the dirt roads to see the progress of a tower and was stopped by a security truck. The guy was nice and polite. We got to talking and it turns out he was from Massachusetts. Not sure how that helped provide a job to a Mainer. As with any large project, after a few years it will be done and money to local shops will stop. Not good for long term growth.

I think you could break this down on a smaller scale and think of 3 neighbors living next to each other in the order of 1,2,3. Neighbor 1 has 100 high-bush blueberry plants they harvest and sell. Neighbor 3 sells baked goods out of the home. Now neighbor 1 and 3 figure if they work together they could make a pretty good profit if Neighbor 1 didn't have to pack the blueberries put them in the vehicle and drive them down the road to neighbor 3. So they decide to ask neighbor 2 for a pathway through the backyard that connects neighbor 1 and 3 . The pathway wouldn't seem big because the backyard is so big already. However, it would solve the distance problem since it would be much shorter than the roadway. They also tell neighbor 2 that the pathway will be barren and even though it is on the property, neighbor 2 will lose control of that part of the yard forever. To top it off they tell neighbor 2 that if they want some of the blueberries or baked goods they are welcome to come by and purchase them at any time.
I think if any member of the PUC was neighbor 2 they would not go for the deal!

Not sure if that was a good analogy or not but that is how I feel we get treated as a state at times. Don't forget the brilliant East-West Highway Plan, gas pipelines that do not service the people of the towns they go through, or any other large product that does not benefit the people of Maine in the long term.

Massachusetts has a great deal of potential for producing their own power off shore or through solar and wind. They should not be relying on Maine after almost 200 years of separation to provide a pipeline of barren land for their needs.

Good luck in your resistance to big business and profit as you protect the people of the state of Maine

Dear Mr. Benjamin Godsoe,

I imagine with a name such as yours, born meaning "gode soule" or good soul, you are considering this transmission line deeply, wondering what might be the good or right thing to do. I'm certainly not claiming to know but perhaps you'll allow me to wonder about this corridor with you.

There is an old man I look up to more than most of the more-lived among us. He seems to be an elder of sorts. He keeps reminding me of a day in the future, a day when my grandchildren come to me in their grief and ask me what I did about the troubles in this time. These grandchildren may ask you or I whether you knew how bad it was....

...whether you handed over to them a diminished world with a shrug of compassion fatigue and a vacant wish of good luck,

or whether you stood up for them."

Allow me to speak on behalf of these unborn grandchildren and to ask you to act as if they may one day be born and inhabit this beautiful state of Maine that we do now.

This state and its wildness has nursed me back to health after 10 years of a chronic digestive disorder. I now deeply depend on the wild plants, animals, and mushrooms found in these Maine forests, rivers, and lakes.

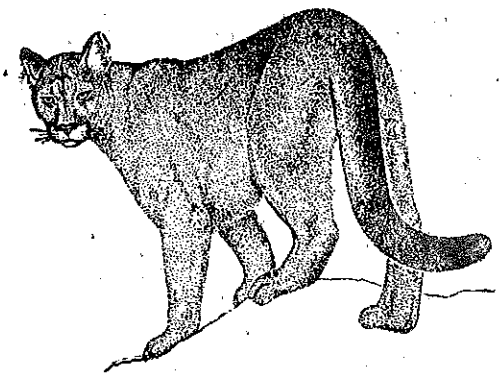
In fact most of my "free time" goes to foraging for nearly 500 edible wild species of plants and ~1,000 medicinal wild plants found in Maine. Or to fishing for DHA-rich lake whitefish, lake trout, brook trout, and others. My health depend on them. And it terrorifies me to envision a clean source of these foods, the north woods, succumb to constant herbicide application, and become another polluted place. It's scary enough to witness what land & water surrounds me to be carrying such a heavy load of Toxins – the Androscoggin River where people once fished for Atlantic salmon & sturgeon and now we don't even eat the river's fish.

Anyways, I suppose what I'm saying is I'd like my grandchildren to experience these healthy wild foods that I do now. I'd like to stick up for them rather than big business. And with a name such as your own, I'm guessing you might too.

Thank you for considering me & my thoughts here. May the north Maine woods remain wild & rich with life.

With deep gratitude,

Sara Moore &
Wilder Waters Community
Canton, ME



Sara Moore
167 Thorne Mt Rd
Canton, ME 04221

SO. MAINE P&DC 040

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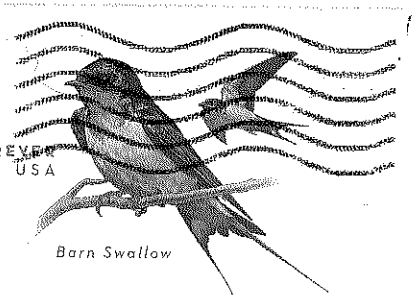


Benjamin Godsoe
Land Use Planning Commission
22 State House Station
Augusta, ME 04333-0022

04333- 01-[illegible]

Maine Forest Products Council

The voice of Maine's forest economy

Companies represented on the MFPC Board

American Forest Mgmt.
Baskahegan Co.
BBC Lands LLC
Cross Insurance
Family Forestry
Farm Credit East
Fontaine Inc.
Hancock Lumber
H.C. Haynes
Huber Resources
Innovative Natural Resource Solutions
J.D. Irving
JM Cote Co.
Katahdin Forest Mgmt.
Key Bank
LandVest Inc.
Limington Lumber
Louisiana Pacific
Maibec Logging
Nicols Brothers
Pingree Associates
Pleasant River Lumber
Prentiss & Carlisle
ReEnergy
Richard Wing & Son
Robbins Lumber
Sappi North America
Southern Maine Forestry
Stead Timberlands
TD Bank
Timber Resource Group
Timberstate G.
Verso Paper
Wadsworth Woodlands
W.T. Gardner & Sons
Wagner Forest Mgt.
Weyerhauser

DATE: January 18, 2019

FROM: Executive Director Patrick Strauch, Maine Forest Products Council

TO: Susanne Miller, Maine DEP; Nick Livesay, Maine LUPC

RE: Comments regarding Central Maine Power Co.'s proposed NECEC transmission line project

The Maine Forest Products Council (MFPC) is a not-for-profit trade association formed in 1961. We represent about 300 member companies from all segments of the state's forest industry, including logging contractors, sawmills, paper mills, biomass energy facilities, and wood manufacturers, on behalf of about eight million acres of commercial forestland in Maine.

CMP's proposed transmission line would cross large tracts of private working forestland where public access is a privilege, not a right. These working forests are the backbone of Maine's $8.5 billion forest economy.

The Council is not taking a position on the CMP project, but in reviewing the comments posted online, we were concerned about recurring themes, such as "our access roads," "pristine wilderness," "miles of 'untouched by man' woods & mountains," "destroys scenic views," and "The land is our heritage, and it should belong to all Maine residents." One person went so far as to say, "These are not just roads for logging trucks to use."

Such comments indicate a serious misunderstanding of the nature of a working forest and also of a unique state tradition. In Maine, landowners have traditionally allowed members of the public to use their private property for a wide variety of recreational activities, free of charge. In most other parts of the nation, private landowners either limit access or charge a fee for uses of their lands. This Maine tradition is supported by strong landowner liability protection laws.

However, the type and extent of recreational use allowed on private land is at the discretion of the landowner. Uses must be safe and compatible with timber harvesting. Landowners make their decisions about access based on their own policies and activities, the location of their land, and the history of public behavior on their proper-ty. Compatible uses might range from none, to limited non-motorized low intensity, to unrestricted.

To accede to public comments that call private roads and private forests "ours," and that claim a right to main-tain present views from those private lands, is both incorrect and dangerous. Logging roads and bridges are pri-vate infrastructure, paid for and maintained by landowners to facilitate the movement of forest products to the mills. The roads are built and maintained for timber harvesting, and it costs a lot of money to keep these roads ready for logging trucks. Recreational use of these

roads and other private lands are a secondary benefit, not the purpose of these lands.

Similarly, any evaluation of effects on the scenic character of private land from a proposed development should give maximum weight to the landowner's position if the landowner has no objections to the proposed use. To reach any other conclusion would be to grant public rights on private property. MFPC members do not want regulators to consider views from their land in deciding whether the CMP project will have an adverse effect on the scenic character of the members' land.

The Council's fundamental concern is that the rights of private landowners will be limited in order to fulfill the desires or meet the demands of recreational visitors seeking a "wilderness experience." These lands are actively managed as working forests. It is wrong to consider views (including photo simulations) from those private working forest lands without the consent of the landowner, because that could limit the opportunities for landowners to either develop a site or sell a conservation easement, and thus could lead landowners to limit public access.

Fortunately, many recreational users now understand that public use of private land is a privilege and not a right, so they are working more closely with landowners. They recognize and respect the sights and sounds of sustainable forest management, because they understand how crucial the forest products industry is to our state's economy. Working forests and their environs are not – and should not be – stagnant or forever "pristine." So too, the views from those lands should not be considered in a way that requires those views to remain forev-er unchanged.

Landowners also recognize the importance – not only to Maine's economy, but to our quality of life – of keeping private land open for public recreational use. With 91 percent of Maine's land in private hands, it would be a small world if Mainers could only hike, hunt, ride recreational vehicles, take photos or watch wildlife on their own property. We have a unique system of access that has worked remarkably well for generations. Let's not break it. To consider in permitting proceedings the perceived impacts on public users' views from publicly accessible private lands would pose a grave threat to that system if it is allowed to override the landowners' opinions of the significance or lack of significance of the impact on those scenic views.

While growing and harvesting timber is the primary objective on these forestlands, there are many other compatible uses and goals, including protecting wildlife habitat, allowing recreation, and encouraging renewable energy. Our members believe that transmission lines can be located in, within, and within sight of their private working forest without disturbing these compatible uses of the land.

Hinkel, Bill

From: Godsoe, Benjamin
Sent: Wednesday, January 23, 2019 9:19 AM
To: Hinkel, Bill
Subject: FW: [EXTERNAL SENDER] Oppose CMP Corridor

I think this was intended to go to you.

-----Original Message-----
From: Magili Quinn [mailto:chapmama@maine.rr.com]
Sent: Tuesday, January 22, 2019 7:49 PM
To: Godsoe, Benjamin <Benjamin.Godsoe@maine.gov>
Subject: [EXTERNAL SENDER] Oppose CMP Corridor

Dear Mr. Godsoe,

I am writing to express my opposition to the proposed transmission project by CMP. I do not want Maine's natural beauty and wildness disrupted by this project. I support the development of renewable energy and this project is not in alignment with this end. I urge the committee to reject this proposal and save Maine's wilderness for what it was created for, a home for its natural inhabitants and thriving ecosystem that fuels our state.

Thank you,
Magili Quinn, DO
Scarborough, ME

Sent from my iPhone

Old Canada Road National Scenic Byway, Inc.

Bill Hinkel
Regional Supervisor
Land Use Planning Commission
Department of Agriculture, Conservation and Forestry

February 5, 2019

Dear Bill,

Planning it seems is generally directed at forecasting use and demand on a number of resources for maximum and lasting use. Much time is spent on models and surveys to determine the future needs. In the case of NECEC, the applicant included only one- half of the purchased corridor width as they maintained that they did not know what they might do with it and as such did not include it in the application. Since the initial application they have conceded that it will be for a second transmission line carrying AC current (Freye matrix of 2nd Kennebec Crossing). This will cause clearing and herbicide use of the remaining 150 feet, in the near future. In our planning process, why can't the entire 300 feet be included in the visual assessment? We know it will happen. The fact is that it will be impossible to deny once the first transmission line is constructed, as wetlands do not have linear boundaries. The view shed of the 300-foot strip will be more than double that of the 150 feet. Drawing a set of "buffer trees" at a fixed distance apart and then another set twice as far apart and drawing a line over the top of one buffer tree to the bottom of the other in each set reveals that one angle is twice the other. This correlates to being able to see into the bottom of the corridor from a much greater area with the same buffer height. In this case, there will be no mandatory buffer- we know this will happen. Just because it is not in the application does not mean the second corridor will not have a tremendous additional visual effect- by applicant design with no possible regulation to prevent it. This must be taken into account with the initial application. What mechanism would an intervenor use to expand the corridor width request to 300 feet… or deny the second line prior to application? This would require the NECEC project be located in the center of the purchased corridor or require the applicant to purchase additional buffer land.

Sticky wicket I know but the approval, based on 150-foot photo simulation is erroneous- by design.

Thanks for tackling this critical issue.

For the Old Canada Road Board of Directors,

Bob Haynes, Coordinator

I am Elizabeth MacKenney. 55 Grand Army Road, Whitefield, Maine, 04353. 207-549-3683.

I give Sandra Howard permission to submit my letter.

I am opposed to the NECEC CMP corridor. Here a few of the reasons I oppose this:

We don't need a power company that maximizes shareholder profits at its customers' expense.

The PUC can only grant CMP its permit if the project meets a public need. This project isn't about meeting any real public need. It's a money-making scheme for a company that can't be trusted to meet the real public need to provide reliable service to its customers.

* Mainers don't need or want this project.
* Maine needs more in-state renewables, but this line will actually hurt Maine-based renewable projects
* Experts say this project can harm existing and potential renewable energy projects by clogging up transmission lines, and flooding the power market.
* Maine needs to tackle climate change pollution, but this line won't help and may even hurt those efforts.
* Hydro-Quebec will not build any new clean power generation facilities to provide the power to send over this line.
* Experts expect Hydro-Quebec will need to buy fossil-fuel based energy from other markets in order to sell their hydroelectricity to Massachusetts through the NECEC. That means that Maines North Woods would be harmed, but there would be no benefits to the climate.
* Maine needs a power company that cares about Mainers (or its customers), but this power line is all about CMP making money for its shareholders instead.
* CMP stands to make about $60 million a year from this project.
* Any short-term benefits for Maine won't last and are likely to be offset by losses from energy and tourism jobs.
* In addition, the deal sends $ billions to Canada for power, instead of investing in clean power in the northeast US.
* Maine needs a strong tourism economy, especially in Franklin and Somerset counties, which this project threatens. This power line will harm the clean waters and natural places Maine loves and depends on.
* This project harms wildlife like brook trout and deer, and threatens the outstanding recreational resources of the Kennebec River Gorge.
* CMP has tried to downplay and ignore the costs to Maines environment and economy, putting this project together on the cheap to win in Massachusetts. Maine should not be the cheap date, and pay the price.
* CMP's exaggerated claims about electricity ratepayer and job benefits from this project have been discredited by the PUC's own expert.

This transmission project is a bad deal for Maine.

-Elizabeth Berry MacKenney

Sandra Howard has my permission to submit my statement as part of sworn testimony

Sept. 13, 2018

To Whom It May Concern;
I am writing to voice my opposition to the proposed energy corridor passing over the Kennebec River gorge. I am a second-generation whitewater raft guide currently guiding on the Penobscot River. Many young Mainers leave the state seeking economic opportunities elsewhere, but I have chosen a path in state, getting my Recreation guide license and working for 10+ years in the outdoor recreation industry. I am appalled at the idea of industrial development over the Kennebec River. Projects on that large of a scale do not go simply away when the economy changes, and the natural areas destroyed do not just come back when we decide we need them. I will leave the economic arguments to the economists, the scientific arguments to the scientists, but outdoor recreation and tourism runs deep here and I trust the land and water a hell of a lot more than I trust Hydro-Quebec with my interests.

Maria McMorrow
15 Sparrow Hill Rd
Freeport, Maine 04032

September 13, 2018
Thomas Michaud & Deanne Munich-Michaud
281 Danville Corner Road
Auburn, Maine, 04210
207-740-7618 e-mail dmichaud35@roadrunner.com

We would like this letter to be included into the public record and authorize Sandra Howard to include it in her testimony on our behalf.

LUPC Members,

We have been paying very close attention to this project and are opposed to the NECEC proposed by CMP for a number of reasons.

1) We do not believe there is a need associated with Maine for this project. This project is a merchant line that has no benefit to Maine rate payers. In fact, we believe there will be greater detriment to Maine rate payers due to the suppression of other renewables, most notably solar which CMP is lobbying against.
2) We believe property values, ours included, will be negatively impacted by this proposed line.
3) We believe Maine's tourism economy will be negatively impacted. People come to Maine for it's scenic beauty. This proposed project harms this scenic beauty. We also feel that the selection of the route directly over Coburn Mountain is just plain wrong. In our opinion being so bold as to go directly up and over any mountain is a mistake.
4) We have concluded based on our research that CMP has significantly down played the negative impacts to tourism, the environment, and property values. One of many glaring examples of this is CMP's submission to the PUC of the Visual Impact Survey that **failed to include the actual towers and transmission lines.** At every turn we see CMP providing half truths and as this VIS was presented directly to the PUC, it appears you are seeing half truths also. Please continue to be vigilant with peer review.
5) We have also concluded based on our research that CMP is inflating the tax benefits to cities and towns along the proposed route. Cities and towns along the route listened to CMP's facts and figures early in this process. Many are reviewing what they have been told by CMP and either have already rescinded any support for this project or are considering doing so.
6) We believe CMP is also inflating the information on jobs associated with this project.
7) While not big fishermen ourselves, we do believe that anything that would impact the native trout population should be given the highest consideration. We are happy to see Trout Unlimited as an intervenor. We are confident that herbicides spread along this route can only be detrimental to the native trout population.

New Hampshire Regulators thoroughly reviewed and then rejected Northern Pass. Northern Pass is similar to NECEC in almost every way. NH Regulators determined the proposed project in NH was not beneficial for NH. We see no significant reason why this project should not be rejected by Maine Regulators for all of the same reasons. Thank you for consideration of our findings and concerns.

Thomas and Deanne Michaud

October 14, 2018

I grew up in Maine and we had moved away from our home state of Maine 18 years ago to be close to our grandchildren. Coming back home last summer brought back so many wonderful memories. A trip to the beautiful Forks area was just what I needed. The tranquility and unspoiled scenery was breath taking. It had been so long since I experienced nature at its very best. To take that away by allowing the CMP corridor would certainly be a crime. Saying NO to NECEC.

Sincerely,
Connie Minervino
Hudsonville, Michigan

Sandra Howard will deliver this for me.

10-11-18

This letter expresses my opposition to the proposed CMP power line as it pertains to the Moose River area. We recently completed our vacation there last month (one of many over many years) I was saddened to see the projected path of the lines. It is in one of the most beautiful areas in the state of Maine. Opening this area to a commercial venture of this magnitude which is opposed by the majority of the affected people would be in my opinion & many others a travesty of the environmental policies so many of us believe in & adhere to. The construction of these lines would be devastating & FOREVER mar the landscape of this beautiful area & every area in which it is projected. We strongly urge you to serve the people of Maine who want no part of it. Your vote is crucial to maintaining to what they hold dear & our future generations deserve.
Thank you for your time,

Sincerely,
Daniel V Parsons
108 Cat Pond Rd
Corbin City, NJ
08270
609-602-5047

PS. I give Carol Howard permission to send in this letter.

Fish and Wildlife Department Critical of CMP Plan

Maine's Department of Inland Fisheries and Wildlife has stepped up big time to criticize Central Maine Power's proposal to construct a massive new transmission line through Maine to move electricity from Quebec to Massachusetts. The good people of New Hampshire rejected CMP's proposal, so they've moved it to Maine.

"Clear and compelling information is necessary demonstrating New England Clean Energy Connect's efforts to avoid and minimize unreasonable adverse impacts to natural resources," wrote Robert Stratton, DIFW's Fisheries and Wildlife Program Support Section Supervisor, in a June 29 letter to CMP.

DIFW identified lots of troubling things in CMP's plan and issued a lengthy list of changes that would have to be made to protect fish and wildlife and the habitats they depend on. And even after listing lots of specific concerns, Stratton wrote that "This is certainly not a comprehensive list, thus MDIFW recommends that CMP further assess the proposed transmission corridor for similar issues and opportunities to avoid or minimize impacts in the proposed corridor and to identify possible impact mitigation (restoration) opportunities in the existing co-located corridor."

For example, DIFW reported that the line will go through several important deer wintering areas which are critical in protecting deer during our snowy and cold winters. And CMP plans to provide only a 25-foot buffer around all streams along the Project. "It is MDIFW's position that this minimal buffer will not be adequate to protect coldwater resources," they wrote. DIFW is insisting that 100-foot buffers be measured from the upland edge of stream or associated fringe and floodplain wetlands.

"As proposed," wrote DIFW, "without the protection of 100-foot buffers at all streams, the quality of fisheries and habitat in these watersheds will be impaired. This is also critically important for the other stream-dependent species of concern noted earlier in this document."

They also reported that 724 water bodies would be intersected by the NECE transmission line corridor, 184 of which will be spanned by construction access roads, which will involve a tremendous amount of clearing.

The department also reported that "it is likely that State-listed Endangered, Threatened, and Special Concern Species are resident or transient in the Project area based on location, habitats present, and life history requirements of the individual species present." And DIFW offered a detailed list of recommendations for specific species.

The department also had asked CMP for information on vernal pools that would be disturbed, but did not receive that information.

The four chairs of our legislature's Committees on Environment and Natural Resources and Utilities and Technology expressed their strong opposition to this project in a May 4 letter to the Massachusetts Department of Public Utilities. Republican Senators Tom Saviello and David Woodsome and Democratic Representatives Ralph Tucker and Seth Berry presented very compelling arguments against the project.

They noted that the project will not reduce and may actually increase total greenhouse gas emissions, may result in lost jobs, tax revenue, and energy investment in Maine, and does not offer meaningful financial benefits to the people of Maine. They noted that experts from our PUC report that CMP inaccurately inflated projected benefits to Maine.

They reported that the project will suppress existing and future renewable energy generation in Maine due in part to increased congestion on the transmission line. In their letter, these legislators also expressed one of my key concerns, the negative impacts on wildlife, forests, and clean water.

We've already lost too many deer wintering areas in the north woods, creating severe problems for our outdoor industries including guides and sporting camps. We've gone from more than 300 to about 3 dozen of our traditional sporting camps. While working on a book about Maine's sporting camps for Down East Books, I asked camp owners what their greatest challenges are, and most said the loss of hunters and anglers. CMP's project will only make that problem worse.

And of course, this project will drive many tourists out of western and northern Maine, another cruel blow to sporting camps, guides, and rural Maine businesses and towns.

I love the Kennebec Gorge, a magnificent unspoiled section of the Kennebec River in the Forks. Our legislators correctly described the Gorge as "a world-renowned whitewater rafting and fishing spot." I've rafted the Gorge numerous times and even took Linda on a guided fishing adventure in the Gorge one time. CMP proposes to stick their line right over the Gorge, a truly horrible idea.

New Hampshire rejected this proposal due to overstated economic benefits and underestimated environmental risks. Why would Maine find any of this acceptable?

With permission to submit by George Smith, author

Maine Stream, June 6, 2018, 638 words, CMP

It's hard to imagine a worse project than Central Maine Power's proposal to construct a massive new transmission line through Maine to move electricity from Quebec to Massachusetts. The good people of New Hampshire rejected CMP's proposal, so they've moved it to Maine.

They did change one thing in their plan. They promised New Hampshire $200 million for community betterment, economic development, clean energy innovation, and tourism promotion. No such offer has been made to Maine. Earlier, when they sought to build their project in Vermont, they promised that state $372 million.

Yup, CMP thinks we're a cheap date. And they are hoping we won't realize that the project won't reduce greenhouse gas emissions, will cause great harm to our north woods, and will suppress Maine's development of solar and wind projects, among other problems.

The four chairs of our legislature's Committees on Environment and Natural Resources and Utilities and Technology expressed their strong opposition to this project in a May 4 letter to the Massachusetts Department of Public Utilities. Republican Senators Tom Saviello and David Woodsome and Democratic Representatives Ralph Tucker and Seth Berry presented very compelling arguments against the project.

They noted that the project will not reduce and may actually increase total greenhouse gas emissions, may result in lost jobs, tax revenue, and energy investment in Maine, and does not offer meaningful financial benefits to the people of Maine. They noted that experts from our PUC report that CMP inaccurately inflated projected benefits to Maine.

They reported that the project will suppress existing and future renewable energy generation in Maine due in part to increased congestion on the transmission line. In their letter, these legislators also expressed one of my key concerns, the negative impacts on wildlife, forests, and clean water.

Maine's Department of Inland Fisheries and Wildlife has expressed strong concerns and objections to the proposal. DIFW reported that the line will go through several important deer wintering areas which are critical in protecting deer during our snowy and cold winters.

We've already lost too many deer wintering areas in the north woods, creating severe problems for our outdoor industries including guides and sporting camps. We've gone from more than 300 to about 3 dozen of our traditional sporting camps. While working on a book about Maine's sporting camps for Down East Books, I asked camp owners what their greatest challenges are, and most said the loss of hunters and anglers. CMP's project will only make that problem worse.

DIFW also expressed strong concerns about the project's impacts on streams and fish. I have worked for decades to recognize and protect our native brook trout, and CMP's project would be disastrous for them. "Maintaining adequate buffers along coldwater streams is critical to protection of water temperatures (and) water quality," said DIFW.

CMP is proposing only a 25-foot buffer along all streams. This is terribly inadequate, and DIFW insisted that a 100-foot buffer must be maintained along all streams including perennial, intermittent, and ephemeral streams.

I haven't even written about other concerns including impacts on vernal pools, endangered wildlife, rare ecosystems, and plants.

And of course, this project will drive many tourists out of western and northern Maine, another cruel blow to sporting camps, guides, and rural Maine businesses and towns.

I love the Kennebec Gorge, a magnificent unspoiled section of the Kennebec River in the Forks. Our legislators correctly described the Gorge as “a world-renowned whitewater rafting and fishing spot.” I’ve rafted the Gorge numerous times and even took Linda on a guided fishing adventure in the Gorge one time. CMP proposes to stick their line right over the Gorge, a truly horrible idea.

New Hampshire rejected this proposal due to overstated economic benefits and underestimated environmental risks. Why would Maine find any of this acceptable?

With permission to submit by George Smith, author

10/8/18

Dear Commissioners,

I am against this Avangrid transmission line from the Quebec Line to Lewiston. It will destroy beautiful land and environmentally sensitive areas and will not benefit the State of Maine and benefit Massachusetts. Many areas that rafters, hikers and recreational users will have to see these monstrosity transmission lines. Many towns are opting out of this deal and Maine should as well, we need to look at more ways to reduce electricity consumption by using more solar and other forms of renewable sources. Please do not ok this line, the majority of the people of Maine do not want this!

Thank you,

Tony Sousa
80 M. Vernon Street
Gardiner, ME 04345
tmsreb5061@gmail.com
207-215-2238

P.S. I give Carol Howard to submit this letter for me.

Oct. 5, 2018

My family has made a tradition of rafting on the Kennebec every year. The Kennebec Gorge is my favorite part of the river. We can relax in pure beauty. We laugh about what happened in the rapids, who fell out, who went flying, who got a rapid in the face and my favorite, how did I not feel that snake napping on my leg! We also get to listen to the guides tell stories, history and tell their love for the river. Our chaotic lives don't exist for a few hours and we just get to enjoy the peaceful nature. We have been lucky enough to have always had guides who love being out on the river, ones who this is a way of life, not just a job. We can hear it in every story, every laugh and every smile. We become family for a day with people we have never met. That only adds to how special this time is. The hustle of our everyday lives disappears for a few hours. My daughter saw her first eagle. This whole thing makes me sad. The power line crossing will take a piece of the experience away.

Sincerely,
Tracey Terreri
Turner, Maine
traceyterreri@gmail.com

* NOTE: I give Sandra Howard to permission to submit this letter.

Moxie Pond East Homeowners Association
Troutdale Campowners Association
C/O Scott Thrasher
650 Russell Road
Madison, ME 04950

October 17, 2018

The Moxie Pond East Homeowners Association, which includes the Troutdale Campowners Association, OPPOSES the Central Maine Power New England Clean Energy Connect (NECEC) powerline proposal. The Moxie Pond East Homeowners Association/Troutdale Campowners Association includes 29 camp owners on the east side of Lake Moxie, in East Moxie Township.

As an association, we oppose this project for the following reasons:

- This project will diminish members' property values. The proposed powerline will be in view directly across Lake Moxie from members' camps and property. The project would mar the scenic landscape.

- Massachusetts and Canada are the main beneficiaries of the project. Maine benefits little to none.

- The environmental damage caused by creating a new and widened corridor is irreversible. There are alternatives to bringing Canadian Hydro power to Massachusetts via overhead powerlines, such as Vermont's New England Clean Power Link, where their proposal is to bury the electric supply cable underground.

- The NECEC could suppress new investment in renewable energy.

The 29 members of the Moxie Pond East Homeowners/Troutdale Campowners Association have a great deal invested in their properties and stand to lose greatly if these powerlines are expanded. As property owners and tax payers in East Moxie Township, we urge the Maine PUC to deny approval of the NECEC project.

Scott Thrasher
President, Moxie Pond East Homeowners Association
Secretary/Treasurer, Troutdale Campowners Association

Sandra Howard has my permission to submit my statement as part of sworn testimony.

9-12-18

I offer my vehement rejection of CMP's proposal of the Quebec-Mass corridor.

Environmental: This project does not add renewable energy to the region: merely reallocates hydropower from one place to another. The added draw to the grid could be fulfilled with any energy source: coal, oil, natural gas, nuclear...

Occupational: The 1700 "promised" jobs are not promised to Mainers. Similar projects always bring in experts from away; I do not believe CMP and Hydro-Quebec will utilize locals as employees, except in the minimum wage, short term jobs.

Transparency: Hydro-Quebec has not been to any of the local meetings to answer our questions. What are they hiding?

Wildlife and Wetlands: The Natural Resource Council and the Sierra Club are both concerned about the irreparable damage the new corridor will bring to our vernal ponds, trout streams, deer shelter and feeding areas, golden eagle habitats, and air quality.

Health: The ill-effects of living under high tension power lines are still debatable. However, the WHO and the CDC both acknowledge increased Electromagnetic Field (EMF) to increased risk of cancer, abnormal heart rates and biorhythms, stunted growth, fatigue, rashes and anxiety. Why should the residents of Maine have to shoulder his added health burden to provide power to Massachusetts?

Tourism: The partnership with Western Mountains and Rivers Corporation does not accurately represent the beliefs and requests of the majority of the residents and tour guides in The Forks area. Most guides, even those employed by the founding members of WM&RC, reject this proposal. Many feel betrayed by this partnership.

Wilderness: There are few areas left with the pristine, untouched wilderness that this corridor will carve and gut.

History: New Hampshire recently rejected a similar proposal. Our western neighbors researched and vetted this well. Let's learn from their diligence and follow with the same decision.

Respectfully submitted,

Julie C. Tibbetts
358 Hidden Lake Road
Otisfield, ME 04270
207-539-4130
riverjules@juno.com

cc to MPUC

June 24, 2018

RECEIVED

2018 JUN 29 A 8:50

MAINE PUBLIC
UTIL. COMM.

President
Central Maine Power
Edison Drive
Augusta, Maine

Re Proposed Transmission Line across Kennebec Forks

Once again, you are allowing another transmission line to benefit another state! New Hampshire turned down the request twice.

In your agreement to let the overhead line to be constructed, you once again are disturbing pristine areas with poles, equipment and lines to go overhead with lines 200 feet above the gorge. This is the same mistake you made over the Saco River near Fryeburg, Maine. When is the last time you upgraded your transmission line system to modern methods?

There is a transmission line being constructed from the Vermont/Canada border going to New York City UNDERGROUND! If we have to supply Massachusetts with more power, put it UNDERGROUND like the Vermont to New York City line! For years CMP has said underground is too expensive – but in the long run, it has little maintenance, no land taking (run along public highways) and doesn't have impact on the environment.

More than 40 years ago the then Boston Edison in Massachusetts tried to run a high voltage transmission over the scenic Concord River, over an Indian Burying ground and through high priced residential neighborhoods. Towns united, engineers were involved, court appearances were made. The opposition to the overhead system proposed that the line be installed underground along public streets. It took about 15 years before Boston Edison succumbed and put it underground and found a shorter route for it.

People who live here In Maine, enjoy the rivers and streams along with the scenic drives and beautiful landscape. Tourists flock to Maine to enjoy all the environment that is offered. Why should one corporation take that away, one high tension transmission at a time and spoil Maine?

I hope the Maine Public Utilities Commission thinks as I do and reviews the application one more time and gets CMP to go underground.

ACT NOW BEFORE IT IS TOO LATE!

Estelle W. Wellman

Estelle W. Wellman
10 Peninsula Drive, Kennebunk ME 04043

September 14, 2018

Dear Maine PUC,

I strongly OPPOSE the NECEC. As a proponent of Maine (hosting a Maine based travel adventure series "From Away") Is explore this state from end to end telling the stories of its people and local trades. I have been gifted to be able to meet and show the world what an extraordinarily unique place and experience we have in the northern woods. People watch my show or go to the North woods because it is so completely different than the world they know. It is our duty as Mainers and stewards of the land to protect special places like these on an ever changing and shrinking world. There are of course many other reasons. The absolutely limited if any impact to Maine energy payers. The still unanswered questions of where exactly this power is coming from and if it is completely new sustainable energy or are they simply diverting it from one place to the next. The tremendous environmental impact from a 400-foot-wide corridor 53 miles long over several sensitive habitats the questionable at best way CMP started and funded the WMRC which CMP admitted to not involving the entire community and only wanting a specific group of people to talk with that they have had previous relationships with to ultimately mitigate a sum of money that did not reflect the voices of the community it will be impacting. As well as doing it at a time where those businesses are most busy running raft companies and other tourist based activities. I have video evidence of these claims, not opinion based.

I give Sandi Howard permission to submit this at the hearing.

Teagan Wright
9 Dunlap St
Brunswick, ME
Email ID: wright.teagan@gmail.com
Phone No.: 207-841-2429

Maine State Federation of Firefighters

Feb 12th, 2019

Governor Janet T. Mills, Augusta ME
Maine PUC: chris.simpson@maine.gov
DEP attn Jim Beyer: NECEC.DEP@maine.gov
LUPC attn Bill Hinkel: Bill.Hinkel@Maine.gov
Mass DPU: alan.topalian@state.ma.us & dpu.efiling@mass.gov

Dear Recipients:

This letter is to express concerns for fire and other emergency response capacities within the areas located along and adjacent to the proposed NECEC Corridor. (RE: DPU 18-64; DPU 18-65; DPU 18-66)

The Maine State Federation of Firefighters (MSFFF) has a membership of over 6000 firefighters. Many of our members are volunteers within small departments in rural communities. Several of our volunteer members, who serve areas within the proposed NECEC Corridor, contacted us to express their concerns for fire and safety response. These concerns focus not only on the major construction phases of the project, but also on significant risks that will be established and which will continue to exist long after construction crews have left the area and wide areas of high voltage power lines cross their jurisdictions. Further conversations and investigation indicate that to date, no evaluation, assessment, or documentation of the fire, emergency medical, terrorism and other risks, or the services and equipment needed to mitigate those risks, have been formally identified, discussed, studied, and/or reported on.

While Maine is not a "fire regime" it does not mean that catastrophic fires cannot occur here. Rural fire response has improved in the seventy years since "The Year Maine Burned" in 1947, but we must remember October 1947 followed one of Maine's rainiest seasons on record. *"From October 13 to October 27, firefighters tried to fight 200 Maine fires, consuming a quarter of a million acres of forest, taking the lives of 16 people, and wiping out nine entire towns. The Maine fires destroyed 851 homes and 397 seasonal cottages, leaving 2,500 people homeless".*

As we've seen over the last few years in other parts of our country and around the world, fires of magnitude that quickly overwhelm state and local resources are becoming annual events. Additionally, as was demonstrated in 2018 with the Paridise (CA) Campfire; PG&E, the power company whose transmission power lines were responsible for the fire, quickly declared bankruptcy. The convenience of PG&E and its ability to declare bankruptcy leaves Paradise, its victims, and the American taxpayer, to clean up the 150,000 acres of toxic wasteland before any attempt is made to rebuild from the destruction.

Regarding fire suppression and emergency support within the proposed NECEC Corridor, please see the enclose map and note the following:

Approximately 70 miles, from the Quebec border to Bingham, has no organized fire or emergency response capacity. These areas are covered by the Maine Forest Service (MFS). During a typical fire season, approximately March-October, the MFS has Rangers living the area who provide initial size-up once they arrived on scene. Weather permitting, air support from Augusta is dispatched; if air support is not already assigned to another fire in another part of the state. Ground crew members from around Maine may also be called to fight fires. Organizing and staging MFS wildland firefighters for a significant fire takes an hour or more. Fires on a windy day gain a significant headway before crews can arrive to remote areas. Volunteers from rural Maine towns are also trained in wildland firefighting and may respond to assist with MFS and Rangers when available.

The first 100 miles of the proposed Corridor, including the 70 miles covered by the MFS and Rangers, has only three (3) volunteer departments within a one-mile (1-mile) buffer of the proposed Corridor. These are the Bingham, Anson, and Solon Volunteer Fire Departments. This area has no staffed fire services and daytime coverage is extremely limited.

South of Bingham, and still within Somerset County, there are three (3) additional fire departments with a two-mile (2-mile) buffer of the proposed NECEC transmission line. These are the volunteer departments of Starks, Madison, and Industry. Once again, these three additional departments have no staffed fire and daytime coverage is extremely limited.

Please also note that these fire departments also lack sufficient off-road fire support capacity. While several do have smaller 4WD apparatus, sufficient large scale wildland suppression and emergency mitigation equipment is not available in the rural areas of the proposed NECEC Corridor area.

Non-fire emergency medical services (EMS) paramedic response is provided by Upper Kennebec Valley Ambulance out of Bingham. Emergency transports are taken to Redington-Fariview Hospital, 35-miles away. Redington-Fariview hospital has a Lifeflight landing pad, with helicopter transport dispatched from Bangor, Lewiston, or Sanford, if available.

Initial response for terrorist or other types of emergency incidents would come from either the Franklin or Somerset County Emergency Agencies depending on the location of the incident. We have been unable to locate any reference or notice from NECEC on how risk and incidents of this nature would be mitigated.

An example of a known risk that supports the need to evaluate, assess, document and sufficiently mitigate comprehensive fire and emergency risks associated with the proposed NECEC Corridor is shown by the 2017 (draft) Somerset County ME Hazard Mitigation Plan.

The most current available Somerset County Emergency Management Agency Mitigation Plan states the following:
C3 Goals
Wildfires: Reduce damage, injury and possible loss of life in Somerset County caused by wildfires.
*Somerset County is subject to wild land fires. The most likely damages caused by a wildfire are the loss of life, loss of prime timberland, and the destruction of personal and real property, especially homes. The loss of electricity is also possible, since many high voltage transmission lines pass through heavily wooded areas. Major wildfires may close commerce, resulting in major losses of income to local businesses and individuals. *There were at least 261 wild land fires in Somerset Country in from 2005 to 2010.*

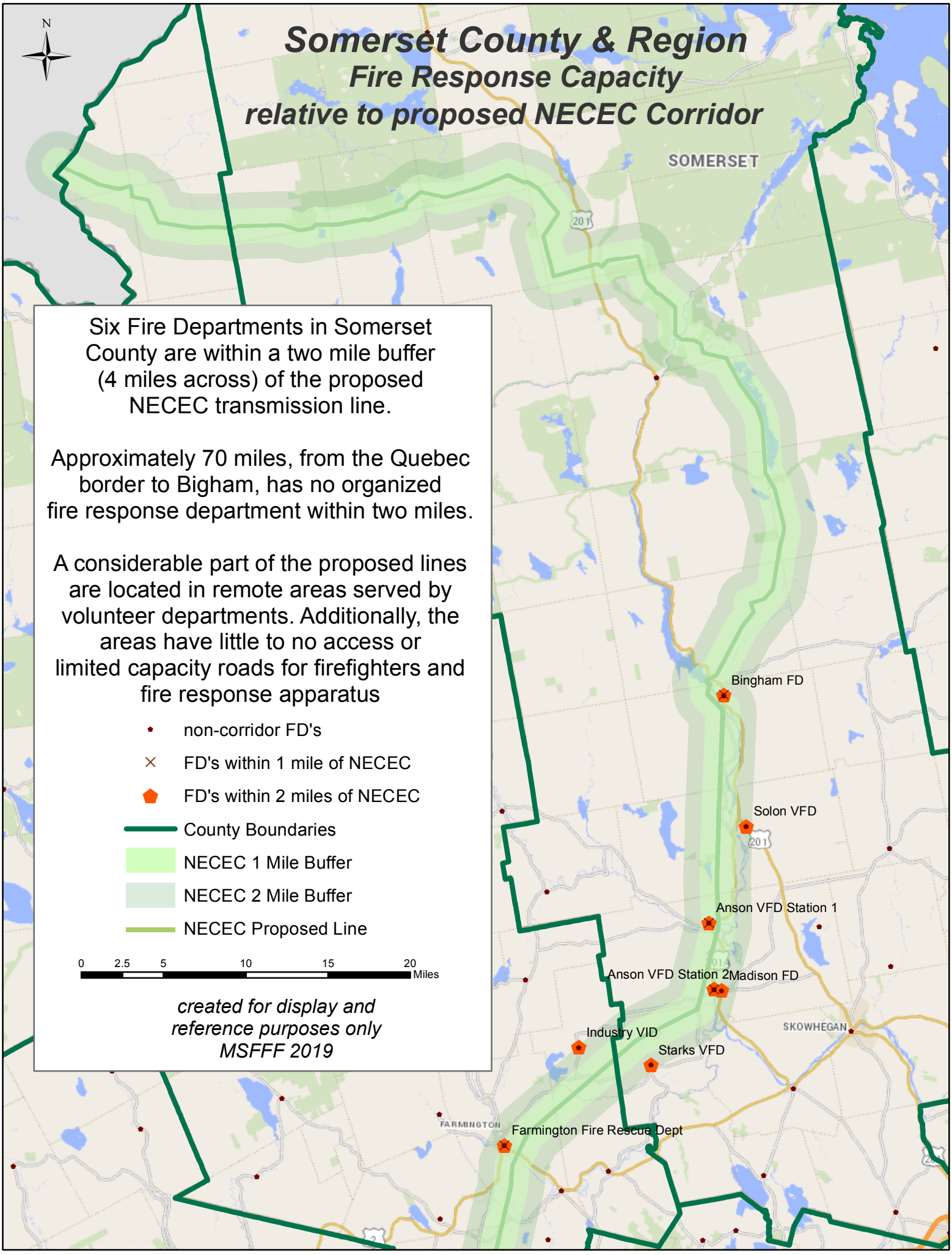
Information to date indicates that consideration of the many emergency hazards associated with the construction and future management of the NECEC Corridor have not been addressed. Due to this oversight, we conclude that the preparedness and safety of our fire fighters, and other first responders who will respond to NECEC Corridor incidents, has been severely overlooked and their security and safety significantly compromised.

The Officers and members of the MSFFF appreciate the opportunity to present these comments and look forward to having the fire, EMS, and other emergency response issues regarding the proposed NECEC Corridor fully evaluated, assessed, and documented. We also encourage the development of and look forward to reviewing mitigation and implementation plans to address associated Corridor risks, and fully support these risks being formally discussed, studied, disclosed, and reported.

Respectfully submitted,

Kenneth Desmond
President, MSFFF
PO Box 911
Sabattus, ME 04280

enc: map of Somerset Cnty Region


Somerset County & Region
Fire Response Capacity
relative to proposed NECEC Corridor
SOMERSET
201
Six Fire Departments in Somerset County are within a two mile buffer (4 miles across) of the proposed NECEC transmission line.
Approximately 70 miles, from the Quebec border to Bigham, has no organized fire response department within two miles.
A considerable part of the proposed lines are located in remote areas served by volunteer departments. Additionally, the areas have little to no access or limited capacity roads for firefighters and fire response apparatus
non-corridor FD's
FD's within 1 mile of NECEC
FD's within 2 miles of NECEC
County Boundaries
NECEC 1 Mile Buffer
NECEC 2 Mile Buffer
NECEC Proposed Line
0 2.5 5 10 15 20 Miles
created for display and reference purposes only
MSFFF 2019
Bingham FD
Solon VFD
Anson VFD Station 1
Anson VFD Station 2
Madison FD
Industry VID
Starks VFD
SKOWHEGAN
FARMINGTON
Farmington Fire Rescue Dept

February 14, 2019

Gerald D. Reid, Commissioner
Department of Environmental Protection
17 State House Station
28 Tyson Drive
Augusta, ME 04333-0017

Subject: Proposed CMP New England Clean Energy Corridor (NECEC) Project

Dear Commissioner Reid:

I am writing to ask Maine's Department of Environmental Protection (DEP) to deny a permit for the 145-mile NECEC project proposed by Avangrid-CMP to carry hydroelectricity generated by Hydro-Quebec (HQ) from Canada to Massachusetts.

CMP's application to DEP for the proposed NECEC project is incomplete because it does not list all of the components. In the Introduction of its Application CMP has written: "The proposed NECEC Project is composed of the following components . . . New 145.3-mile +/- 320 kv HVDC Transmission Line from Canadian border to a new converter substation located north of Merrill Road in Lewiston."

The project components do not start at the Canadian border, and must include the reservoir hydroelectric generating facilities located in Canada, which are storing and reducing water flows into the Gulf of Maine's ecosystem during the biologically active season of the year and significantly increasing the flow during the winter, which is the biologically inactive time of the year. H-Q recognized these reservoir generating facilities as components in the project in a 12/14/18 letter, in which, they wrote: *"Excess water not used to generate electricity is stored in large reservoirs for use in later periods."* (See Attachment #8)

The following was written in the January 29, 2019 edition of the Bangor Daily News in regards to this letter:

"Hydro-Quebec seemed content to let CMP fight for the project alone before regulators for much of 2018. But at the end of the year, the utility took a more proactive approach, meeting with editorial boards and providing a two-page letter detailing its "spillage" issues to CMP, which entered it into the record at the Maine Public Utilities Commission.

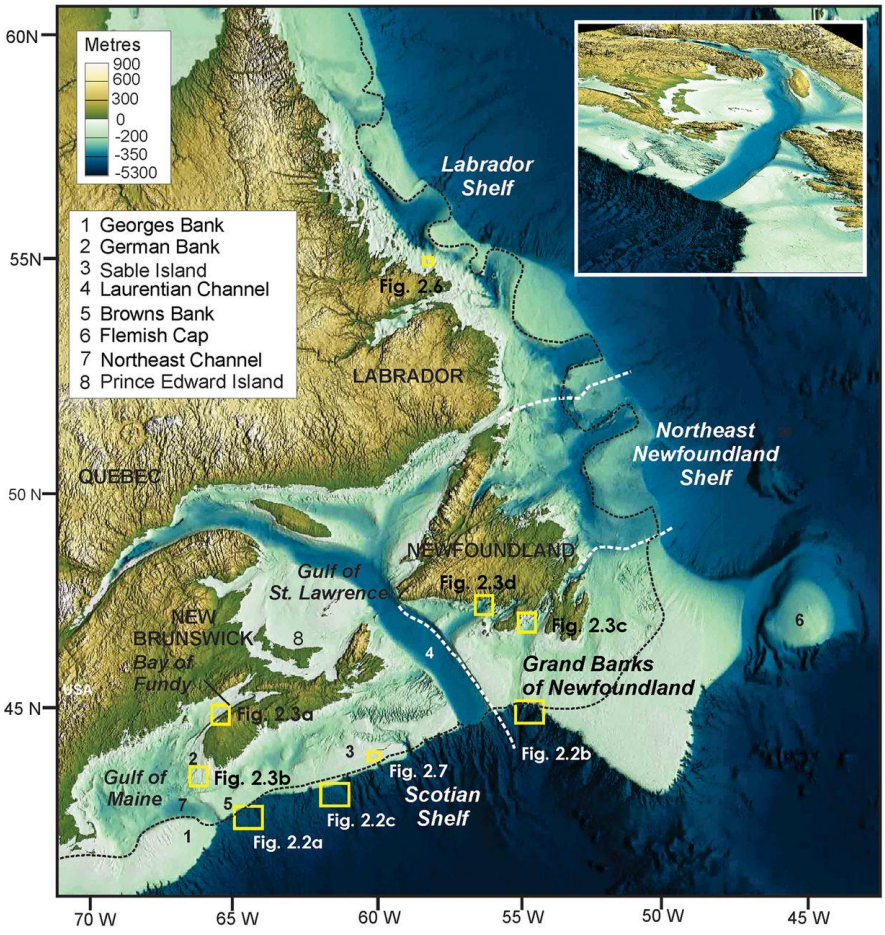
The letter provided figures on the amount of water the utility spilled that could have been converted into sellable energy, if only Hydro-Quebec had a way to get it to market. Instead, by "spilling" the water, the company essentially wasted it.

Hydro-Quebec said that, in 2017, it spilled water that could have produced 4.5 terawatt hours of electricity, or slightly more than half the energy needed to fulfill the Massachusetts contracts. In 2018, the letter continued, Hydro-Quebec spilled water that could have been converted into 10.4 terawatts worth of energy. The company said it didn't spill at all due to transmission constraints prior to 2017."

The epic magnitude of these stored waters has weakened the thermohaline current and created the physical, chemical and biological conditions that are now starving the fisheries. As the maps below and on the next 3 pages illustrate, the discharged waters from all of H-Q's reservoir hydroelectric facilities discharge into one of three water bodies, either the Gulf of St. Lawrence, or James Bay and Hudson Bay or Labrador Sea. All of these water bodies and their watersheds are part of the Gulf of Maine's ecosystem.

The strength of the thermohaline current and thus the transport of deep nutrient enriched ocean water into the St. Lawrence Estuary, Grand Banks, Georges Bank (#1 below) and Gulf of Maine via Northeast Channel (#7 below) depends on the amount of fresh water flowing into these water bodies. Reduced spring and summer outflows from these reservoir hydroelectric dams have created a chokehold on the delivery of the annual budget of dissolved silica and other nutrients via both the rivers and upwelling ocean waters driven by thermohaline currents.

These dams and accompanying flow regulation are denying phytoplankton essential nutrients which in turn starves marine ecosystem biota from zooplankton, to copepods, to fish and including Right Whales. It is very important to acknowledge that these reservoir components have changed the thermohaline circulation, not only in the Gulf of St. Lawrence, but also in the Labrador Current. Subsequently, this has changed the thermohaline current in the Gulf of Maine, as the St. Lawrence waters and Labrador Current mix together over the Scotia Shelf, which is offshore of Nova Scotia, and then flow into the Gulf of Maine.

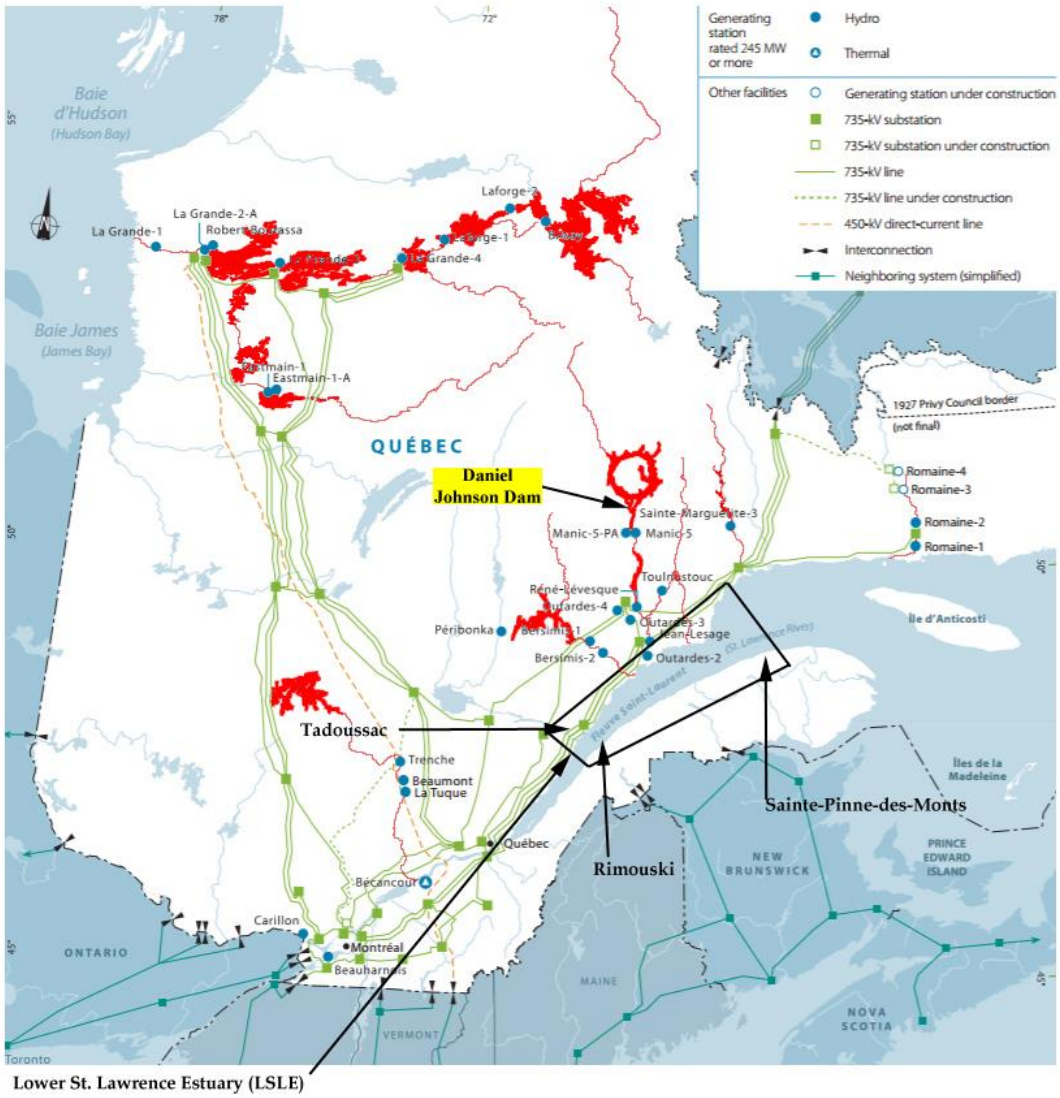


Map 1

Source: SHAW, TODD, LI, MOSHER & KOSTYLEV Geological Survey of Canada (Atlantic), Bedford Institute of Oceanography

In a recent Canadian study of trends in river discharge from 1964-2014, the authors found: "That there has been a three-fold increase in River Discharge during winter, when electric demand peaks, into the estuaries of Labrador Sea and Eastern Hudson Bay for the 2006-2013 period compared to 1964-1971 and a forty percent reduction in discharge during the summer." (Recent Trends and Variability in River Discharges Across Northern Canada, Dery et. al. 2016).

RED AREAS HIGHLIGHTED BELOW REPRESENT SOME OF H-Q'S MAN-MADE STORAGE OF WATER RESOURCES BEING CHOKED OFF FROM FEEDING THE GULF OF MAINE ECOSYSTEM



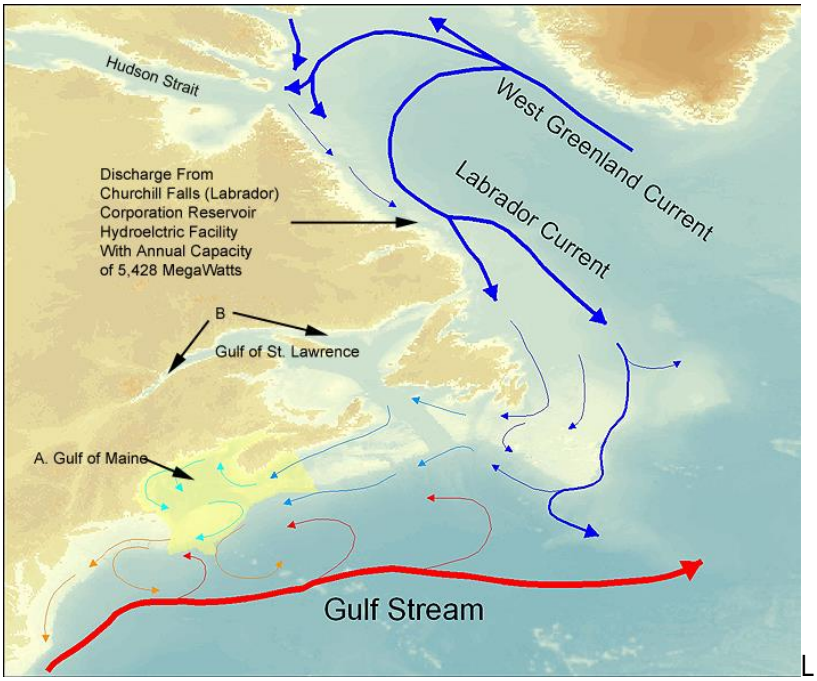
Map 2 Source: New England News Collaborative

The Daniel Johnson Dam is the fourth largest reservoir in the world and has a storage capacity of 142 km³, which is equal to the amount of water in 27 Moosehead Lakes. It is the headwater of the Manicouagan River, which flows into Lower St. Lawrence Estuary. It was commissioned in 1970 and *"Serious levels of hypoxia first appeared in the St. Lawrence Estuary in the mid-1980's. In 2003, this area covered approximately 540 square miles of the sea floor and has continued to grow over the last few years."* (Quebec Ocean Fact Sheet 2, January 2011)

This dam has greatly altered the seasonal timing of spring freshet waters enriched with dissolved silicate, oxygen and other nutrients. This has led to a change from a phytoplankton-based ecosystem dominated by diatoms to a non-diatom ecosystem dominated by flagellates, including dinoflagellates, which has led to the starvation of the fisheries and depletion of oxygen in the estuary and spreading into the Gulf of St. Lawrence.

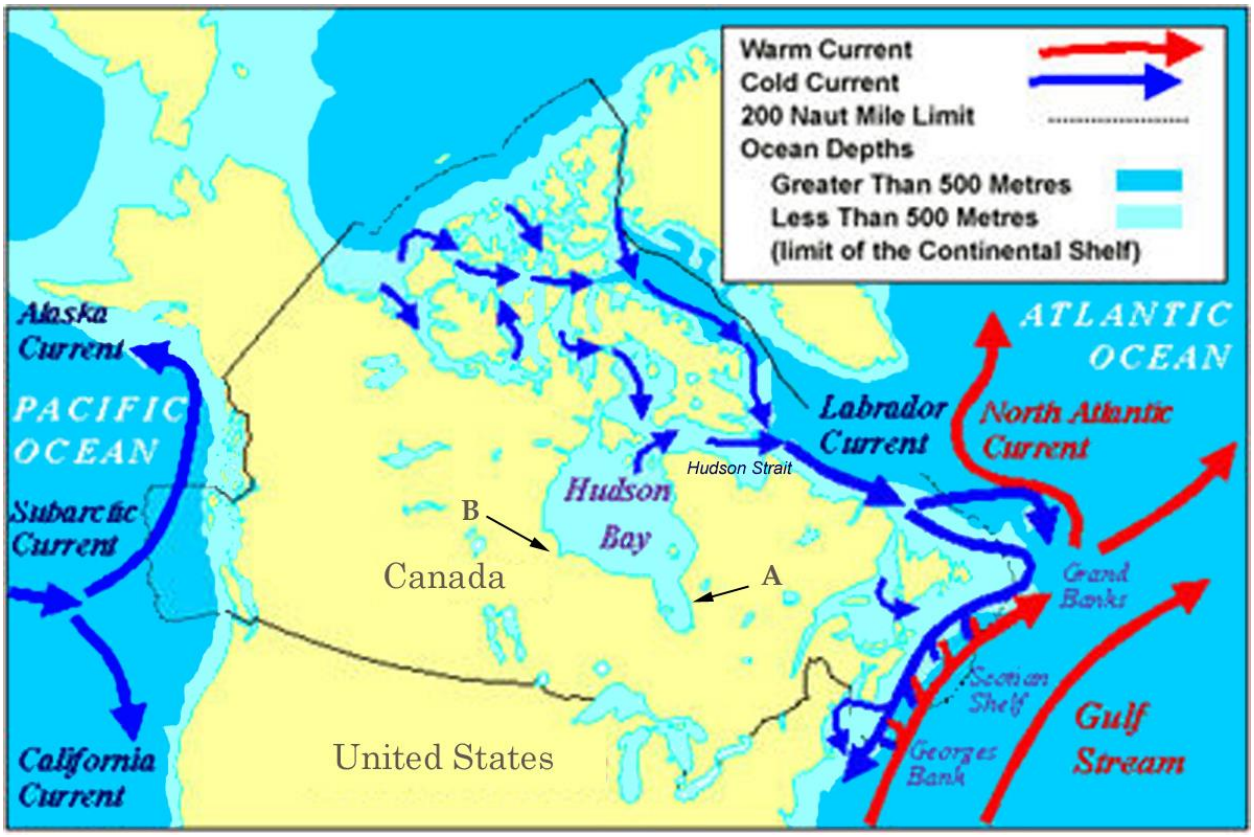
This hypothesis has been confirmed in a 2005 study, RECENT EUTROPHICATION AND CONSEQUENT HYPOXIA IN THE BOTTOM WATERS OF THE LOWER ST. LAWRENCE ESTUARY: MICRO PALEONTOLOGICAL AND GEOCHEMICAL EVIDENCE," by Thibodeau, Devernal, and Mucci. The authors analyzed two sediment box cores recovered from the lower St .Lawrence estuary and observed the following: *A ten-fold increase in the accumulation rate of dinoflagellate cysts and benthic foraminifera in the sediment over the last four decades,"* and *"Our results imply that a significant increase in marine productivity in the Lower St. Lawrence Estuary occurred since the 1960's."*

The increased marine productivity is in the form of dinoflagellate cysts, which is starving the estuary and Gulf of oxygen. See Attachments 4 and 5 for a more comprehensive analysis on the importance of silica.



Map 3 Source: Blog.WeatherFlow.com

In Map 3 on page 4, Maine's six major rivers discharge into the Gulf of Maine in the area marked "A." The hydroelectric facilities on these rivers typically operate in a "run of river" mode and have an annual capacity of 526 MW. Maine's total capacity is only 723MW. In the area marked "B," Hydro-Quebec has 16 reservoir hydroelectric facilities built on 9 rivers discharging into the St. Lawrence River and/or its Gulf (see Map 2 on page 3 for more details).



Map 4 Source: The Canadian Encyclopedia

In the area marked "A," Hydro-Quebec has 9 reservoir hydroelectric facilities in the watershed of the LaGrande River and 2 on the Eastmain River. The annual capacity of these 11 facilities is 17,383 MW (see Map 2 on page 3).

In the area marked "B," Manitoba Hydro has 4 reservoir hydroelectric facilities in the watershed on the Nelson River with an annual capacity of 3,837 MW.

According to a 2007 report by Straneo and Soucier: "Our results suggest that approximately 15% of the volume and 50% of the freshwater carried by the Labrador Current is due to Hudson Strait Outflow." Storing the waters of the spring freshet has significantly reduced the transport of essential nutrients during the biologically active season of the year. (I bolded for emphasis.)

The applicant has also failed to define "clean" energy and how this "clean" energy is generated. Part of the Approval Criteria, which is mandated by Maine Statutes, requires that "*the applicant has made reasonable provisions to realize the environmental benefits of the project, if any, and to mitigate its adverse environmental impacts."*

The applicant advocates in its recent letter to PUC that the spillage from it reservoir dams is a benefit which can be used to generate electricity, but failed to discuss how it will mitigate the following adverse environmental impacts, which this unprecedented storage has caused in downstream water bodies:

1. **THE SEVERE CHANGE IN NATURAL FRESHWATER FLOW AND HYDROPOWER'S ELIMINATION OF THE SPRING FRESHET**. "Run-off is transferred from the biologically active to the biologically inactive period of the year. This is analogous to stopping the rain during the growing seasons and irrigating during the winter, when no growth occurs." (Dr. Hans Neu 1982 See Attachment #2 Pg 41)

2. **REDUCING THE FLOW OF FRESH WATER DURING THE BIOLOGICALLY ACTIVE SEASON OF THE YEAR, OR EVEN REVERSING THE CYCLIC FLOW ALTOGETHER, REPRESENTS A FUNDAMENTAL MODIFICATION OF A NATURAL SYSTEM.**"Life as we know it in our coastal waters and its level of productivity has evolved over thousands of years in response to these seasonal variations. Such a modification must have far reaching consequences on the life and reproduction cycle in the marine environment of the region affected." (Dr. Hans Neu 1982 See Attachment #2 Pg 41)

3. **ALTERING THE SEASONAL TIMING OF SPRING FRESHET WATERS ENRICHED WITH DISSOLVED SILICATE, OXYGEN AND OTHER NUTRIENTS, HAS STARVED THE FISHERIES.** This has led to a change from a phytoplankton-based ecosystem dominated by diatoms to a non-diatom ecosystem dominated by flagellates, including dinoflagellates, which has led to the starvation of the fisheries and depletion of oxygen and warming of the waters in the estuaries and coastal waters of the Gulf of St. Lawrence, Gulf of Maine and northwest Atlantic. (See Attachments #'s 4 and 5.)

4. **THE COLLAPSE OF THE COD FISHERIES IN GULF OF MAINE, GULF OF ST. LAWRENCE AND GRAND BANKS OF NEWFOUNDLAND, WHICH OCCURRED AT THE SAME TIME AND TO THE POINT OF DEPLETION BY THE EARLY 1990'S**.The major force, if not the driving force, has been the proliferation of huge reservoir hydroelectric facilities by Hydro-Quebec on the rivers throughout the ecosystem of these three water bodies.. Dr. Hans Neu, a Senior Research Scientist at Bedford Institute of Oceanography, Dartmouth, Nova Scotia warned Hydro-Quebec, in a February 9, 1977 article in The Sherbrooke Record, that the proliferation of its reservoir hydroelectric facilities might be the cause of declining fish stocks, and not overfishing. (See Attachment #1)

5. **"IT CAN BE ASSUMED THEREFORE THAT FRESH WATER REGULATION MODIFIES THE CLIMATE OF THE COASTAL REGION TO BE MORE CONTINENTAL-LIKE IN THE SUMMER AND A MORE MARITIME-LIKE IN THE WINTER."** ((Dr. Hans Neu 1982 Attachment #7)) "In winter this is caused by an increase in

upwelling of deeper warmer water and in summer due to slower surface currents which will allow the surface layer to absorb more heat during its passage through the system.

6. **"OBVIOUSLY, THESE CHANGES WHICH ARE ALREADY IMPLEMENTED ARE A FUNDAMENTAL MODIFICATION TO THE FRESH WATER REGIME OF CANADA AND TO THE PHYSICS AND DYNAMICS OF ITS COASTAL REGIONS**. There is no doubt in the mind of the author that if Canada continues this development and the USSR follows its lead, the hydrological balance of our globe would be threatened and as a result the biological productivity of our oceans, primarily in their coastal waters, may be seriously jeopardized." (Dr. Hans Neu, The Sherbrooke Record, Feb. 9, 1977 on page 4 of Attachment #2)

7. **"EVEN IF WE CANNOT YET MEASURE THE EFFECTS WITH CERTAINTY IN OUR OWN MARINE ENVIRONMENT, SIMILAR CHANGES MUST ALREADY HAVE HAPPENED TO THE COASTAL WATERS OF ATLANTIC CANADA AND THE EFFECT MUST INCREASE AS REGULATION OF OUR RIVERS CONTINUES.** Of particular concern is the increased development of hydro-power – under construction or in the design stage – in Labrador, Ugava Bay, James Bay and Hudson Bay, which are bound to threaten the productivity of the Grand Banks of Newfoundland." (Dr. Hans Neu Attachment #2)

8. **THERE HAS BEEN MUCH CONCERN OVER THE EFFECTS OF THESE DAMS ON THE INLAND ENVIRONMENT, YET NOBODY HAS STUDIED WHAT HARM THEY ARE DOING TO THE OCEAN ENVIRONMENT."** (Dr. Hans Neu, Sherbrooke Record Feb.9, 1977)

The passage of time has proven all of Dr. Neu's concerns and predictions to be correct, and H-Q has failed to mitigate these adverse environmental impacts. I have written a more comprehensive analysis on these environmental impacts in Attachments 1-7 to this report, and I have referenced Dr. Neu and "Silica Stories," by Conley and De LaRoucha 2017 extensively:

1. February 4, 2019 Fact Sheet "Hydro Dams Blamed for Decline in Fish Stocks"
2. January 15, 2019 Report, "Hydro-Quebec's Dams Have a Chokehold on the Gulf of Maine's Ecosystem
3. December 23, 2018 Maine Sunday Telegram Editorial "Hydroelectric dams produce green energy? Think Again"
4. November 28, 2018 Report "Reservoir Hydroelectric Dams – Silica Depletion – A Gulf of Maine Catastrophe"
5. October 15, 2018 Report – "The Problem Is The Lack of Silica"
6. October 9, 2018 Portland Press Herald Editorial "Reject CMP Power Line Because Hydro-Quebec Facilities Damage Ecosystem"
7. February 11, 2009 Fact Sheet: "Man-Made Storage of Water Resources – A Liability to Ocean Environment."

The applicant has failed to specifically address the following part of the Approval Criteria in the State Statute, which reads as follows:

7 "Environmental and energy considerations. The advantages of the project are greater than the direct and cumulative adverse impacts over the life of the project based upon the following considerations:

A. Whether the project will result in significant benefit or harm to soil stability, coastal and inland wetlands or the natural environment of any surface waters and their shore lands; [1989, c. 309, §5 (AMD).]
B. Whether the project will result in significant benefit or harm to fish and wildlife resources. In making its determination, the department shall consider other existing uses of the watershed and fisheries management plans adopted by the Department of Inland Fisheries and Wildlife and the Department of Marine Resources; [2009, c. 561, §39 (AMD).]

The department shall make a written finding of fact with respect to the nature and magnitude of the impact of the project on each of the considerations under this subsection, and a written explanation of their use of these findings in reaching their decision."

I have documented in this letter, with its attachments and in two editorials, the adverse environmental impacts and, in my opinion, the applicant has failed to address how it intends to mitigate these impacts.

I ask the reader to please take note of my October 9, 2018 editorial (Attachment # 6), my December 23, 2018 Editorial appears on pages 34-36 of Attachment 2 and a January 5, 2019 Portland Press Herald Editorial "Hydro-Quebec Offers Misleading Claims About Climate Impact," by Bradford H. Hager, MIT earth sciences professor on pages 37-39 of Attachment 2..

In the Commentary Section of the January 15, 2019 Portland Press Herald appears a letter "Science about Quebec Hydropower Must Not be Overlooked," by Alain Tremblay, Ph.D. and Francois Bilodeau, M.Sc., who are senior environmental advisors with Hydro-Quebec.

Their commentary leads off: "In recent op-eds, various opponents have criticized Quebec hydropower putting forward a series of falsehoods that absolutely need to be corrected." The rest of the commentary was focused on the points raised by Professor Hager, and there were no comments on the observations and hypotheses in my two editorials. Obviously, we can only conclude that they did not consider my observations to be falsehoods.

In closing, the following Feb. 7, 1977 observation, in The Sherbrooke Record, by Dr. Neu should never have been ignored and H-Q has only itself to blame for the billions of dollars spent on reservoir hydroelectric facilities which I believe have caused more harm than good.

"Until now it was assumed that hydro power is 'clean' with little or no impact on the environment, particularly that of the ocean. That this might not be the case is difficult to understand. Obviously, designing storage schemes and forecasting output of power is easier to grasp than to quantify the changes imposed on the population dynamics of the biota in the coastal region. There is the possibility that damages imposed by man-made lakes on the ecosystem may outweigh the benefits they provide. This is the crux of the problem."

Dr. Neu made these comments in 1977, and at the time H-Q had four large reservoir hydroelectric facilities on line with a storage capacity of 212.84 km^3. (see Attachment #7). They then built four more large facilities with a storage capacity of 200.0 km^3 from 1979-1993. (The water volume in Moosehead Lake in Maine is 5.19 km^3.)

The negative adverse environmental impacts of man-made storage doubled in less than 16 years.

H-Q is the engineer of this colossal destruction of the Gulf of Maine's ecosystem, which includes Gulf of St. Lawrence and its Estuary, James Bay and Hudson Bay and Labrador Sea.

DEP can stand tall in this process by demanding H-Q respond to my observations on the negative environmental impacts caused by their reservoir hydroelectric facilities and denying the permit if they fail to mitigate these impacts.

Sincerely,

Stephen M. Kasprzak

SMK/gcl
Encs.
cc: Service List for The CMP NECEC Hearing Updated January 31, 2019
Governor Janet T. Mills
Maine Utilities Commission

HYDRO DAMS BLAMED FOR DECLINE IN FISH STOCKS

I believe the driving force in the collapse of cod fisheries in the early 1990's in the Gulf of Maine, Gulf of St. Lawrence and Grand Banks of Newfoundland has been the proliferation of huge reservoir hydroelectric facilities by Hydro-Quebec on the rivers throughout the ecosystem of these three water bodies. The Daniel Johnson Dam discharges into the St. Lawrence Estuary and is the fourth largest in the world. It stores 142.0 cubic kilometers (km^3) of water, which is equivalent to 27 Moosehead Lakes. There were other large reservoirs built (see page 4) storing the water equivalency of an additional 63 Moosehead Lakes.

Dr. Hans Neu, a Senior Research Scientist at Bedford Institute of Oceanography, Dartmouth, Nova Scotia warned Hydro-Quebec, in a February 9, 1977 article in The *Sherbrooke Record*, that the proliferation of its reservoir hydroelectric facilities might be the cause of in the 1970's decline of fish stocks in Gulf of St. Lawrence, as shown in the below graph, and not overfishing.

In a 1982 report, "Man-Made Storage of Water Resources - A Liability to the Ocean Environment.? Part I and Part II," he made the following observations and prediction:

> "*Life as we know it in our coastal waters and its level of productivity has evolved over thousands of years in response to these seasonal variations. Changing this pattern by reducing the flow of fresh water during the biologically active season of the year, or even reversing the cyclic flow altogether, represents a fundamental modification of a natural system. Such a modification must have far reaching consequences on the life and reproduction cycle in the marine environment of the region affected."*
>
> and he made the following prediction in regards to Gulf of St. Lawrence
>
> *"The next big decline (in fisheries stock) probably will be in the early or mid-eighties*" and "*will be worse, since regulation will have increased further in the meantime."*

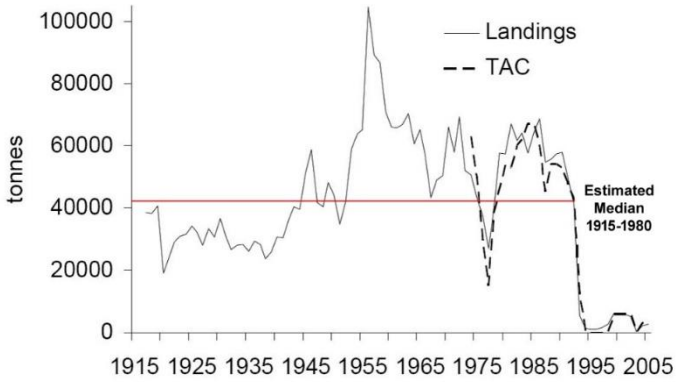


Figure 2: Landings and TAC (t) for the southern Gulf of St. Lawrence cod stock.
Source: Canadian Science Advisory Secretariat Science Advisory 2006/014

The above graph supports his prediction, and please note the following:

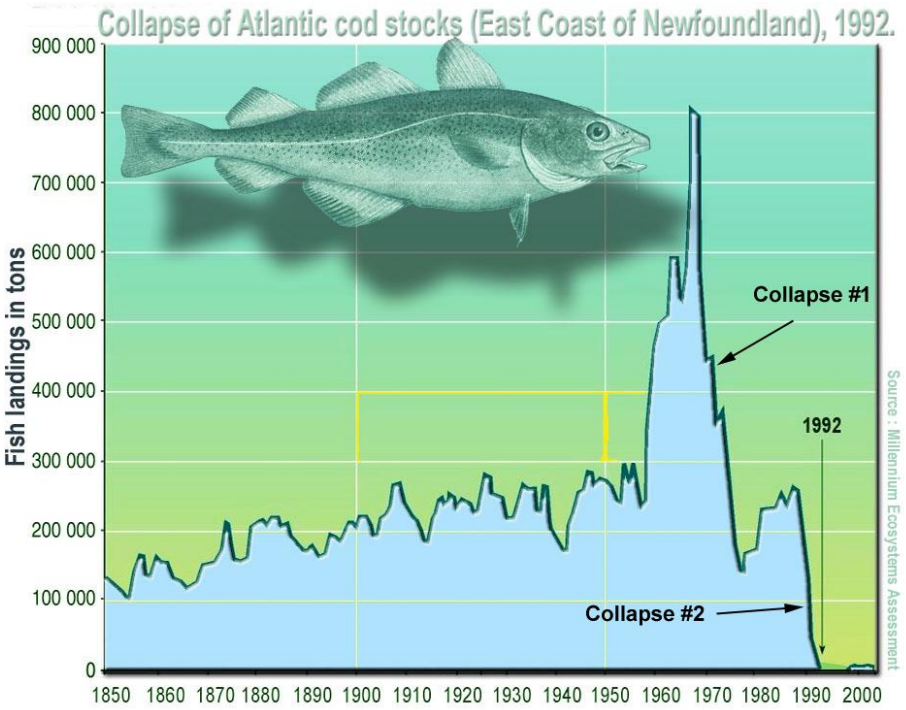
1. Dr. Neu predicted in 1982 that the next big decline after the 1975 decline would be worse because the Daniel Johnson Dam was coming on line. The decline was not only worse, but it has lasted 25 years and appears to be irreversible.
2. There was a sustainable median catch of 42,000 tonnes for the previous 80 years.

He also predicted a decline in the fishing stock off the Grand Banks of Newfoundland:

> *"Even if we cannot yet measure the effects with certainty in our own marine environment,* (Gulf of St. Lawrence SMK) *similar changes must already have happened to the coastal waters of Atlantic Canada and the effect must increase as regulation of our rivers continues. Of particular concern is the increased development of hydro-power-under construction or in the design stage – in Labrador, Ungava Bay, James Bay and Hudson Bay, which are bound to threaten the productivity of the Grand Banks of Newfoundland."*

The second collapse in the following graph supports this prediction. Shown below are two collapses of the Atlantic northwest cod fishery in the past fifty years. Both collapses have been analyzed as one and the cause blamed on overfishing and/or global warming by others

.



There is no doubt that overfishing caused the spike in cod landings during the 1960's and the first collapse in the 1970's is the consequence of overfishing. However, the second and more lasting collapse occurred in the 1989-1991 period. The driving force of this decline has been man-made storage behind the reservoir dams.

From 1850 through the late 1980's there was a sustainable median catch of 200,000 tons per year followed by what appears to be an irreversible collapse, which has continued through 2018.

I believe the elimination of this 140 year sustainable cod catch of 200,000 tons is what Dr. Neu had in mind when he said the storage of these waters "*MUST HAVE FAR REACHING CONSEQUENCES ON THE LIFE AND REPRODUCTION CYCLE IN THE MARINE ENVIRONMENT OF THE REGION AFFECTED.*"

The passage of time has documented that his predictions, based on earlier research, were correct.

THIS NEGATIVELY IMPACTED MARINE ENVIRONMENT ALSO INCLUDES THE GULF OF MAINE

I have written a more comprehensive analysis on other environmental impacts in my January 15, 2019 report, "Hydro-Quebec's Dams Have a Chokehold on the Gulf of Maine's Ecosystem," in which, I describe how these dams have starved the fisheries in downstream waters of nutrients and changed the thermohaline circulation, not only in the Gulf of St. Lawrence, but also in the Labrador Current. Subsequently, this has changed the thermohaline current in the Gulf of Maine as the St. Lawrence waters and Labrador Current mix together over the Scotia Shelf, which is offshore of Nova Scotia, and then flow into the Gulf of Maine.

The strength of the thermohaline current and thus the transport of deep nutrient enriched ocean water into the St. Lawrence Estuary, Grand Banks and Gulf of Maine depends on the amount of fresh water flowing into these water bodies. Reduced spring and summer outflows from these reservoir hydroelectric dams have created a chokehold on the delivery of the annual budget of dissolved silica and other nutrients via both the rivers and upwelling ocean waters. The cumulative impact of these stored waters have starved the fisheries to depletion.

Dr. Neu was quoted as follows in *The Sherbrooke Record*:

> "*In their natural state, rivers carry smaller flows during the winter when precipitation is frozen as snow, and sharply increased flows after the spring thaw. This coincides with the life cycle of marine organisms, increasing food supplies as they come out of their winter hibernation and decreasing supplies when winter returns.*
>
> *But hydro-electric dams tend to level out the cycles, storing much of the spring and summer runoff in the reservoirs until winter, when consumer demand for power is greater. This means that fresh-water nutrients reach the ocean in the winter, when the fish don't need them, and are lost into the barren depths beyond the continental shelf. In the spring and summer the nutrient supply fails to increase as rapidly as is needed."*

THERE WAS A SUSTAINABLE MEDIAN (COD) CATCH FOR 100 YEARS OF 8,000 METRIC TONS IN THE GULF OF MAINE AND THE PRECIPITOUS DECLINE, WHICH BEGAN IN 1991, IS CONSISTENT WITH THE TIMING OF COLLAPSES IN GULF OF ST. LAWRENCE AND WESTERN ATLANTIC.

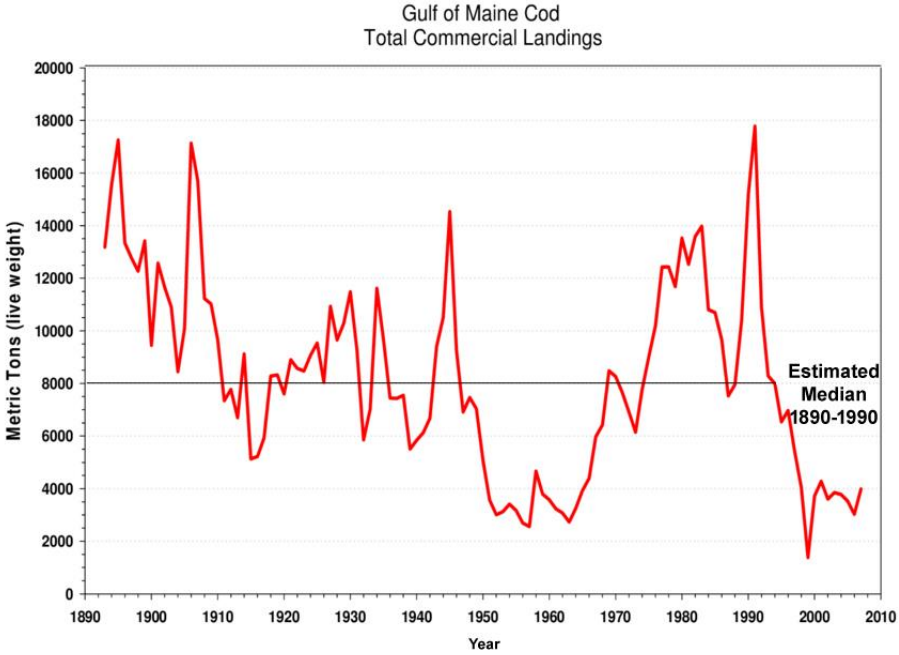
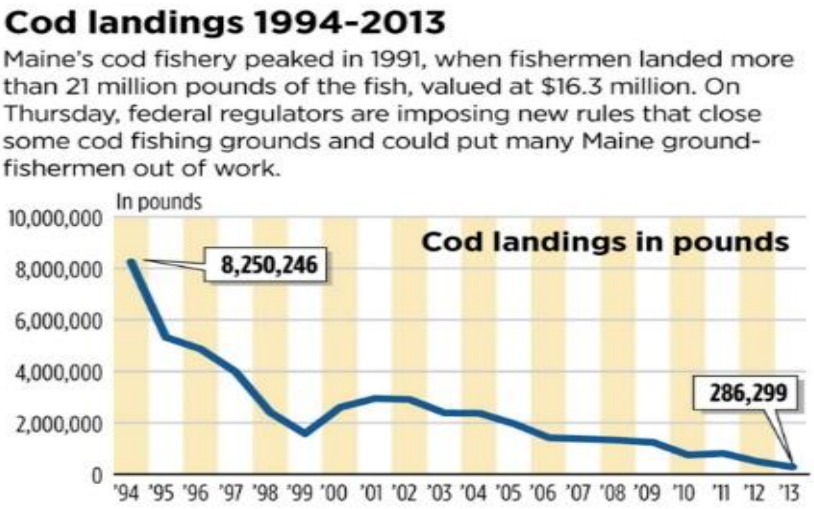


Figure 1.2 Total commercial landings (mt) of Atlantic cod from the Gulf of Maine stock, 1893-2007.

The public perception is that the depletion of the cod fishery has been caused by overfishing and/or global warming. The graph shown below by Michael Fisher of the Portland Press Herald does a great job of supporting this narrative,

but fails to disclose there was a sustainable catch for the preceding 104 years, as shown in the graph on the preceding page.



THE DRIVING FORCE BEHIND THE DEPLETION OF THE COD FISHERY WAS CAUSED BY THE PROLIFERATION OF RESERVOIR HYDROELECTRIC DAMS BY HYDRO-QUEBEC

These dams created huge storage lakes built for power development and capable of holding the spring run-off of large drainage areas and storing it over entire seasons, years and even longer.

The water volume in Moosehead Lake in Maine is 5.19 cubic kilometers (km^3) and Hydro Quebec built the equivalent of 80 Moosehead Lakes in the three watersheds listed below.

Gulf of St. Lawrence Watershed		James Bay/Hudson Bay Watershed		Labrador Sea Watershed	
1956 Bersimis -1	13.9 km^3	1979-81 Robert-Bourassa Generating Station	61.7km^3	1971-74 Churchill Falls	32.64 km^3
1969 Outardes-4	24.3 km^3	1982-84 LaGrande -3 Generating Station	60.0km^3		
1970 Daniel Johnson Dam	142.0 km^3	1984-85 LaGrande-4	24.5 km^3		
	180.2 km^3	1993 Brisay	53.8 km^3		32.64km^3
			200.0 km^3		

To put this in perspective, since the 1970's the review standards in Maine's Natural Resource Protection Act, which mandate submission of proof to minimize environmental impacts, would have prevented the building of even a small or large reservoir on any brook, stream, or river flowing into the Gulf of Maine.

RESERVOIR HYDROELECTRICITY GENERATED BY HYDRO-QUEBEC IS NOT GREEN ENERGY. IF MAINE'S PUC & DEP SAY "YES" TO CMP'S PROPOSED NEW ENGLAND CLEAN ENERGY CONNECT (NECEC), IT WOULD BE THE HEIGHT OF HYPOCRISY.

HYDRO-QUEBEC'S DAMS HAVE A CHOKEHOLD ON THE GULF OF MAINE'S MARINE ECOSYSTEM

By Stephen M. Kasprzak

January 15, 2019

PREFACE

I wrote an October 15, 2018 Report "The Problem is the Lack of Silica," and a November 28, 2018 Report, "Reservoir Hydroelectric Dams - Silica Depletion - A Gulf of Maine Catastrophe."

The observations, supplements and references in this Report support the following hypothesis, which was developed in these two earlier Reports:

Hydro-Quebec's dams have greatly altered the seasonal timing of spring freshet waters enriched with dissolved silicate, oxygen and other nutrients. This has led to a change from a phytoplankton-based ecosystem dominated by diatoms to a non-diatom ecosystem dominated by flagellates, including dinoflagellates, which has led to the starvation of the fisheries and depletion of oxygen and warming of the waters in the estuaries and coastal waters of the Gulf of St. Lawrence, Gulf of Maine and northwest Atlantic.

Physicist Hans J. A. Neu offered a similar hypothesis in his 1982 Reports and predicted the depletion of the fisheries by the late 1980's and a warming of the waters.

Anyone who wants to question this hypothesis has to also question more than 40 years of research, which the passage of time has documented the earlier research and predictions as correct.

If you stopped burning fossil fuels tomorrow, it will not stop the starving of the fisheries . This will only happen if you release the chokehold on the rivers and allow the natural flow of the spring freshet and the transport of dissolved silicate and other essential nutrients. The high outflows of the spring freshet will also strengthen the density current (haline circulation) and restore the natural balance in the mixing of Labrador Current and Gulf Stream waters and help cool the waters.

It should also help to reduce ocean acidity as larger and heavier silica-encased diatoms would sequester more carbon to the bottom of the ocean.

Climate change is not the only force destroying the Gulf of Maine, and it is time to recognize that hydroelectric reservoir dams may be part of the problem. Mr. Hue wrote the following in his 1982 Report:

> *"In conclusion, fresh water regulation may prove to be one of the most consequential modifications man can impose on nature. If we do not alter our course and give consideration to nature's needs there will be irreparable injuries inflicted on the environment for which future generations will condemn us.."*

My hypotheses can easily be tested by taking core samples in the bottom of the reservoirs and measuring dissolved silicate concentrations in the discharged waters from these reservoirs.

DEDICATION

This report is dedicated to Hans J.A. Neu.

He was a Senior Research Scientist with the Canadian Department of Fisheries and Oceans at the Bedford Institute of Oceanography , Dartmouth, Nova Scotia. A specialist for 27 years in estuarine and coastal hydrodynamics, he has studied the physical oceanography of the major waterways across Canada as well as on the continental shelf and north-west Atlantic. He died on January 28, 2009 at the age of 83.

His 1982 Reports "Man-Made Storage of Water Resources – A Liability to the Ocean Environment? Parts I and II" were published in Marine Pollution Bulletin Vol. 13, No. 1 and No. 2 and printed in Great Britain.

In 1982, Mr. H. Neu predicted the depletion of the fisheries and explained how reducing spring flows would negatively impact the transport of nutrients to the estuaries and coastal waters via the rivers and also from deep ocean waters via haline circulation and/or density currents.

The magnitude of this density current is fueled by fresh water entering the ocean via our rivers. *"In estuaries the density current varies with seasonal run-off, being at a minimum during low discharges in the winter and at its peak in spring and summer. In coastal waters which are some distance away from the fresh water sources (i.e. the Grand Banks the Scotian Shelf and Georges Bank)* and Gulf of Maine (added by me) *there can be delays of from several months to almost a year before the freshwater peak arrives*" (Hue Part 1 1982)

A February 9, 1977 article in the Sherbrooke Record in Quebec appears on page 4 and illustrates why I am dedicating this report to Hans J.A . Neu. It is very disquieting that the politicians, scientists and media failed to support his recommendations for more studying.

He was obviously right as proven by the collapse of so many fisheries by the late 1980's and the warming of the waters of the Gulf of Maine and St. Lawrence as well as the northwest Atlantic, which has been brought on by a much weaker density current due to the proliferation of reservoir hydroelectric dams by Hydro-Quebec over the past 70 years

He predicted in the 1970's and early 1980's the following negative impacts of reservoir hydroelectric dams:.

1. *"Far reaching consequences on the life and reproduction cycle in the marine environment of the region affected,"*(see Section II, on page 11.)
2. *"the next big decline (in fisheries stock) probably will be in the early or mid-eighties"* and *"will be worse, since regulation will have increased further in the meantime,"* (see Section II on page 11.)
3. *"There is a definite possibility that both winter and summer temperatures of the surface layer will increase; in winter due to an increase in upwelling of deeper warmer water, and in summer due to slower surface currents which will allow the surface layer to absorb more heat during its passage through the system. It can be assumed therefore that fresh water regulation modifies the climate of the coastal region to be more continental-like in the summer and more maritime-like in the winter."*(See Sections X-XIII on pages 22-24.)
4. *"Even if we cannot yet measure the effects with certainty in our own marine environment, similar changes must already have happened to the coastal waters of Atlantic Canada and the effect must increase as regulation of our rivers continues. Of particular concern is the increased development of hydro-power – under construction or in the design stage – in Labrador, Ugava Bay, James Bay and Hudson Bay, which are abound to threaten the productivity of the Grand Banks of Newfoundland." (See Section II on page 11.)*

Hydro dams blamed for decline in fish stocks

DARTMOUTH, N.S. (CP) — A physicist at the Bedford Institute of Oceanography says hydro-electric dams might be more to blame than overfishing for the decline of fish stocks off Atlantic Canada, and no new dams should be built until the effects are known.

Dr. Hans Neu told a seminar at the institute Tuesday that Canada, more than any other nation, has been building water control projects on its estuaries, and no one knows what effect they are having on the ocean into which the rivers flow.

Dr. Neu, whose studies have dealt with the physics of water circulation, urged biologists to carry out research to prove whether his belief is correct that dams are the chief cause of declining fish stocks.

He explained that dams disrupt the natural cycle by which nutrient-loaded fresh water flows from the rivers into the ocean.

In their natural state, rivers carry smaller flows during the winter, when precipiation is frozen as snow, and sharply increased flows after the spring thaw. This coincides with the life cycle of marine organisms, increasing food supplies as they come out of their winter hibernation and decreasing supplies when winter returns.

LEVEL CYCLES

But hydro-electric dams tend to level out the cycles, storing much of the spring and summer runoff in their reservoirs until winter, when consumer demand for power is greater.

This means that fresh-water nutrients reach the ocean in the winter, when the fish don't need them, and are lost into the barren depths beyond the continental shelf. In the ypring and summer the nutrient supply fails to increase as rapidly as is needed.

Interruptions of the fresh-water supply could have further effects, he said, by interrupting "haline currents"—currents set up by the meeting of fresh and salt water. If these currents were stopped altogether, he said, it is theoretically possible that the coastal waters could freeze over.

Dr. Neu cited a scientific study showing that Egypt's Aswan High Dam on the Nile, a hydro-electric and irrigation project, caused a decline in nutrients to the Mediterranean off Egypt, with the result that fishing dropped off sharply. The catch of sardinella had been 15,-000 tons in 1964 but declined to 4,600 tons in 1965 and only 554 tons in 1966. The dam also blocked passage of other marine life such as shrimp and eel.

MANY MAJOR DAMS HERE

Canada has more than 20 projects controlling flows at least as great as the Aswan High Dam, Dr. Neu said. There has been much concern over the effects these dams have on the inland environment, yet nobody has studied what harm they are doing to the ocean environment.

Neither the provinces who plan the projects nor the bankers who finance them could be blamed for wanting the dams to run profitably, he said.

"But shouldn't there be someone who will stand up and say: 'No, you can't do that.'"

He suggested construction of water-control projects be regulated internationally and that no new projects be permitted until their effects on the ocean are known.

SUPPLEMENTS

I. "*Hydro dams blamed for decline in fish stocks,"* in the Sherbrooke Record, Wed. Feb. 9, 1977 , pg. 4.

II. "*Maine study finds potentially* disastrous threat to single-celled plants that support all life," Christopher Cousins, BDN Staff, June 10, 2012, pgs 7 & 8.

III. *"Hydroelectric dams are destroying the Gulf of Maine fishery,"* Roger Wheeler, Special to the Bangor Daily News, January 8, 2019, pgs 9 & 10.

IV. *"The St. Lawrence is Low on Air,"* Quebec Ocean Fact Sheet @, January, 2011, pgs 28 & 29.

V. *"Less and Less Oxygen in the St. Lawrence,"* Par Beatrice Riche, Editor of the Group for Research and Education of Marine Mammals, July 24, 2017, pgs 31 & 32.

VI. *"Hydroelectric dams produce green energy? Think again,"* Stephen M. Kasprzak, Editorial to Maine Sunday Telegram, December 23, 2018, pgs. 34-36.

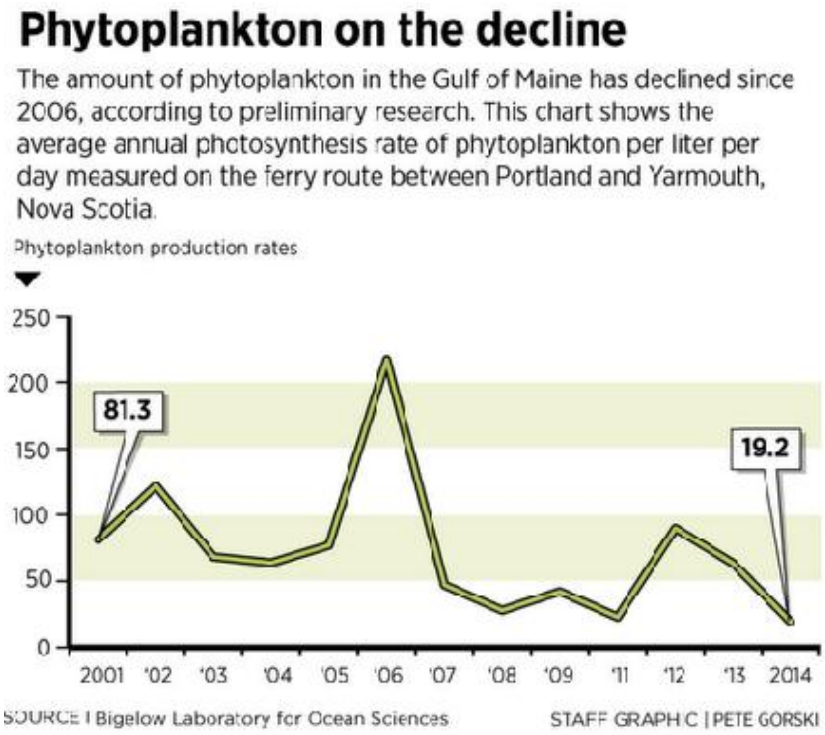
VII. *"Hydro-Quebec offers misleading claims about climate impact,"* Bradford H. Hager, Editorial to Portland Press Herald, January 5, 2019, pgs. 37-39.

VIII. *"Man -Made Storage of Water Resources – A Liability to the Ocean Envionment? Part II, "*by Hans J. A. Neu in Matine Pollution Bulletin, Volume 13, Number 2, pages 44-47, 1982, pgs. 40-43.

SECTION I PHYTOPLANKTON IS ON THE DECLINE IN THE GULF OF MAINE

This Report and my two previous ones are focused on Hydro-Québec's reservoir hydroelectric dams and how they have negatively impacted phytoplankton, fisheries and water quality in the Gulf of Maine and its watershed, which includes the Gulf of St. Lawrence, James and Hudson Bays, and Labrador Sea.

The following graph, illustrates that phytoplankton biomass in the Gulf of Maine has fallen by 75%.



In the newspaper article, reprinted on the next two pages, Mr. Balch reasoned that above normal rainfall could be impacting phytoplankton regeneration rates.

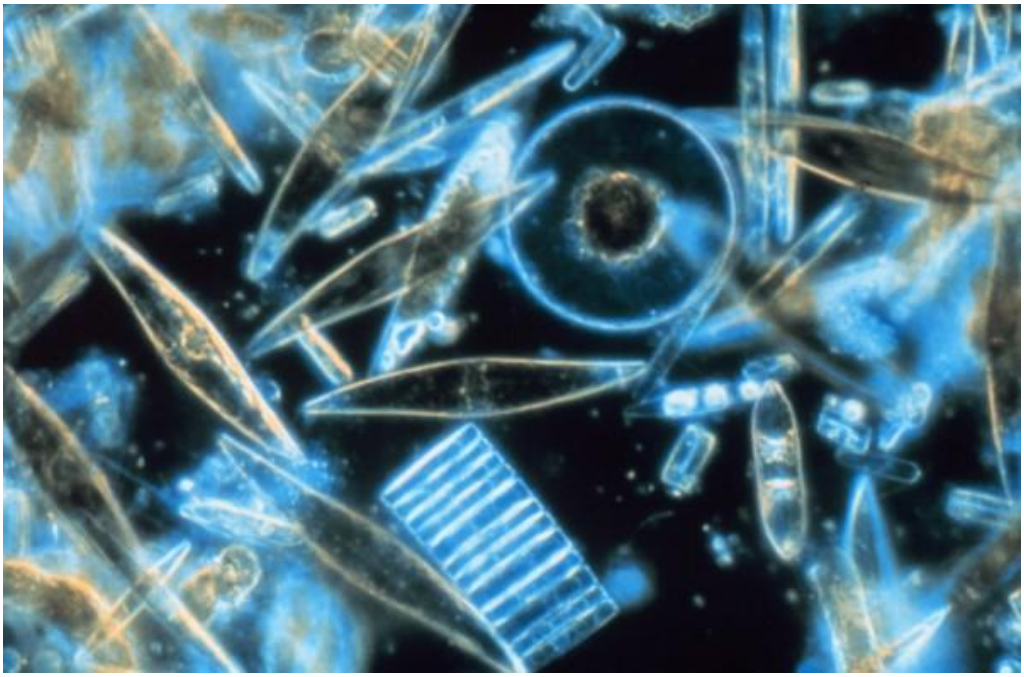
Above normal rainfall would be beneficial to phytoplankton regeneration rates by transporting more beneficial dissolved silica and nutrients to the coastal waters.

I believe the driving force of lower regeneration rates is the elimination of the "spring freshet" discharge into Gulf of St. Lawrence, James Bay and Hudson Bay and Labrador Sea.

The "natural" spring freshet of the Manicougan River as shown in Fig. 8 on page 16 has been eliminated. This freshet had a peak flow in l976 of about 3500 cubic meters per second (124,000 cubic feet per second) and the freshet began around April 1st and lasted into June. These freshets have been eliminated on hundreds of rivers by the reservoir hydroelectric dams listed in Tables 1-3 on pages 14 and 15.

In a 1980's study by Therriault and Lavasseur on Lower St. Lawrence Estuary they observed "*At high discharge rates (spring and fall) the whole Lower Estuary forms a single freshwater plume."*

Maine study finds potentially disastrous threat to single-celled plants that support all life



Diatoms are one of the most common types of phytoplankton.

By Christopher Cousins, BDN Staff • June 10, 2012 5:02 pm

BOOTHBAY, Maine — Phytoplankton. If the mention of the tiny plant organisms that permeate the world's oceans isn't enough to pique your interest, consider this: They produce the oxygen in every other breath you take.

Still not interested? This is where it's hard not to take notice. In 2007, the reproduction rate of phytoplankton in the Gulf of Maine decreased suddenly by a factor of five — what used to take a day now takes five — and according to a recently released study by the Bigelow Laboratory for Ocean Sciences in Boothbay, it hasn't bounced back.

So what does it mean? According to Barney Balch, the lab's senior research scientist and lead author of the study, such a change in organisms at the bottom of the planetary food chain and at the top of planetary oxygen production could have disastrous consequences for virtually every species on Earth, from lobsters and fish that fuel Maine's marine industries to your grandchildren. But the 12-year Bigelow study focused only on the Gulf of Maine, which leads to the question, will it spread?

"I don't think it takes a rocket scientist to know that if you shut down the base of the marine food web, the results won't be positive," said Balch.

Balch said the study, which was published recently in the Marine Ecology Progress Series, provides one of the strongest links to date between increases in rainfall and temperature over the years and the Gulf of Maine's

ecosystem. Key factors in the study's conclusions were driven by 100 years of records on rainfall and river discharge, both of which have increased by between 13 and 20 percent over the past century.

In fact, of the eight heaviest rainfall years in the past century, four of them fell between 2005 and 2010. Balch said that increased precipitation, along with water melting from the polar ice caps, could be the reason for the problems discovered in the phytoplankton regeneration rate. The fact that Gulf of Maine's water temperature has risen about 1.1 degrees Celsius — which is on par with what is being seen around the world — could also be a factor.

"The major change that we're seeing is that we are now able to put [precipitation and temperature data] into better context," said Balch. "It's so striking that the increase is so statistically significant."

Though heavier water flows into the Gulf of Maine might be a major factor, Balch said it may actually be side-effects of that phenomenon — such as decreased salinity and increasing amounts of materials like rotting plant matter being swept up in the stronger currents — that are actually causing the problem. In other words, when the water is brown it's bad for phytoplankton because the added material in the water starves the single-celled plants of sunlight.

During the 12-year study, which focused on the area of sea between Portland and Yarmouth, Nova Scotia, researchers noticed that plumes of material coming from Maine rivers were reaching 70-100 kilometers into the ocean — farther than had ever been seen before. The outflows also prevent nutrient-rich deep-ocean water from circulating into the Gulf of Maine.

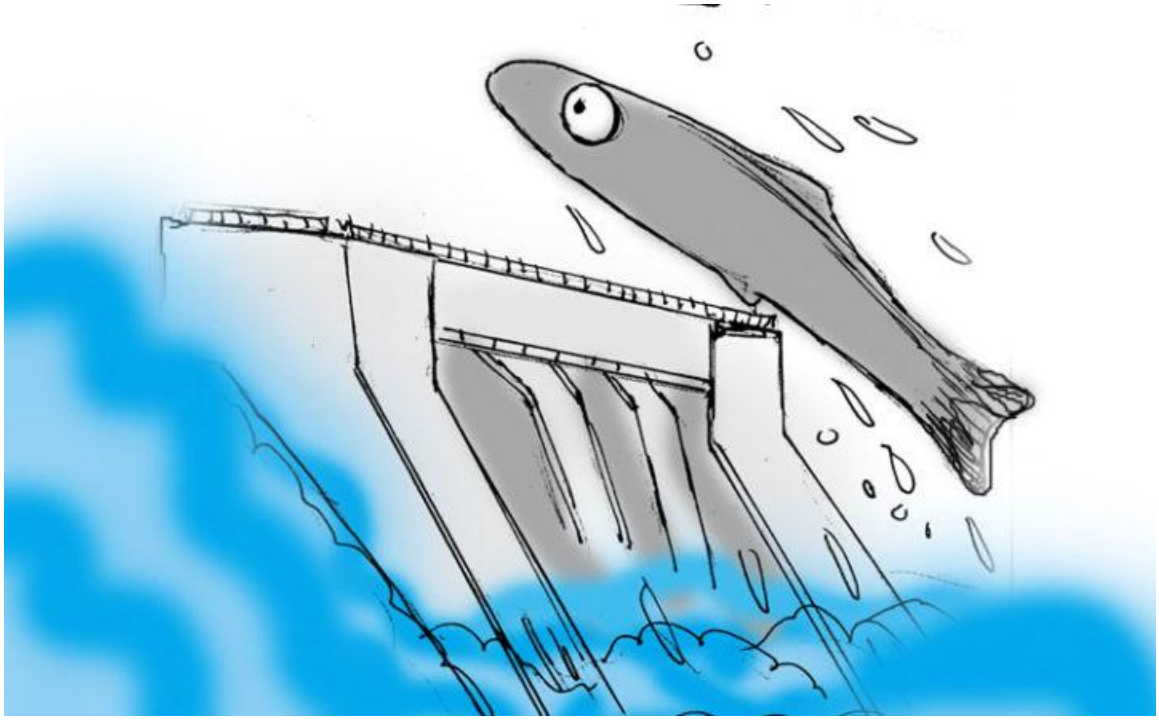
"When you collect the amount of data that we've collected, it's hard to discount the significance," said Balch. "I know there are skeptics out there who still discount the issue of climate change, but the evidence now is just striking. We need to be thinking very carefully about trying to slow this down. It didn't happen overnight and it's not going to go away overnight."

Balch said that the Gulf of Maine is small compared to the world's oceans, but not without the capacity to have a marked effect on the overall ecosystem of the Atlantic Ocean. If the problem with the phytoplankton persists, fishermen will notice its effects long before the world's oxygen supply suffers. Phytoplankton is a key food source for several species of larval fish and lobster populations.

"People shouldn't freak out about this but they should think very carefully about the long-term changes that we humans are making," he said. "This study shows the incredibly tight connection that there is between land and the ocean, especially in the coastal ocean."

THIS SPECIAL EDITORIAL TO THE BANGOR DAILY NEWS ON JANUARY 8, 2019 BY ROGER WHEELER EXPLAINS THE HOW AND WHY OF THIS DECLINE IN PHYTOPLANKTON IN THE GULF OF MAINE.

Hydroelectric dams are destroying the Gulf of Maine fishery



George Danby | BDN

By Roger Wheeler, Special to the BDN • January 8, 2019 9:08 am

In a June 10, 2012, BDN article, "Study finds potentially disastrous threat to single-celled plants that support all life on Earth," the late BDN reporter Christopher Cousins asked if the reader is interested in the rapid disintegration of the marine ecosystem. Yes, Chris, and although over six years late you have my full attention.

Since he wrote this compelling article, we now are aware that the essential nutrient of the most important single-celled plants is dissolved silicate and reservoir hydroelectric dams work to extinguish the annual free transport of this nutrient via the rivers into the ocean currents feeding the Gulf of Maine.

If we could magically engineer a tree that produces 10 times the oxygen of any existing equally sized tree on Earth, we would worship it. If we could engineer a tree that removes 40 percent of the carbon dioxide from the air and water and permanently buried its absorbed carbon in the depths of the soil, we would welcome it. With this special tree, we might have a fighting chance against accelerating global warming.

Here on Earth, there is a plant that is only 2 percent of the Earth's biomass but provides us with 20 percent of the oxygen we breathe. This plant removes a significant percentage of the carbon dioxide from the ocean and

miraculously permanently sequesters the carbon it contains in the deep ocean sediments. This plant is the diatom, a phytoplankton, and it is a miracle "tree."

Tragically, we are destroying the diatom populations. Worldwide, diatom numbers, like other beneficial phytoplankton, are disappearing by about 1 percent per year. In the Gulf of Maine, phytoplankton, including diatoms, have decreased by a factor of five in just 17 years. Diatoms require adequate dissolved silicate to grow their heavy thick shells. Worldwide, the proliferation of tens of thousands of mega dams over the last 70 years is preventing silica and other important nutrients from reaching the oceans.

Ground zero for the impacts of dams is the Gulf of Maine. This area of the earth was the finest fishery because of its huge watershed delivering copious amounts of dissolved silicate annually to the Gulf of Maine. The rivers of New England, the Canadian Maritime Provinces and Quebec and Ontario all delivered nutrients like no other place on Earth. The St. Lawrence River, by discharge volume, is the second largest river in North America. Nothing is more important to estuaries and coastal water ecosystems than the seasonal timing and volumes of freshwater flow.

Now, the regulation of river flow in the US and Canada has moved to follow a highly unnatural policy of diminishing if not eliminating the nutrient delivering spring freshet, and maintaining low flows from spring through the fall while reservoir storage dams release high flows in the winter when flows were naturally at their lowest. In Canada, the size and numbers of dams and reservoirs are staggering.

Around the world and in Canada more hydro dam projects are planned. Not only do these dams change nutrient delivery in northern seas but they release vast quantities of warm reservoir water in the winter and eliminate the natural cold spring freshet waters. It is not surprising the Gulf of Maine is warming faster than any other ocean body. The numbers and sizes of the diatoms have been reduced as more and more reservoir dams have been discharging silica depleted water into the ocean currents that feed the Gulf of Maine. Unnatural freshwater flow regulation is a climate and marine ecological train wreck for the microscopic diatom to the noble right whale. Dams have weakened the natural function of diatoms to feed bountiful fisheries and reduce carbon dioxide levels.

We will not forget Chris Cousins' 2012 article and we will continue to sound this alarm.

Roger Wheeler of Standish is the president of Friends of Sebago Lake.

SECTION II REDUCING THE FLOW OF FRESH WATER DURING SPRING AND SUMMER WHILE INCREASING IT DURING WINTER CHANGES THE SEASONAL COMPOSITION OF THE RECEIVING WATERS IN ITS SURFACE LAYER AND THE SEASONAL STRENGTH OF THE DENSITY CURRENT.

> *"What is less well known is that upwelling is also generated by density currents associated with the excursion of large amounts of fresh water over coastal regions and continental shelves such as found along the Atlantic coast of Canada. The latter represents a continuous transport of nutrient laden water on a scale far surpassing that of Gulf Stream eddies."*

This was written by Mr. Hans Neu in a 1982 Report Man-Made Storage of Water Resources-A Liability to the Ocean Environment? Part II. I have reprinted Part II (see Pgs. 40-43) and have quoted Mr. H. Neu extensively from Part I of his Report.

I have read and reviewed thousands of Reports, and I would describe Mr.H. Neu as an Einstein in regards to estuarine and coastal hydro dynamics.

In 1982, he predicted the decline and eventual collapse of the fish stock of the Gulf of St. Lawrence.

> *"Life as we know it in our coastal waters and its level of productivity has evolved over thousands of years in response to these seasonal variations. Changing this pattern by reducing the flow of fresh water during the biologically active season of the year, or even reversing the cyclic flow altogether, represents a fundamental modification of a natural system. Such a modification must have far reaching consequences on the life and reproduction cycle in the marine environment of the region affected. Thus, it follows that storage schemes already implemented in Canada are having an impact on the biological resources of the Atlantic coastal region. Unfortunately, data to prove this quantitatively are masked by other possibilities. For example, a drastic decline in fish catches in the late sixties and early seventies is currently attributed to over-fishing in the internationally regulated area prior to the establishment of the Canadian 200 mile zone. In recent years, it appears that as a result of the reduced fishing pressure, some stocks are showing significant recovery. This fact, however, also happens to coincide with a period of increasing natural discharge in our river systems.*
>
> *As demonstrated by Sutcliffe (1972, 1973) and Sutcliffe et. al. (1976,1977), fish catches, especially in the Gulf, varied correspondingly, being larger during the fifties but smaller during the sixties with an increase in the seventies after allowing a delay of a number of years for the fish to mature. This implies that the low flow period of the sixties imposed stresses on the productivity of the system. Unfortunately, at the same time as the flow was at its lowest level, regulation was "stepped up from an average of 4000 $m^3 s^{-1}$ to about 8000 $m^3 s^{-1}$ with the implementation of the Manicouagan-Outardes-Bersimis hydro-power complex. I contend that this further reduction in the spring flow was probably the final straw in the decline of the fish stocks. The larger flows of the seventies decreased the proportional effect of the regulation and gave the fish stocks an opportunity to recover. The next big decline probably will be in the early or mid-eighties when another low discharge period is predictable from the long term cycles (11 and 22 yr) of water levels in the Great Lakes. This decline however, will be worse, since regulation will have increased further in the meantime."* Neu Part II 1982)

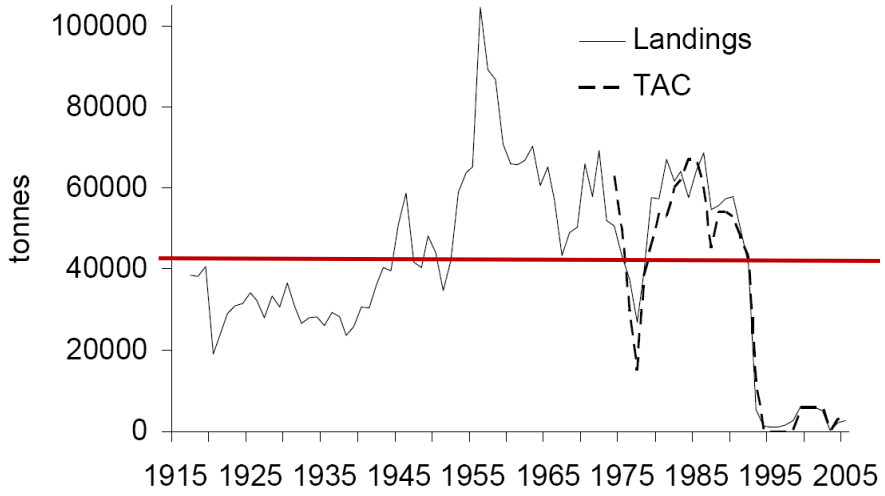


Figure 2: Landings and TAC (t) for the southern Gulf of St. Lawrence cod stock.

Source: Canadian Science Advisory Secretariat Science Advisory 2006/014
Assessment of Cod in the Southern Gulf of St. Lawrence, April 2006

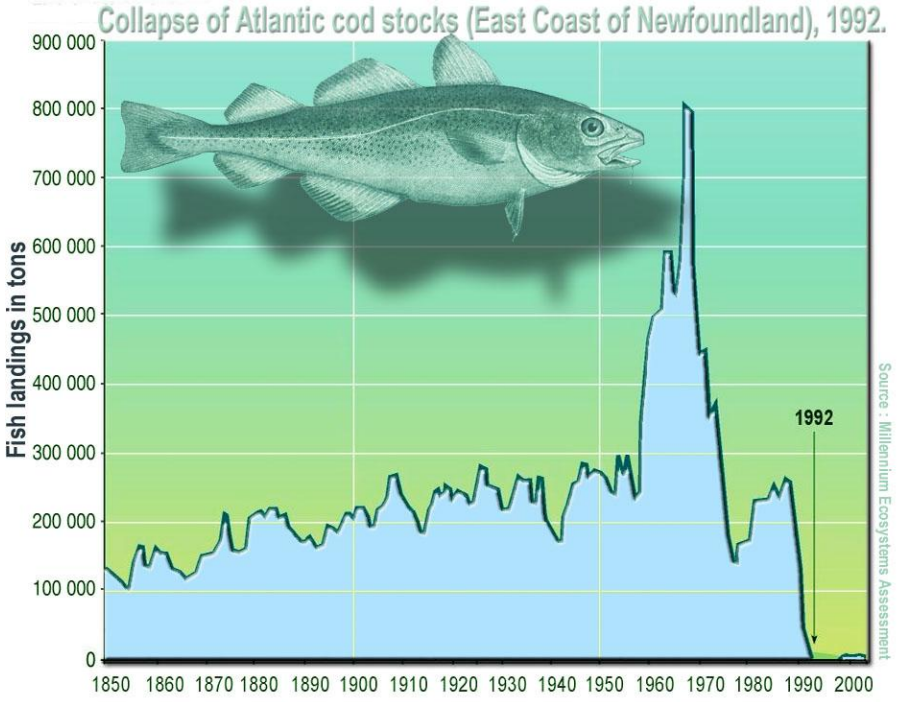
He also predicted the decline of the fishing stock of the Grand Banks of Newfoundland:

> *"Even if we cannot yet measure the effects with certainty in our own marine environment, similar changes must already have happened to the coastal waters of Atlantic Canada and the effect must increase as regulation of our rivers continues. Of particular concern is the increased development of hydro-power – under construction or in the design stage – in Labrador, Ungava Bay, James Bay and Hudson Bay, which are abound to threaten the productivity of the Grand Banks of Newfoundland.* (See Tables I - III.)
>
> *Until now it was assumed that hydro power is 'clean' with little or no impact on the environment, particularly that of the ocean. That this might not be the case is difficult to understand. Obviously, designing storage schemes and forecasting output of power is easier to grasp than to quantify the changes imposed on the population dynamics of the biota in the coastal region. There is the possibility that damages imposed by man-made lakes on the ecosystem may outweigh the benefits they provide. This is the crux of the problem. The prime task therefore is to establish a cost-benefit ratio in which all factors, also those which affect the ocean environment, as included. This should be a prerequisite for any further development."*
> *(Neu* Part II 1982).

The following appears in my October 15, 2018 Report: *"The Problem Is The Lack of Silica."*

STARVATION OF ATLANTIC NORTHWEST COD FISHERY

There have been two collapses of the Atlantic northwest cod fishery in the past fifty years, and they are illustrated in the graph below. Both collapses have been analyzed as one and the cause blamed on overfishing and global warming.



There is no doubt that overfishing caused the spike in cod landings during the 1960's and the subsequent decline in the 1970's.

However, the second and more lasting decline occurred in the 1989-1991 period. The major factor of this decline has been the lack of silica caused by the capture of the spring freshet in the reservoirs of hydroelectric facilities owned by Quebec Hydropower. These facilities have significantly reduced the transport of dissolved silica and other nutrients needed for healthy spring and summer diatom phytoplankton blooms in the northwest Atlantic and Gulf of Maine. Mr. H. Neu's predictions were correct, and thanks to Mr. H. Neu's Reports, we all know much more as to the how and why there was a lack of silica.

Table I

Reservoir Hydroelectric Generating Stations
Discharging into Estuary and Gulf of St. Lawrence River

Owner	Name	Capacity in Megawatts (MW)	Head (FT)	Commissioned	Watershed
Hydro-Quebec	Rapids Blanc	204	33	1934-35	St. Maurice
Hydro-Quebec	Bersimis-1	1,178	267	1956	Betsiamites
Hydro-Quebec	Bersimis-2	869	116	1959	Betsiamites
Hydro-Quebec	Jean-Lesage (Manic-2)	1,145	70	1965-67	Manicouagan
Hydro-Quebec	Outardes-4	785	121	1969	Outardes
Hydro-Quebec	Outardes-3	1,023	144	1969	Outardes
Hydro-Quebec	Outardes-2	523	82	1978	Outardes
Hydro-Quebec	Manic-5	1,596	142	1970	Manicouagan
Hydro-Quebec	Rene-Levesque (Manic-3)	1,244	94	1975-76	Manicouagan
Hydro-Quebec	Manic-5-PA	1,064	145	1989	Manicouagan
Hydro-Quebec	Sainte-Marguerite	882	330	2003	Saint-Marguerite
Hydro-Quebec	Touinstouc	526	152	2005	Touinstouc
Hydro-Quebec	Peribonka	405	68	2007-08	Peribonka
Hydro-Quebec	Romaine-2	640	156	2014	Romaine
Hydro-Quebec	Romaine-1	270	63	2015-16	Romaine
Hydro-Quebec	Romaine-3	395	119	2017	Romaine
		12,749			

Table II

Reservoir Hydroelectric Generating Stations Discharging
Into James Bay and Hudson Bay

Owner	Name	Capacity in Megawatts MW	Commissioned	Watershed
Manitoba hydro	Kelsey	287	1957	Nelson
Manitoba Hydro	Kettle	1,220	1970	Nelson
Manitoba-Hydro	Lang-Spruce	980	1977	Nelson
Manitoba –Hydro	Jenpeg	122	1979	Nelson
Hydro Quebec	Robert-Bourassa	5,616	1979-81	LaGrande
Hydro Quebec	LaGrande-3	2,417	1982-84	LaGrande
Hydro Quebec	LaGrande-4	2,779	1984-86	LaGrande
Manitoba-Hydro	Limestone	1,350	1990	Nelson
Hydro-Quebec	Brisay	469	1993	Caniapiscau
Hydro Quebec	LaGrande-2-A	2,106	1991-92	LaGrande
Hydro Quebec	Laforge-1	878	1993-94	Laforge
Hydro Quebec	LaGrande-1	1,463	1994-95	LaGrande
Hydro Quebec	Laforge-2	319	1996	Laforge
Hydro Quebec	Eastmain-1	507	2006	Eastmain
Hydro Quebec	Eastmain-1-A	829	2011-12	Eastmain
		21,342		

Table III
Summary of Tables 1 & 2
Annual Capacity in Mega Watts (MW) of Reservoir Hydroelectric
Generating Stations Discharging Into

	James Bay and Hudson Bay	St. Lawrence River	Labrador Current	Total
1930-39				
1940-49		204		204
1950-59	2,334	2,047		2,334
1960-69		2,953		2,953
1970-79	2,200	3,363	5,428	10,991
1980-89	10,812	1,064		11,876
1990-99	6,116	469		6,585
2000-2009	507	1,813		2,320
2010-2018	829	1,305		2,134
	21,220	12,749	5,428	39,397

SECTION III HYDRO-QUEBEC MANAGES ITS DAMS TO TRANSFER THE RUN-OFF FROM THE BIOLOGICALLY ACTIVE SEASON TO THE BIOLOGICALLY INACTIVE PERIOD OF THE YEAR.

"In higher latitudes during the winter, river run-off is at a minimum while power demand is at its maximum. This is shown in Fig. 7, where an average hydrograph and the seasonal power demand of a city in northern regions are plotted. As can be seen, water supply and power demand are out of phase by nearly half a year.

Developers of electrical energy view this as an inconvenience of nature; thus they reverse the natural run-off cycle by storing the spring and summer flow in artificial lakes to be released during the winter. An example is shown in Fig. 8 for the Manicouagan River at Manic 5 power station (Neu Part I, 1982)."

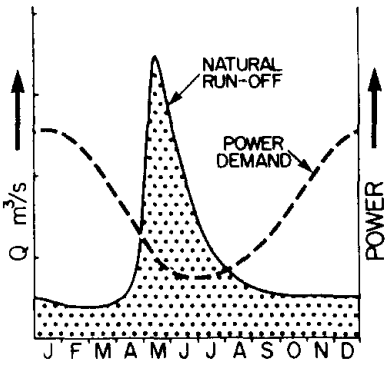


Fig. 7 Typical hydrograph and seasonal power demand.

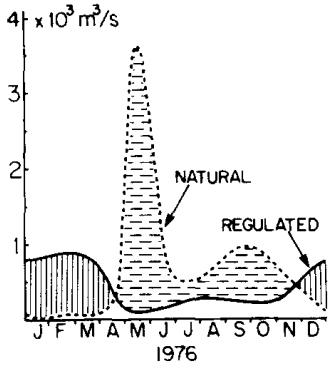


Fig. 8 Natural and regulated discharge of the Manicouagan River at Manic 5 power station.

SECTION IV THIS IS ANALAGOUS TO STOPPING THE RAIN DURING THE GROWING SEASON AND IRRIGATING DURING THE WINTER, WHEN NO GROWTH OCCURS (Neu Part 1, 1982).

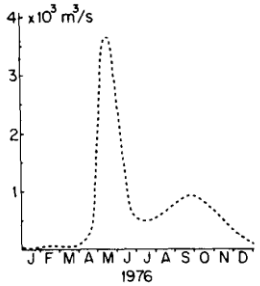
Such an alteration in seasonal precipitation rates would be catastrophic for the world's ecosystem. The trees in our forests would die off and carbon sequestration through photosynthesis would suffer a devastating blow.

The farmer's crops and fields would be barren leading to widespread hunger and starvation of livestock and world's population.

Man-made storage of our rivers has destroyed our oceans in the same way, but unfortunately the destruction goes unnoticed and depletion of the fisheries has been buried under sparkling blue water on a sunny day.

SECTION V THE HYDROGRAPH IN FIGURE 1 SHOWS THE MANICOUAGAN RIVER DISCHARGE WITH A MAXIMUM IN MAY WHICH IS 30 TO 40 TIMES LARGER THAN DURING WINTER MONTHS OF JANUARY-MARCH.

"In northern latitudes, winter precipitation in the form of snow remains stored until the following spring. During this period, biological activities slow down and become dormant with little or no need for nutrients. With the onset of spring, the snow melts, creating large river flows particularly during the early part of the season. At the same time the annual growth cycle begins and the nutrients required to support the renewed activities are provided on the land by the fresh water directly, and in the ocean indirectly by increasing the entrainment of nutrient-rich deep ocean water into the surface layer.



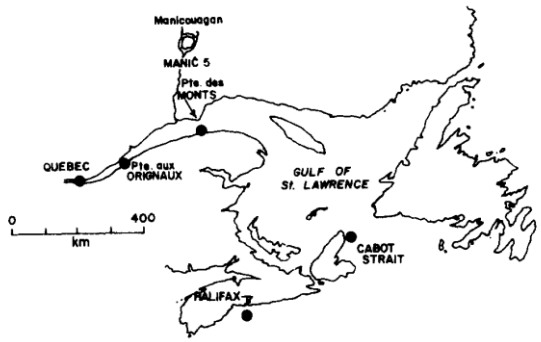


Fig. 1 Natural run-off to the Manicouagan River at Manic 5 power station.

Source: Neu Part I (1982)

A typical monthly run-off hydrograph of a snow-fed river is given in Fig. 1. It shows the Manicouagan River discharge with a maximum in May which is 30-40 times larger than during the winter months.

The seaward progress of the fresh water totals of the St. Lawrence and its tributaries, including the Manicouagan, is shown in Fig. 2a. These totals contain fresh water from melting surface ice which has formed in the system during the winter months. The estimated contribution at Cabot Strait is on the average about 4000 $m^3 s^{-1}$ and at its peak probably 6000, $m^3 s^{-1}$. The bulk of the spring freshet passes quickly through the estuary in May, then slows over the Magdalen Shoal in the southwestern Gulf in summer, and arrives at Cabot Strait by the beginning of August. From here it can be traced to Halifax and even to Georges Bank at the entrance to the Gulf of Maine in the autumn. (Man-Made Storage of Water Resources-A Liability to the Ocean Environment?"

(*Part* I, by Hans J. A. Neu 1982*).*

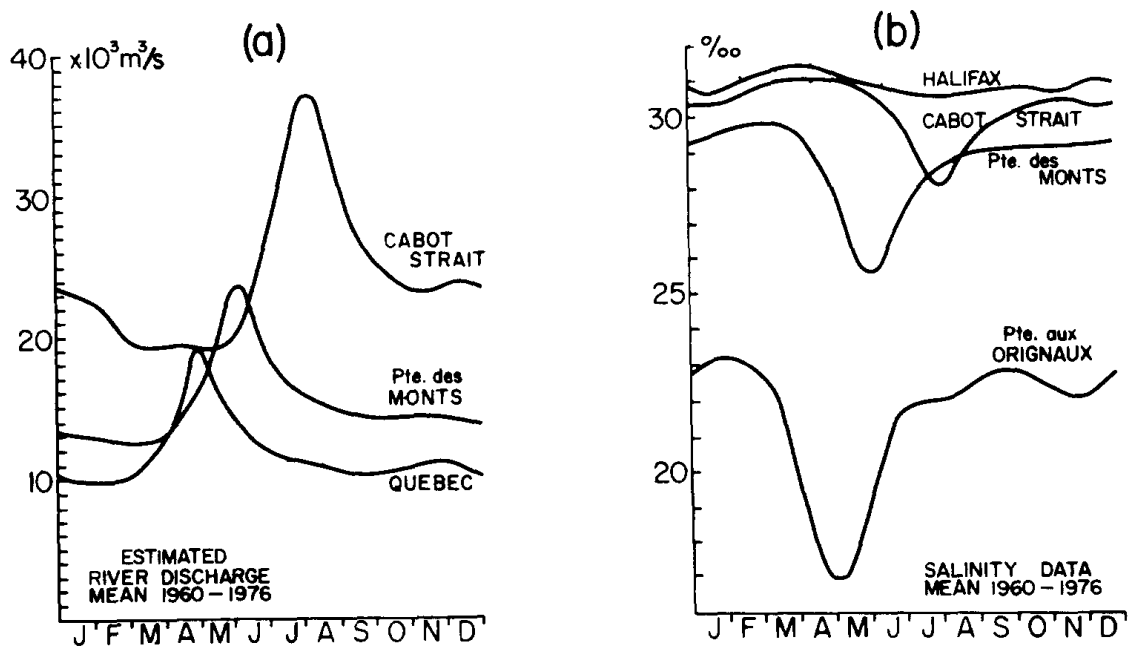


Fig. 2 Mean monthly (a) fresh water and (b) surface salinity variation for stations along the St. Lawrence system and Scotian Shelf.

Source: Neu Part I (1982)

SECTION VI MR. NEU PREDICTED IN HIS 1982 REPORT, "ARTIFICALLY STORING THE SPRING AND SUMMER RUN-OFF TO GENERATE POWER THE FOLLOWING WINTER MUST HAVE A SIGNIFICANT IMPACT ON THE OCEAN ENVIRONMENT AND ON THE CLIMATE OF THE MARITIME REGION."

"A primary reason for estuaries, embayments and continental shelves being among the most fertile and productive regions on earth is the supply of fresh water from land run-off which, on entering the ocean, induces mixing and the entrainment of nutrient-rich deep water into the surface layer. For temperate regions such as Canada, the natural fresh water supply varies sharply with season - being low during the winter when precipitation and run-off is stored as snow and ice, and very large during spring and early summer when the winter storage melts. Nearshore biological processes and adjacent ocean activities are attuned to this massive influx of fresh water - this is the time when reproduction and early growth occur. To modify this natural seasonal run-off for human convenience is to interfere with the hydrological cycle and with the physical and biological balance of the coastal region. Artificially storing the spring and summer run-off to generate power the following winter must have a significant impact on the ocean environment and on the climate of the maritime region."

SECTION VII MR. NEU'S 1982 PREDICTION OF "MUST HAVE A SIGNIFICANT IMPACT," WAS BORNE OUT IN JUST A FEW YEARS, AS REVEALED BY THE FOLLOWING OBSERVATIONS:

1. ***"Serious levels of hypoxia (a lack of oxygen) first appeared in the St. Lawrence Estuary in the mid-1980's.*** *In 2003, this area covered approximately 1,300 km² (500 sq. miles) of the sea floor, and has continued to grow over the last few years. In 70 years, the concentration of oxygen has decreased by half at depths greater than 250 meters."* (Quebec Ocean Fact Sheet 2 – January 2011. See pages 28 & 29.)
2. **A tenfold increase in the accumulation rate of dinoflagellate cysts over the last four decades in the sediment of Lower St. Lawrence Estuary. Thibodeau, et.al. 2005**. This is equivalent to an average annual increase of 25% per year. Forty years from 2005 is 1965, and two large reservoir hydroelectric facilities were commissioned in 1956 and 1959. (See Table 1 on page 14.)
3. **Dissolved oxygen concentrations of 45 micromoles were recorded in June of 2017 in deep waters off Rimouski and Mantane, while concentrations are usually in 200-300 micromoles. (Whales online-Riche 7/24/17** Eutrophication is most likely the driving force in the oxygen depletion in the St. Lawrence Estuary**.**

SECTION VIII CLEARLY DIFFERENTIATES BETWEEN 2 TYPES OF MODIFICATION OF THE SILICA BIOGEOCHEMICAL CYCLE THAT OCCUR WITH EUTROPHICATION AND BOTH ARE CONTRIBUTING TO THIS OXYGEN DEPLETION IN THE ST. LAWRENCE ESTUARY

The first occurs behind the reservoir dams, where there is:

> *"a reduction in the water column silica reservoir through a modification of the biogeochemical cycling of silica. Increased diatom production results in increased deposition and preservation of diatom silica in sediments, which in turn leads to reductions in water column DSi concentrations." (*Conley, et. al. 1993)
>
> *"When the moving water of the river hits a reservoir and slows down and all those particles that were in suspension sink out, the water becomes a lot more clear. This means light can penetrate into the water more than the couple of feet or inches it could before and that means photosynthetic plankton living in the water can suddenly make a good living. Phytoplankton can finally fix carbon into organic matter faster they respire it away. They can begin to grow.*
>
> *But a dam means not only light, but also the time to put it to good use. Water that would have shot through that stretch of river in hours to days will now spend weeks to months to years in the extra reservoir volume. That's ample opportunity for phytoplankton like diatoms to build up biomass into thick blooms and to remove almost all the dissolved silica in the water. And because these stretches of quiet water with an enormously tall concrete wall at the downstream end are great places to build up sediments, the biogenic silica that has been produced stands a very good chance of sinking down and getting buried. The buck stops here, as they say, and as a result of downstream areas are starved of silica."* (Silica Stories, Conley et. al. 2017).

"The second occurs as N and P are added to aquatic systems through anthropogenic activities. Because DSi is not added to any significant extent with nutrient enrichment (Office and Ryther 1980*) additions of N and P will change the Si:N and Si:P ratios of receiving waters. These changes alone can have a substantial impact on ecosystem dynamics.*

While nitrogen and phosphorus are the 2 most important nutrients governing overall algal growth (Ryther and Dunstan 1971, Schindler 1977, Hecky and Kilham 1988), *the ratios of nutrients present* (Tilman et al. 1982) *and availability of dissolved silicate* (Kilham 1971, Egge & Aksnes 1992) *can regulate the species composition of phytoplankton assemblages (*Fig. 1). *Growth of diatoms depends on the presence of dissolved silicate* (DSi). *Whereas growth of non-diatom phytoplankton does not. When concentrations of DSi become low, other types of algae that do not require DSi can dominate algal community composition and decrease the relative importance of diatoms in phytoplankton communities.*

Schelske & Stoermer (1971, 1972) also hypothesized that the limitation of diatom flora by reduced DSi supplies would lead to drastic and undesirable changes in the ecosystem where the phytoplankton community was dominated by green and blue-green algae during summer when DSi was limiting for diatoms,. The hypothesis that modification of the phytoplankton flora would occur with eutrophication was formalized and its implications were discussed for the coastal ocean and marine systems by Officer & Ryther (1980) and Ryther & Officer (1981). These 2 studies identified essentially 2 distinctly different phytoplankton-based ecosystems; one dominated by diatoms and the other a non-diatom ecosystem usually dominated by flagellates, including dinoflagellates, chrysophytes, chlorophytes and coccolithophores, which may also contain large proportions of non-mobile green and blue-green algae. They suggested that the diatom food web contributed directly to large fishable populations, that other algal-based food webs were undesirable either because species remain ungrazed or fuelled food webs that are economically undesirable, and that changes in species composition would lead to oxygen depletion in bottom waters.(Conley et. al. 1993).

SECTION IX REDUCED DISSOLVED SILICATE HAS LED TO EXCESS NITROGEN IN OCEAN WATERS, WHICH IS AS HARMFUL TO THE MARINE ENVIRONMENT AS EXCESS CARBON IS IN THE ATMOSPHERE.

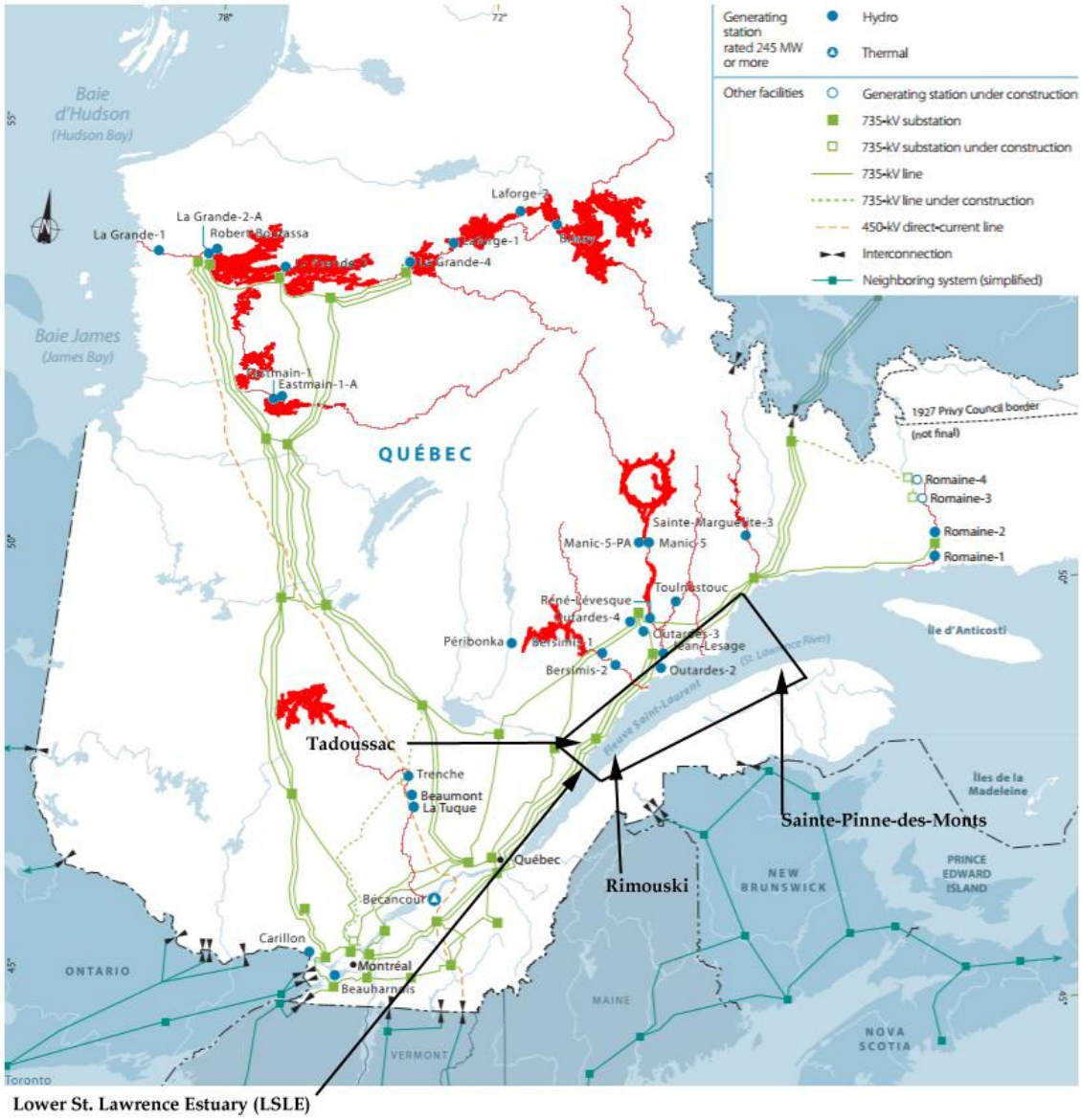
Less dissolved silicate in the upper waters of the Estuary and Gulf has allowed the increased nitrogen input from sewer treatment plants and storm water runoff to fuel an explosion in the growth of non-siliceous algal growth. This increase in algal growth (eutrophication) has lead to oxygen depletion throughout the water column and a limitation in some of the bottom waters.

Many politicians and scientists have turned their backs on how and why silicate retention behind dams affects marine biochemistry and the ecosystem structure in coastal waters and estuaries. These are probably some of the same people who have accused the fossil fuel industry of covering up how burning fossil fuels is causing climate change!

THE ST. LAWRENCE IS LOW ON AIR

The zone most affected by the reduction of oxygen in the St, Lawrence Estuary extends from Tadousssac at the confluence of the Saguenay River and the St. Lawrence to the northwest of the Gulf of St. Lawrence.

(Quebec Ocean Fact Sheet 2 January 2011)



Red Areas Highlighted Above Represent The Man-Made Storage of Water Resources Being Choked Off From Feeding The Marine Ecosystem

SECTION X HOW RIVER WATER INTERPLAYS WITH SALT WATER AND ITS SEASONAL VARIATION

"THE MOST OUTSTANDING FEATURE IN THE ENCOUNTER BETWEEN FRESH WATER AND SALT WATER IS THE FORMATION OF A CURRENT WHICH OCEANOGRAPHERS REFER TO AS HALINE CIRCULATION AND ENGINEERS AS DENSITY CURRENT. *The energy system which generates this motion is in principle the same as that which generates the winds in the atmosphere. While the winds are the result of inequalities in barometric pressure caused by non-uniform heating of the atmosphere under solar radiation, the density current in coastal waters and estuaries is primarily the result of the difference in density between fresh water of the run-off and the salt water of the ocean.*

There are basically two force components which generate this motion. First, fresh water entering the ocean raises the height of the water surface above the height of the ocean and establishes a horizontal pressure gradient. Water flows along this gradient resulting in a seaward flow of the surface water. The pressure gradient and thus the surface flows are maintained by the continuous input of river water. Second, sea water is more dense than river water and since pressure at depth depends on the water density times the water column height, there is a certain depth where the pressure from the low-density river water will be equal to the pressure from the denser sea water.

As shown schematically in Fig 3, below this depth the pressure difference is landward directed and above this point it is seaward directed. This arrangement imposes a two-layer flow system in which, as far as an estuary is concerned, the surface layer flows outward and the deeper layer flows inward. The major manifestation of this principle and the mixing involved is demonstrated by the large variation in salinity and temperature throughout an estuary.

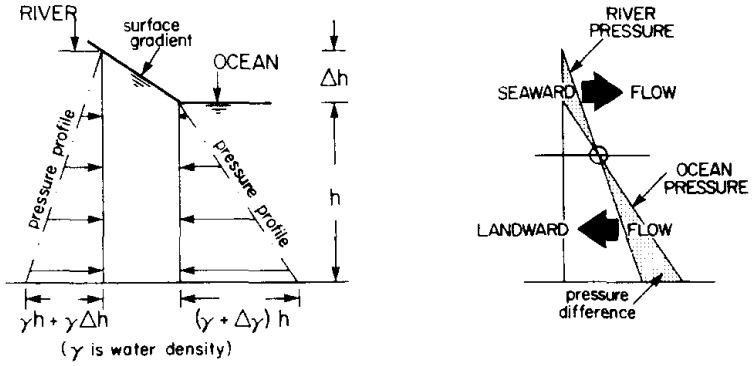


Fig. 3 Schematic diagram of pressure distributions for density currents.

SECTION XI OBVIOUSLY, THE TWO-LAYER CURRENT SYSTEM ACTS LIKE A LARGE NATURAL PUMP WHICH CONSTANTLY TRANSPORTS LARGE QUANTITIES OF DEEP OCEAN WATER ONTO THE CONTINENTAL SHELF AND THEN INTO THE EMBAYMENTS AND ESTUARIES.

Just as for the winds in the atmosphere, the, magnitude of the current is proportional to the pressure difference. Hence in times where more fresh water enters the ocean, the longitudinal gradient seaward increases and with it the strength of the current system. From this it follows that in estuaries the density current varies with the seasonal run-off, being at a minimum during the low discharges in winter and at its peak during the large discharges in spring and summer. In coastal waters which are some distance away from the fresh water source (i.e. the Grand Banks, the Scotian Shelf and Georges Bank) there can be delays of from several months to almost a year before the freshwater peak arrives.

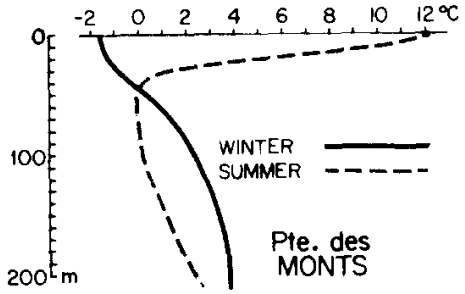


Fig. 6 Vertical temperature profile at Pointe des Monts in winter and summer.

SECTION XII CONCERNING THE TEMPERATURE OF THE WATER, SIMILAR VARIATIONS OCCUR BUT IN THIS CASE NOT EXCLUSIVELY DUE TO FRESH WATER BUT TO SEASONAL WARMING AND COOLING ALSO.

As shown in Fig. 6, the upper layer warms during the summer and cools during the winter. This trend is reversed in the deeper layer where during the summer an intermediate colder layer forms as a residue of preceding winter cooling, and is sandwiched between two warmer layers. This 'cold water' layer is characteristic of most of the coastal waters in the western North Atlantic. Although temperature, particularly during warming in spring, plays an important role in the biological activities of the upper layer, it has less influence on the density of the water, and hence on the motion and mixing, than the fresh water of the river.

SECTION XIII CONCERNING THE TEMPERATUARE OF THE WATER, THERE WILL ALSO BE CHANGES BUT SINCE THIS PROPERTY IS NON-CONSERVATIVE, IT IS DIFFICULT TO PREDICT THE FULL EFFECT.

There is a definite possibility that both winter and summer temperatures of the surface layer will increase; in winter due to an increase in upwelling of deeper warmer water, and in summer due to slower surface currents which will allow the surface layer to absorb more heat during its passage through the system. It can be assumed therefore that fresh water regulation modifies the climate of the coastal region to be more continental-like in the summer and more maritime-like in the winter.

SECTION XIV THE GREATEST CONSEQUENCES WILL ARISE, PROBABLY, FROM CHANGES IMPOSED ON THE DENSITY CURRENT.

This current determines the transport of deeper water from the ocean onto the shelf and from there into the embayments and estuaries. Reducing the flow of fresh water during the spring and summer decreases the strength of the density current to the point where, if taken far enough, it could be stopped altogether, while increasing the fresh water during the winter increases the current. Except where nutrients are produced locally, their rate of supply is directly related to the volume of salt water which carries them. A reduction in the transport of this water therefore decreases the influx of nutrients – the natural food supply – during the biologically active season of the year. An increase of supply during the winter does not compensate for these losses since primary and secondary production does not occur during this period, and the nutrients will return to the ocean body without being utilized.

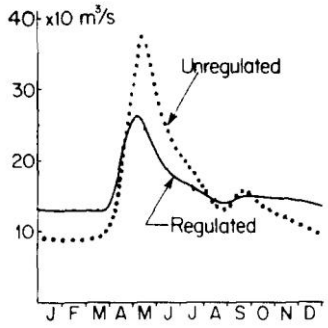


Fig. 11 Regulated and unregulated flow of the St. Lawrence at Pointe des Monts for 1976.

SECTION XV ***TAKING THE ST. LAWRENCE AS AN EXAMPLE, WHERE TODAY MORE THAN 8000 $m^3 s^{-1}$ (APPROXIMATELY ONE-QUARTER TO ONE-THIRD OF THE PEAK DISCHARGE) IS HELD BACK IN SPRING (FIG. 11), THE SEASONAL INFLOW OF OCEAN WATER INTO THE GULF MUST ALREADY BE SIGNIFICANTLY MODIFIED.***

> *The reduction of the amount of water and with it the quantity of nutrients entering the system during the biologically active season must be in the order of 20-30% of its initial supply. According to El-Sabh (1975), the inflow into the Gulf through Cabot Strait is, at its peak in August, between 600 000 and 700 000 $m^3 s^{-1}$. Before regulation was implemented it probably was closer to a million cubic metres per second with all the extra nutrients that volume implies.*
>
> *Beyond any doubt, similar reductions in the shoreward transport of sea water and nutrients have occurred at other places during the summer, such as in Hamilton Inlet below the Churchill Falls power development in Labrador, and will now occur in James Bay after the first power scheme there is in operation."* (H.J.A. Neu, 1982)

SECTION XVI THERE ARE MANY IN THE SCIENTIFIC COMMUNITY WHO HAVE WARNED FOR YEARS ABOUT THE NEGATIVE IMPACTS OF RESERVOIR HYDROLOGICAL DAMS.

Scientists Venugopalan Ittekkot, Christoph Humborg and Peter Schafer wrote a 2000 Report "Hydrological Alterations and Marine Biogeochemistry: A Silicate Issue? Silicate retention in reservoirs behind dams affects ecosystem structure in coastal seas."

In this Report, they documented how reservoir dams will result in eutrophication and lower oxygen levels in downstream coastal waters:

> *"Freshwater and sediment inputs from rivers play a major role in sustaining estuarine and coastal ecosystems. Nutrients from rivers promote biological productivity in estuaries and coastal waters, and the sediments supplied by the rivers stabilize deltas and coastal zones and help to maintain ecosystems along the periphery of landmasses. In the last few decades human activities have caused enormous changes both in the nature and quantity of these inputs. Fluxes to the oceans of mineral nutrients, such as phosphate and nitrate, have increased worldwide by more than a factor of two (*Maybeck 1998)."

Quebec's population has doubled since 1951 from about 4,000,000 to over 8,000,000, which means much higher annual fluxes of phosphate and nitrate from sewerage treatment plants and storm water runoff into the Gulf.

> *"This increase has led to accelerated algal growth, known as eutrophication, and consequently to deterioration in water quality because of oxygen depletion. Toxic algal blooms occurring in coastal waters, which have devastating effects on fisheries and on biodiversity in general, are also attributable to euthrophication. Oxygen-deficient conditions, in turn, promote the production of greenhouse gases such as nitrous oxide and methane and their emission from coastal waters to the atmosphere."*

"The observed continuing increase in nutrients such as nitrate and phosphate and the reduction in silicate concentrations in rivers clearly indicate that nonsiliceous phytoplankton species will be more prolific in the receiving waters of many dammed rivers of the world. The occurrence of potential toxic flagellate blooms may become more frequent. Many important regulatory and socioeconomic functions of water bodies will be affected. The ability of these water bodies to sustain economically important fisheries resources will be reduced; severe perturbations can be expected in the biogeochemical cycling of elements, with adverse consequences for the role of coastal seas as sinks for anthropogenic gases such as CO^2."

SECTION XVII IN A 2005 STUDY, RECENT EUTROPHICATION AND CONSEQUENT HYPOXIA IN THE BOTTOM WATERS OF THE LOWER ST. LAWRENCE ESTUARY: MICRO PALEONTOLOGICAL AND GEOCHEMICAL EVIDENCE," BY THIBODEAU, DEVERNAL, AND MUCCI, THE AUTHORS ANALYZED TWO SEDIMENT BOX CORES RECOVERED FROM THE LOWER ST. LAWRENCE ESTUARY AND OBSERVED THE FOLLOWING:

"A ten-fold increase in the accumulation rate of dinoflagellate cysts and benthic foraminifera in the sediment over the last four decades." And *"our results imply that a significant increase in marine productivity in the Lower St. Lawrence Estuary occurred since the 1960's."*

THIS IS MUCH MORE THAN "A SIGNIFICANT INCREASE

A TEN FOLD INCREASE IS THE SAME AS A 1,000 PERCENT INCREASE. OVER A TIME FRAME OF 40 YEARS THIS WOULD BE AN AVERAGE INCREASE OF ABOUT 25 PERCENT PER YEAR OF DINOFLAGELLATE CYSTS IN THE SEDIMENT.

The driving force for this epic increase of dinoflagellates is the gigantic reservoirs behind these hydroelectric dams, which have changed the silica cycle and natural hydraulic cycle in the St. Lawrence and Gulf of Maine. Changes in the hydraulic cycle have also significantly reduced the annual input of dissolved oxygen and warmed the waters of these rivers.

"Most studies addressing the causes of eutrophication have concentrated on the elements nitrogen and phosphorus, mainly because both nutrients are discharged by human activities. Silicate, however, also plays a crucial role in algal growth and species composition. For example, the growth rates of diatoms (silica-shelled phytoplankton) are determined by the supply of silicate. Researchers have noted a decrease in the level of dissolved silicate in many coastal marine regions of the world in the last few years (Conley et al; 1993). The increased growth of silicate-utilizing diatoms-the result of nitrate-and phosphate-induced eutrophications-and the subsequent removal of fixed biogenic silica via sedimentation out of the water column (Billen et al. 1991.1996) are thought to explain the decrease in dissolved silicate. The resulting changes in the ratios of nutrient elements (e.g., silicon: nitrogen:phosphorus, or Si:N:P) have caused shifts in phytoplankton populations in water bodies (Admiral et. al. 1990, Turner and Rabalais 1994). Shifts from diatoms to nonsiliceous phytoplankton have been observed much earlier in the season in several estuarine and coastal regions (in the receiving marine waters of the Rhine River, for example).

"The source transport, and sink characteristics of silicate, as they relate to changes in the hydrology of rivers, are distinct from those of nitrogen and phosphorus. Large-scale hydrological alterations on land, such as river damming and river diversion, could cause reductions of silicate inputs to the sea (Humborg et al. 1997). By contrast, although all nutrients (nitrogen, phosphorus and silicon) get trapped in reservoirs behind dams, nitrate and phosphate discharged from human activities downstream of the dams more than make up for what is trapped in reservoirs; for silicate, there is no such compensation. The resulting alteration in the nutrient mix reaching the sea could also exacerbate the effect of eutrophications-that is, silicate limitation in perturbed water bodies can be set in much more rapidly than under pristine conditions, leading to changes in the composition of phytoplankton in coastal waters."

And

"One of the issues to be resolved is whether the reduction in silicate in coastal waters is caused by its increased removal through enhanced diatom production or by a decrease in direct inputs from rivers. Although both processes are likely to affect silicate decrease, enough evidence is available to suggest that hydrological alterations such as river damming and river diversions could be the crucial factors (Milliman 1997). Given the large numbers of dams in operation today (Rosenberg et al. 2000) and the extent of river flow that is dammed or diverted (Voorosmarty and Sahagian 2000), reduction of silicate could be of global significance." (Ittekkot, Humboarg and Schafer 2000).

SECTION XVIII I HAVE REPRINTED, ON PAGES 7 AND 8, A JANUARY 2011 FACT SHEET "THE ST. LAWRENCE IS LOW ON AIR," BECAUSE THE READER HAS TO READ IT FOR THEMSELVES IN ORDER TO BELIEVE THAT THERE IS NO MENTION OF THE PROLIFERATION OF RESERVOIR HYDROELECTRIC DAMS DURING THE PAST SEVENTY YEARS AS A POSSIBLE CAUSE IN LOW OXYGEN IN THE ST. LAWRENCE.

In the section, "Caused by human activity-but only in part," the author fails to mention that the discharged waters from the dams into the rivers have much less dissolved silicate to offset the increased input of nitrates and phosphates from municipal wastewater, as well as fertilizer and manure in nearby agriculture fields. As a result, the diatom populations have declined and dinoflagellate populations have exploded.

In the section "A link to climate change, the author explains that the cause of less oxygen is because:

"The proportion of water coming from the Labrador Current Water has decreased, and thus more of the water entering the gulf comes from the less oxygenated Gulf Stream. This situation has contributed not only to a reduction in oxygen levels in the deep waters of the St. Lawrence Estuary, but also to an increase in water temperature of 1.65°C.

As discussed in Sections XII and XIII, the storage of water resources may be the driving force in this increase in water temperature.

Québec OCÉAN

THE ST. LAWRENCE IS LOW ON AIR

A serious danger is threatening the St. Lawrence River: a lack of oxygen. This phenomenon, called hypoxia, is a serious concern for the St. Lawrence Estuary, but also affects the gulf. Findings from a recent scientific cruise[1] confirm that a large portion of the estuary is slowly but surely suffocating.

In fact, the levels of oxygen in the deep waters of the estuary are so low that it could have serious repercussions on the marine ecosystems. Some scientists are even using the term "dead zones" to describe these areas of low oxygen that are expanding from year to year. When the concentration of oxygen in the bottom waters falls below 30% (hypoxia), many marine organisms, including fish, molluscs, and crustaceans, can no longer survive. Currently, certain parts of the estuary have oxygen levels below 15% saturation.

The critical zone

The zone most affected by the reduction of oxygen in the St. Lawrence Estuary extends from Tadoussac, at the confluence of the Saguenay River and the St. Lawrence, to northwest of the Gulf of St. Lawrence.

Serious levels of hypoxia first appeared in the St. Lawrence Estuary in the mid-1980s. In 2003, this area covered approximately 1,300 km^2 of the seafloor, and has continued to grow over the last few years. In 70 years, the concentration of oxygen has decreased by half at depths greater than 250 meters.

Caused by human activity—but only in part

Researchers have calculated that between one-third and one-half of the decrease in oxygen is the result of factors related to the river and the activities of those who live near it. Municipal wastewater, as well as fertilizer and manure used in nearby agricultural fields, results in the input of large quantities of nitrates and phosphates into the river. This creates an additional source of nutrients for the plankton, which multiply rapidly from spring through summer. When these abundant plankton die and fall to the bottom of the river, it gradually decomposes in the water, consuming the ever-decreasing supply of oxygen.

Credit: Lise Duchesne

Entrance of the Bic Park, South shore of the St. Lawrence estuary.

A link to climate change

Scientists believe that changes in circulation in the Atlantic Ocean, possibly due to global warming, could contribute to the reduced oxygen in the St. Lawrence.

The water that enters the St. Lawrence is a mixture of two large water masses: the shallower Labrador Current Water is cold and oxygen-

rich, while the deeper North Atlantic Central Water, originating in the Gulf Stream, is warmer and less oxygenated. The deep water flowing into the estuary slowly loses its oxygen as it moves toward Tadoussac.

The problem is that the proportion of water coming from the Labrador Current Water has decreased, and thus more of the water entering the gulf comes from the less oxygenated Gulf Stream. This situation has contributed not only to a reduction in oxygen levels in the deep waters of the St. Lawrence Estuary, but also to an increase in water temperature of 1.65 °C.

If this trend continues, the deep waters of the estuary could, in the next fifty years, become anoxic (without oxygen). In a word, suffocation! According to that sad scenario, the deep waters of the estuary could no longer support any form of life, with the possible exception of some microorganisms.

Crédit: Bjorn Sundby

Oxygen concentration will be determined by scientists in the sediment sample and its living organisms.

A better understanding of the phenomenon and its consequences

To better understand the causes of hypoxia, Québec-Océan researchers are pursuing their studies on the impact of low concentrations of oxygen on organisms living in the deep waters. They are also developing simulation models to predict the concentrations of oxygen in the estuary and the Gulf of St. Lawrence. These advanced models take into account not only the circulation of the water masses, but also the exchange of oxygen between nutrients, sediments and plankton.

[1] *Hypoxia 2010 Cruise, lead by Prof. Alfonso Mucci on the Coriolis II.*

Find out more

- Will "Dead Zones" Spread in the St. Lawrence River?
- Hypoxia 2010 Cruise
- The Deep Waters of the Estuary: A Dead Zone? (French only)
- Biodiversity - A quantifiable economic value (French only)
- Coastal water threatened with suffocation as a result of human activities (French only)
- The estuary is holding its breath

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SECTION XIX THIS CHANGE IN "PROPORTION" WHICH IS MENTIONED AND HIGHLIGHTED IN THE PREVIOUS PAGES, IS TAKING PLACE 700 PLUS MILES DOWNSTREAM FROM THE ST. LAWRENCE ESTUARY IN THE NORTHWEST ATLANTIC AND IS BASED ON A HYPOTHESIS WHICH IS NOT PROVEN.

This hypothesis was studied in the following 2 reports:

1. Lefort S. "A Multidisciplinary Study Of Hypoxia In The Deep Water Of Estuary And Gulf Of St. Lawrence: Is This Ecosystem On Borrowed Time?" PhD thesis, McGill University; 2011.
2. Lefort S. Gratton Y, Mucci A., Dadou I, Gilvert D. ,"Hypoxia In The Lower St. Lawrence Estuary: How Physics Controls Spatial Patterns,". J Geophys Res. 2012; CO7019.

And the authors of the second report concluded:

The result strongly suggests that the physics of the system and the source water properties are mostly responsible for oxygen depletion and its distribution pattern in the deep water column.

Three years later Daniel Bourgault and Frederic Cyr wrote a Report: "Hypoxia in the St. Lawrence Estuary: How a Coding Error Led to the Belief that "Physics Controls Spatial Patterns" and wrote the following Abstract and Conclusion:

"*Abstract*

Two fundamental sign errors were found in a computer code used for studying the oxygen minimum zone (OMZ) and hypoxia in the Estuary and Gulf of St. Lawrence. These errors invalidate the conclusions drawn from the model, and call into question a proposed mechanism for generating OMZ that challenges classical understanding. The study in question is being cited frequently, leading the discipline in the wrong direction."

And

"Conclusion

The equation, boundary conditions, and parameters proposed by Lefort (2011) (1) and Lefort et al. (2012) (2) are inappropriate when solved correctly for explaining the observed oxygen field and hypoxia in the St. Lawrence Estuary. It is by unfortunate chance that their unrealistic Eq2 combined with their proposed boundary conditions, parameters and numerical scheme produced remarkable but puzzling agreement with observations. Hypoxia in the St. Lawrence Estuary and the OM in the Gulf of St. Lawrence Estuary and the OM in the Gulf of St. Lawrence are important feature to reproduce correctly with proper theory, and the community must not be left continuing to believe that their model succeeded in reproducing them."

The authors also wrote the following in their Report: "*THE AUTHORS HAVE BEEN INFORMED AND HAVE CONFIRMED THE UNFORTUNATE ERROR."*

SECTION XIV IT APPEARS THAT THIS HYPOTHESIS HAS CONTINUED SUPPORT AND THE WORD OF THIS UNFORTUNATE ERROR HAS BEEN SLOW IN GETTING OUT!

I have reprinted below a July 24, 2017 article "Less and Less Oxygen in St. Lawrence."

Again, no mention of reservoir hydroelectric dams as a possible cause or reduction in dissolved silicate concentrations I remind the reader that these dams are owned by Hydro-Quebec, which is owned by the Province of Quebec.

LESS AND LESS OXYGEN IN THE ST. LAWRENCE

24 / 07 / 2017

Par Béatrice Riché

Editor of Group for Research and Education on Marine Mammals

During their recent mission aboard the *Coriolis II*, researchers observed the lowest concentrations of dissolved oxygen ever recorded in the deep waters of the St. Lawrence River. Why is there less oxygen in the deep waters and what are the consequences for the species of the St. Lawrence?

Coriolis II, the research vessel of the Institute of Ocean Sciences in Rimouski. © UQAR
From June 12 to 21, 13 researchers from McGill, Concordia and Moncton universities plied the St. Lawrence River between Québec City and Anticosti Island aboard the *Coriolis II*, the research vessel of the Institute of Ocean Sciences in Rimouski (ISMER/UQAR). The multidisciplinary team had several objectives: to learn more about surface water acidification, to monitor oxygen concentrations in deep waters and to map the sediments (including petroleum products) of the seafloor.

Researchers observed an area of hypoxia, i.e., a very low oxygen zone, in the deep waters between Tadoussac and Sainte-Anne-des-Monts. The lowest concentrations were recorded off Rimouski and Matane: 45 micromoles of dissolved oxygen per kilogram of water, while concentrations are usually in the order of 200-300 micromoles per kilogram. Oxygen levels in

the deep waters of the St. Lawrence have been declining for at least a decade. Researchers are concerned by this trend.

Multiple causes

There are a number of factors that might explain the magnitude of hypoxia in the St. Lawrence: the changing composition of water bodies entering the Gulf, climate change and pollution. Two major currents of water penetrate the Gulf of St. Lawrence: the Labrador Current and the central North Atlantic Current. The water in the Labrador Current is cold and well oxygenated, while the central North Atlantic water is warmer and less oxygenated. Studies have shown that over the last few decades, the proportion of water from the Labrador Current entering the Gulf of St. Lawrence has declined, while that from the central North Atlantic has increased. This has two consequences on the deep waters of the St. Lawrence Estuary: a decrease in their oxygen concentration and an increase in their temperature.

Climate change may exacerbate hypoxia, as the higher the water temperature, the less soluble oxygen is. A study published last January by the Maurice Lamontagne Institute of Fisheries and Oceans Canada revealed that average deep water temperatures in the Gulf of St. Lawrence at depths of 250 and 300 metres have also reached levels never observed in the last hundred years.

Pollution may also play a significant role in the hypoxia phenomenon. The application of fertilizers and manure to farmland and municipal wastewater discharges contribute significant quantities of nitrates and phosphates to the river. These nutrients cause a proliferation of plankton. When the latter dies and sinks to the seabed, the decomposition process results in a depletion of the water's oxygen content.

Implications for species of the St. Lawrence

According to Yves Gélinas, research professor at Concordia University's Department of Chemistry and Biochemistry and one of the 13 researchers involved in the mission, some oxygen concentrations recorded at the mission "are too low to allow for the long-term survival of a number of living organisms […] in these waters".Indeed, just like their terrestrial counterparts, marine organisms require oxygen. But although oxygen depletion has a detrimental effect on most species, others have a different tolerance level. Cod, for example, are unable to tolerate the low oxygen concentrations currently found in the deep waters of the Estuary and avoid these areas. However, other species, such as redfish, plaice and shrimp, congregate in low oxygen areas to avoid predators.

For those St. Lawrence whales that feed on benthic prey – including belugas, sperm whales, harbour porpoises and several others – “their feeding grounds are likely to change,” points out Robert Michaud, Scientific Director of the Group for Research and Education on Marine Mammals (GREMM). How will whales adapt to these changes? Will they change their feeding grounds or the species they consume? For Robert Michaud, these issues are at the heart of the challenges we face in understanding and protecting the whales of the St. Lawrence.

Sources

Lack of oxygen may threaten St. Lawrence biodiversity (in French, Radio-Canada, 2017-07-04)
Thirteen scientists study St. Lawrence aboard *Coriolis II* (in French, Radio-Canada, 2017-06-11)

Maine Voices
Posted December 23, 2018

Maine Voices: Hydroelectric dams produce green energy? Think again

Building such dams in Maine would violate federal and state environmental laws, for good reason.

BY **STEPHEN M. KASPRZAK** SPECIAL TO THE TELEGRAM

CAPE PORPOISE — Before advocating for the 145-mile line to carry hydroelectricity generated by Hydro-Quebec (Our View, Dec. 9), the Maine Sunday Telegram Editorial Board should first explain why hydroelectricity produced by reservoir dams should be called "green energy." The construction of these dams in Maine would be prohibited by Section 401 of the Clean Water Act of 1972 and Maine's Natural Resources Protection Act.

Every reservoir hydroelectric facility represents an environmental catastrophe, not only to the dammed river, but also to the ocean regions where the rivers' currents convey nutrients.

ABOUT THE AUTHOR

Stephen M. Kasprzak is a resident of Cape Porpoise.

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Four other hydroelectric facilities, built from 1967 to 1989 on the nearby Manicouagan River, also discharge into the St. Lawrence. The Manicouagan Reservoir is a giant head pond created by the Daniel-Johnson Dam and has a surface area of 750 square miles – equivalent to 16 Sebago Lakes.

There are four other reservoirs on the Manicouagan River, and the Mavic-Outardes hydro project has an annual capacity of 5,579 megawatts. Maine's total annual hydroelectric capacity is 753 MW.

The St. Lawrence, the largest-volume river in North America, is the major supplier of dissolved silicate to the Gulf of Maine, as daily flows are 40 to 50 times greater than any of Maine's major rivers.

The Churchill Falls Generating Station was built in the 1970s in Newfoundland-Labrador on the Churchill River, which discharges in the Labrador Current.

There are 11 generating units and a series of 88 dykes, which have a total length of 40 miles and created the Smallwood Reservoir with a surface area of 2,200 square miles – equal to 46 Sebago Lakes. The annual capacity is 5,428 MW.

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A second phase of hydroelectric dams was built on the LaGrande River in the 1990s with an annual capacity of 5,200 MW. The surface area of these three additional reservoirs equals 13 Sebago Lakes.

The surface areas of the above reservoirs, built on just four rivers, are equal to 169 Sebago Lakes or 982 transmission corridors 145 miles long by 300 feet wide.

Before these dams were built, the silica cycle was in a steady state with input balancing off the output. The major output loss is in the ocean waters, where it is estimated that the burial rate of biogenic silica is 2 to 3 percent per year. A cumulative loss of 3 percent per year would result in a 50 percent loss of silica in only 23 years.

This ocean loss was offset naturally each year by the input of dissolved silicate transported by the rivers. Rivers account for 80 to 85 percent of the annual

input of dissolved silicate to the oceans. In temperate rivers with reservoir dams, scientists have calculated an annual silica removal as high as 50 percent.

The cumulative impact of less silica being transported each year to the ocean has resulted in fewer and smaller diatoms. Depleted diatom populations fail to support a healthy food chain or ameliorate ocean acidity, and they'll release less oxygen into the atmosphere. This has led to the starvation of creatures and fishes that eat them and increased acidity. The silicate of the smaller diatoms dissolves before the carbon can be sequestered to the ocean floor.

These reservoir dams have had other catastrophic impacts. For example, the temperature of the high-volume winter discharged waters flowing into the ocean has increased. These reservoir waters are now thermally stratified lakes. In northern temperate lakes, the bottommost waters are typically close to 4 degrees Celsius year-round, which is much warmer than the super cold river waters flowing under ice in the winter. It is not surprising the Gulf of Maine is warming so fast.

How long will the media and officials remain silent about all the key causes of the demise of the Gulf of Maine because of Canadian hydropower dams and unnatural freshwater flow regulation?

Posted January 5,2019

Commentary: Hydro-Quebec offers misleading claims about power's climate impact

We can't trust the utility's publicists to represent correctly their own carbon emissions.

BY **BRADFORD H. HAGER**SPECIAL TO THE PRESS HERALD

Hydro-Quebec's claim that – as paraphrased by Portland Press Herald Staff Writer Edward D. Murphy – the electricity they would send south is "produced with none of the carbon emissions blamed for global warming" is dead wrong, directly contradicted by scientific research sponsored by Hydro-Quebec itself. I care deeply about aggressively addressing climate change, and I agree with the Press Herald Editorial Board (Our View, Dec. 9) that the most important question in evaluating the proposed transmission line to Massachusetts is whether it will reduce total greenhouse-gas emissions.

But to answer this question correctly, we must use the best available science. The Press Herald should avoid passing along Hydro-Quebec's misinformation. Either the utility officials who claim their power is carbon-free are ignorant of the science published by their colleagues, or they are ignoring this established science in their attempt to sell power.

ABOUT THE AUTHOR

Bradford H. Hager is an MIT earth sciences professor and a part-time resident of Mercer.

International Hydropower Association data show that Hydro-Quebec electricity is just about as dirty as hydropower gets. Why? When Hydro-Quebec dams rivers on northern Quebec's relatively flat terrain, it floods vast areas of forests and wetlands under shallow water. The amount of power Hydro-Quebec produces per acre flooded is among the lowest of any

hydropower in the world. The trees, bogs and soils Hydro-Quebec floods have been storing carbon since the last Ice Age. When flooded, this stored carbon decomposes, releasing CO2 and methane. To make things worse, drowned trees are gone forever and cannot grow back to remove CO2 in the future.

Here's an example of their own best available science that Hydro-Quebec did not provide to the Press Herald: About a decade ago, Hydro-Quebec built dams to divert the Rupert River to the Eastmain hydro facility, flooding 175 square miles of virgin forest and wetlands. As a result, the first year after flooding, as much CO2 was released as would have been released by a coal-fired power plant generating the same amount of electricity!

Fortunately, the release of CO2 slows with time. Unfortunately, it never becomes insignificant. After five years, the total emissions from these Hydro-Quebec dams and natural gas power plants are about equal; after 10 years, the total release from hydro is "only" two-thirds that of natural gas. Extrapolating for a century, Quebec's hydro is about half as dirty as gas – something of an improvement, but in no way "carbon free."

How can we make the best of this situation? To reduce total regional emissions, Hydro-Quebec should export its somewhat-dirty hydropower to neighboring New Brunswick, displacing the much dirtier power produced there from burning coal while Maine and Massachusetts pursue truly carbon-free sources. That would result in a meaningful decrease in overall greenhouse-gas emissions.

Hydro-Quebec knows that their hydropower causes significant greenhouse-gas release. Yet, when marketing their project, they omit this information. This should make us skeptical about their other claims.

Hydro-Quebec's assertion that it has "wasted" enough water to provide 10 terawatt hours of electricity because it lacks transmission capacity is not

backed by documentation. In contrast, a 2017 study of Hydro-Quebec's export capacity found that the limiting factor for total energy output is generation, not transmission capacity. This makes sense – why would Hydro-Quebec pay the high cost of building dams and installing generators and not also provide adequate transmission capability?

Like any hydropower operation, Hydro-Quebec must deal with large variations in rainfall. It is expensive to build enough generation to handle peak flows, and then let the generators stand idle during years that are either dry or have normal rainfall. During unusually wet times, the water is "wasted" because it is more economical to spill water occasionally than to waste generation capacity most of the time. While it may be true that enough water to generate 10 terawatt hours of electricity has been spilled during times of unusually high water, that in no way shows that the rate and timing of this spillage could have been used to fulfill a contract for a more steady supply of power.

We can't trust Hydro-Quebec publicists to represent correctly the scientific research that their company supported about their own carbon emissions. The Press Herald and the Maine Public Utilities Commission should not accept what Hydro-Quebec says about "clean" energy and spillage without requiring and thoughtfully reviewing documentation.

Attachment I

VIEWPOINT

Viewpoint is a column which allows authors to express their own opinions about current events.

Man-Made Storage of Water Resources—A Liability to the Ocean Environment? Part II

HANS J. A. NEU

Mr. H. Neu is a Senior Research Scientist with the Canadian Department of Fisheries and Oceans at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia. A specialist for 27 years in estuarine and coastal hydrodynamics, he has studied the physical oceanography of the major waterways across Canada as well as on the continental shelf and in the north-west Atlantic.

The first part of this article (Mar. Pollut. Bull., **13**, 7–12, 1982) *described the impact of the seasonal freshwater runoff on bodies of water—such as the Gulf of St. Lawrence and the coastal region—through changes in the salinity and temperature distribution and through changes in the current generated by the density difference between the fresh river water and the ocean. The strength of the current and thus the transport of deep ocean water to the coastal region depends on the amount of fresh water released into the ocean. Therefore modifying the natural seasonal runoff by storing water for power production during the winter interferes with the timing of the physical and dynamic balance of the coastal region. The impact of this interference on the marine life and on the climate of the region is now discussed.*

As on land, the basis of life in the ocean is the plant community which alone can synthesize energy and living tissue from raw materials in the presence of sunlight by photosynthesis. The circulation of the ocean determines the areas where nutrients can reach those upper levels where there is sufficient light for photosynthesis to proceed. Thus, upwelling areas are the fertile parts of the ocean which are highly significant to the marine environment.

Regions of upwelling can be related to large ocean currents like the Humboldt off South America, the boundary currents along the shelf break of the continental margin, and even the warm-core eddies of the Gulf Stream penetrating the shelf region. What is less well known is that upwelling is also generated by density currents associated with the excursion of large amounts of fresh water over coastal regions and continental shelves such as found along the Atlantic coast of Canada. The latter represents a continuous transport of nutrient laden water on a scale far surpassing that of Gulf Stream eddies.

This excursion, being subjected to large seasonal variations, is co-related with the biological activities and productivity in temperate regions. The area affected extends as far as the fresh water reaches. Within this area there is intense primary as well as secondary productivity which is tuned to the seasonal variation in climate and run-off. This productivity is nourished by the seasonal nutrient supply which in turn is regulated by the seasonal fresh water run-off.

Life as we know it in our coastal waters and its level of productivity has evolved over thousands of years in response to these seasonal variations. Changing this pattern by reducing the flow of fresh water during the biologically active season of the year, or even reversing the cyclic flow altogether, represents a fundamental modification of a natural system. Such a modification must have far reaching consequences on the life and reproduction cycle in the marine environment of the region affected. Thus, it follows that storage schemes already implemented in Canada are having an impact on the biological resources of the Atlantic coastal region. Unfortunately, data to prove this quantitatively are masked by other possibilities. For example, a drastic decline in fish catches in the late sixties and early seventies is currently attributed to over-fishing in the internationally regulated area prior to the establishment of the Canadian 200 mile zone. In recent years, it appears that as a result of the reduced fishing pressure, some stocks are showing significant recovery. This fact, however, also happens to coincide with a period of increasing natural discharge in our river systems. As shown in Fig. 1, where the five-year running means of each year's monthly maximum (spring) and minimum (winter) discharges are plotted for the St. Lawrence at Pointe des Monts, larger spring flows existed in the fifties and middle seventies and lower flows in the middle of the sixties. As demonstrated by Sutcliffe (1972, 1973) and Sutcliffe *et al.* (1976, 1977), fish catches, especially in the Gulf, varied correspondingly, being larger during the fifties but smaller during the sixties with an increase in the seventies after allowing a delay of a number of years for the fish to mature. This implies that the low flow period of the sixties imposed stresses on the productivity of the system. Unfortunately, at the same time as the flow was at its lowest level, regulation was

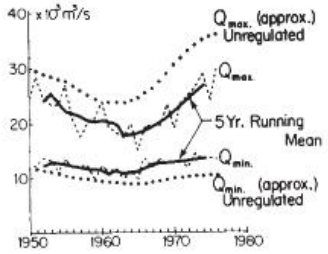

Fig. 1 Annual monthly Q_{-max} and Q_{-min} of the St. Lawrence river at Pointe des Monts.

stepped up from an average of 4000 $m^3 s^{-1}$ to about 8000 $m^3 s^{-1}$ with the implementation of the Manicouagan–Outardes–Bersimis hydro-power complex. I contend that this further reduction in the spring flow was probably the final straw in the decline of the fish stocks. The larger flows of the seventies decreased the proportional effect of the regulation and gave the fish stocks an opportunity to recover. The next big decline probably will be in the early or mid-eighties when another low discharge period is predictable from the long term cycles (11 and 22 yr) of water levels in the Great Lakes. The decline, however, will be worse, since regulation will have increased further in the meantime.

The Aswan Dam regulation in Egypt is similar in size to the regulation schemes in Canada, though located in the subtropical and tropical region and therefore not directly comparable with our coastal waters. It is, however, the only case known to the author where a large scale regulation scheme was assessed with respect to the ocean environment prior to its construction and reported upon after it was in operation. Western scientists predicted that retaining the run-off of the rainy season would significantly affect the biological balance in the southeastern Mediterranean. The prediction became fact. Aleem (1972) reported: "Construction of the Aswan High Dam in Egypt, and subsequent cessation (since 1965) of surplus Nile flood water (*ca.* 35. 10^9 m^3 of water annually) from discharging into the Mediterranean Sea, has had an impact on marine life in coastal waters adjoining the Nile Delta and on brackish-water life in the lakes. Nutrient concentrations have fallen considerably in these waters; phytoplankton bloom associated with the Nile flood have disappeared and, consequently, *Sardinella* catches have dropped from *ca.* 15 000 tons in 1964 to 4600 tons in 1965 and to 554 tons in 1966. Depletion of nutrients, reduction of organic matter and of mud and silt deposition affect also benthic life on the Continental Shelf and in brackish-water lakes adjoining the sea."

According to Tolmazin (1979), the fishing industry of the Black and Azov Seas has also suffered disastrous declines over the past 20 years. This coincided with the introduction of a number of regulation lakes in the major rivers flowing south into the Russian inland seas, the Caspian Sea included. The Dnieper, the Don and the Volga have been brought almost completely under man's control. Tolmazin (1979) concludes that creating these lakes caused this decline and quotes the following estimate: "The loss of fish food all over the country now amounts to more than one thousand million rubles per year, including the finished products made from raw fish". He concedes that "The damage inflicted on other branches of the economy is very difficult to assess".

Even if we cannot yet measure the effects with certainty in our own marine environment, similar changes must already have happened to the coastal waters of Atlantic Canada and the effect must increase as regulation of our rivers continues. Of particular concern is the increased development of hydro-power – under construction or in the design stage – in Labrador, Ungava Bay, James Bay and Hudson Bay, which are bound to threaten the productivity of the Grand Banks of Newfoundland.

Until now it was assumed that hydro power is 'clean' with little or no impact on the environment, particularly that of the ocean. That this might not be the case is difficult to understand. Obviously, designing storage schemes and forecasting output of power is easier to grasp than to quantify the changes imposed on the population dynamics of the biota in the coastal region. There is the possibility that damages imposed by man-made lakes on the ecosystem may outweigh the benefits they provide. This is the crux of the problem. The prime task therefore is to establish a cost–benefit ratio in which all factors, also those which affect the ocean environment, are included. This should be a prerequisite for any further development.

Regulation Schemes

The two countries with the largest fresh water resources are Canada and the USSR. Soon after the second world war, Russia announced plans to develop its hydrologic potential. One of these was the creation of a central Siberian fresh water lake into which the rivers Ob, Lena and Jenisey would be diverted, each the size of the St. Lawrence. In spite of the announcements Russia has not yet started this project. It is assumed and hoped that this delay is more for ecological than for economical reasons. Another plan was for significant water diversion and storage in the Pechora–Vychegda–Kama scheme which diverts water, originally flowing north into the Barents Sea, south through the Volga into the Caspian Sea. The volume of water stored is about 200 km^3. This scheme is somewhat similar to the water diversion proposals by the US under the so-called North American Water and Power Alliance for diverting Alaskan and Canadian rivers south to the US. From the viewpoint of their impact on nature, water regulations and water diversions are similar. Both remove the fresh water from the biologically active season of the year.

In the rivers flowing south, the Dnieper, Don and Volga, the total amount of water stored in 18 storage schemes is 142.3 km^3, that is the same amount as stored in Manic 5, one of the many large Canadian storage lakes.

In Canada, during the last 25 years, a number of power developments with large storage schemes have been installed (Fig. 2). The most important of a total of more than 300 are: the Churchill Falls in Labrador; the Manicouagan system, the Outardes, Bersimis and Lac Saint Jean complex in the Laurentians north of the St. Lawrence; the LaGrande system into James Bay; to the west the St. Maurice and further west the Ottawa River system and the

Fig. 2 Major storage schemes in Canada.

Great Lakes Regulation; the Nelson-Churchill and Saskatchewan River schemes in the midwest; the Peace River and Columbia River storage schemes in British Columbia; to name just a few. A number of new schemes are under construction or in the design stage. They include several projects in the James Bay area; a new scheme in Labrador; the Gulf of St. Lawrence north shore development which includes the rivers from Sept Isles to the Strait of Belle Isle; a possible Ungava Bay scheme and the development of the rivers in Ontario on the James Bay and Hudson Bay, and others further west.

The dimensions of these schemes, particularly their storage capacity, are colossal. Manic 5, the largest lake of the Manicouagan system, stores 142 km³, one-quarter of which is live storage. This volume of water would cover half of Nova Scotia to a depth of 10 m. It is comparable with the storage capacity of Lake Nasser in Egypt, one of the largest man-made lakes in the world. While the construction of the Aswan Dam, which forms Lake Nasser, created great political upheaval and much scientific discussion as to its effect on the southeastern Mediterranean, Manic 5 was being constructed during the same period without any reaction at all.

To indicate the scale of the quantity of water stored in these lakes, all rivers on earth at any one time contain about 1300 km³ of water. The existing artificial storage in Canada already holds back this amount. Excluding the far north, Canada has an annual run-off of about 1500–2000 km³; this is not much more than the integrated artificial storage. Assuming that between one-third and one-quarter of this storage is live storage, then about 400 km³ of water is annually shifted from the summer to the winter season. The natural ratio of these two seasons is about 4:1, this means that prior to regulation, the two volumes were 1600 km³ and 400 km³ respectively. Under the existing conditions, the summer flow is therefore reduced to 1200 km³ and the winter flow increased to 800 km³, making the ratio 3:2.

Obviously, these changes which are already implemented are a fundamental modification to the fresh water regime of Canada and to the physics and dynamics of its coastal regions. There is no doubt in the mind of the author that if Canada continues this development and the USSR follows its lead, the hydrological balance of our globe would be threatened and as a result the biological productivity of our oceans, primarily in their coastal waters, may be seriously jeopardized.

Possible Alternatives

Since it is obvious that the transfer of fresh water from the biologically active to the biologically inactive season of the year is the prime problem of water regulation, it leads to the question: can hydro power be fully developed economically without storage? There is no simple answer to this question because it depends on many factors.

One possibility would be to separate seasonal peak power production from general power production where power would be produced from 'run of the river' stations without significant storage. The peak power part would consist of a twin-lake system with a large head difference between the lakes as might be available in the Laurentians or Rocky Mountains. The water in the system would form a closed circuit and the system should be big enough to satisfy the seasonal demand of a region. In spring and summer, when large amounts of excess energy would be available from the 'run of the river' stations, water would be pumped from the lower lake into the upper lake, while during the winter when large quantities of energy are required but little is supplied by river stations, the water stored in the upper lake would be utilized. If the system were placed on the coast, the lower basin would not be necessary and the water recycled would be ocean water. The usefulness of salt water, however, must first be investigated because it may create other ecological problems. The operational efficiency of transferring power from 'run of the river' stations to peak power via pumping is about 65%.

The major benefit of such a scheme would be that the seasonal run-off of rivers, as designed by nature, would not be modified; thus the role that fresh water plays in coastal ecosystems would continue as in the past.

Alternatively, appropriate studies might be carried out into how much of a spring peak is necessary to maintain a reasonable level of primary production in the estuaries and coastal region. This knowledge could perhaps influence the present philosophy of power production to be more compatible with nature in the use of existing hydro-power systems.

Conclusions

Life in the ocean, as life on land, is intimately related to its environment. The ecosystem is a very closely interwoven fabric of all living things coupled with the natural processes that determine the character, quality and quantity of life that can be supported. Man, with his increasing ability to modify his environment, still has his place in it. But, until he understands its complexities to the extent that he can anticipate the disadvantageous consequences of his actions, man cannot hope to safely exploit the environment to his advantage.

The question then, is whether the interpretation given here is in accordance with the facts supported by

scientifically verified predictions and conclusions. Unfortunately, we are not yet able to give an answer. The problem is so large and so complex that it would take years, even decades, of intensive studies before some of the statements given in this analysis could be verified in detail. This time scale applies in particular to the biological field; climatological effects may show up sooner.

Decisions, however, have to be made which do not permit such a delay. Thus, in the interim, these decisions have to be based on theoretical and semi-empirical principles, observations and sound engineering.

In conclusion, fresh water regulation may prove to be one of the most consequential modifications *man* can impose on nature. If we do not alter our course and give consideration to nature's needs there will be irreparable injuries inflicted on the environment for which future generations will condemn us.

The author greatly appreciates the assistance given initially by E. S. Turner, formerly with the National Research Council, and F. Jordan who helped to analyse data, developed graphs, and assisted in the preparation of the paper.

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The cumulative impact of less silica being transported each year to the ocean has resulted in fewer and smaller diatoms. Depleted diatom populations fail to support a healthy food chain or ameliorate ocean acidity, and they'll release less oxygen into the atmosphere. This has led to the starvation of creatures and fishes that eat them and increased acidity. The silicate of the smaller diatoms dissolves before the carbon can be sequestered to the ocean floor.

These reservoir dams have had other catastrophic impacts. For example, the temperature of the high-volume winter discharged waters flowing into the ocean has increased. These reservoir waters are now thermally stratified lakes. In northern temperate lakes, the bottommost waters are typically close to 4 degrees Celsius year-round, which is much warmer than the super cold river waters flowing under ice in the winter. It is not surprising the Gulf of Maine is warming so fast.

How long will the media and officials remain silent about all the key causes of the demise of the Gulf of Maine because of Canadian hydropower dams and unnatural freshwater flow regulation?

Reservoir Hydroelectric Dams

Silica Depletion

Silica Shelled Diatom Phytoplankton

A Gulf of Maine Catastrophe

Stephen M. Kasprzak
November 28, 2018

INTRODUCTION

I wrote a Report The Problem is the Lack of Silica on October 15, 2018 and submitted it at a public hearing by Maine's Public Utility Commission on the proposed New England Clean Energy Connect (NECEC) by Avangrid/Central Maine Power (CMP). This Report documented how Hydro-Quebec has significantly reduced the annual budget of dissolved silica to the northwest Atlantic and Gulf of Maine and how this reduction is the major driver in the starvation of many of the fisheries in these waters.

I handed out over 30 copies of this Report at the hearing and e-mailed more copies to interested parties. Someone shared my report with a scientist who commented *"the Gulf of Maine is too big to be affected by the releases from Hydro-Quebec's reservoir hydroelectric dams."*

This Report has been written to not only respond to the above observation, but also to the claim of Maine Marine Resources that "*Climate change is driving the decline in the shrimp fishery."*

The major source of the annual budget of fresh water and dissolved silicate to the Gulf of Maine is the St. Lawrence River, whose head waters are Lake Michigan, which is the fifth largest water body in the world. The St. Lawrence is the 27th largest river in the world, and its daily water flows of 300,000 to 500,000 cubic feet (ft.^{3}) per second dwarf the flows of Maine's largest rivers (see Graphs 1 and 2 on page 4).

The proliferation (see Maps 1 & 2 on pages 3 & 5 and Tables 1-3 on pages 6 &11) of Hydro-Quebec's reservoir hydroelectric facilities on the major rivers discharging into the St. Lawrence River, James Bay, Hudson Bay and Labrador Current have significantly altered the natural hydrologic cycle and silica cycle, which has starved the silica encased diatom phytoplankton in the Gulf of Maine of dissolved silicate. Diatom phytoplankton is the essential basis of the marine food web, including Maine's shrimp.

The building of these dams would have violated section 401 of the Clean Waters Act and Maine's Natural Resources Act and never could have been built in Maine. These reservoir dams have been built not only on all of the major rivers, but also on many of the tributaries and outlets of thousands of lakes and ponds in the watersheds of these major rivers.

These rivers and water bodies are all part of the Gulf of Maine's ecosystem and for over 70 years Maine officials have stayed silent while Hydro-Quebec built dams discharging waters depleted of dissolved silicate, and thereby, polluting the waters of the Gulf of Maine by starving them of the essential nutrients that support phytoplankton growth.

In the late 1950's there was a major decline in the annual load of dissolved silicate transported to the Gulf of Maine via the St. Lawrence River. This decline was brought on, not by dams, but by a silica limitation in Lake Michigan, which is the head waters of St. Lawrence River.

A 1970's study on the eutrophication of Lake Michigan was done by Claire Schelsky and Eugene Stoermer and was summarized in *Silica Stories by Conley and DeLaRocha,* in 2017 (see Attachment 1).

I believe the cumulative impact of this annual silica limitation in Lake Michigan was the driving force behind the first red tide event in 1958 in the Gulf of Maine. Coincidence, I don't think so. See Attachment #1 and look at the graph in Case Study #1 and the huge increase in silica burial in Lake Michigan from 1930 on. Please note that this has never happened before in Lake Michigan's 14,000 year history.

"Thirty years ago paralytic shellfish poisoning (PSP) was virtually unknown in New England, yet now, significant portions of the region's intertidal shellfish resources are closed annually to harvesting because of toxicity. A further expansion of the problem occurred in 1989 when off-shore shellfish resources on George's Bank and Nantucket Shoals were shown to contain dangerous levels of toxin. (White et.al. 1993)

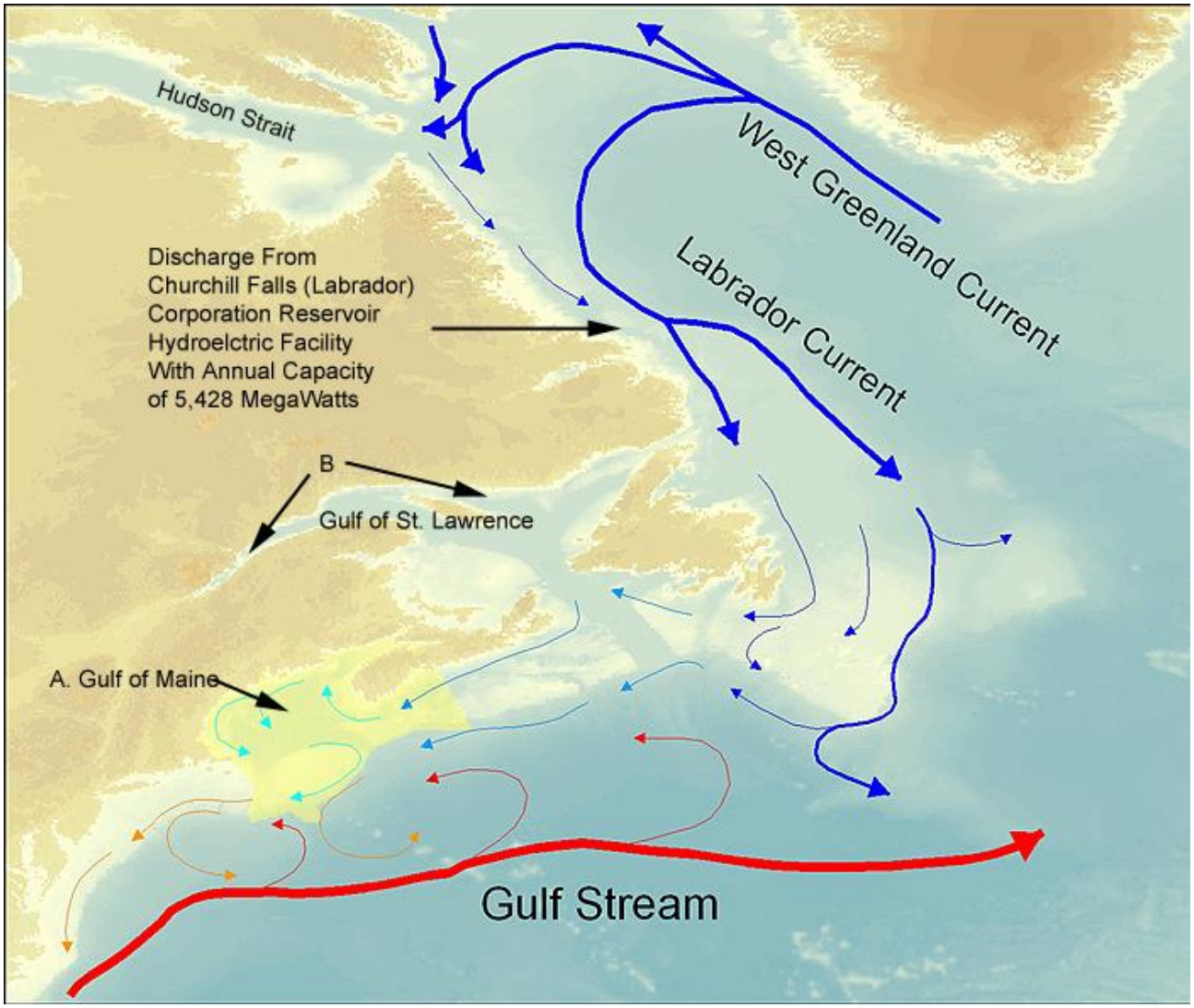
The following is the last paragraph of the Case Study #1:

"Overall, diatoms getting shut out of the latter part of the growing season in Lake Michigan while there is still plenty of nitrogen and phosphorus available for growth is a bad thing. It means a decrease in the flow of energy and materials through diatom-based food webs, which generally efficiently lead to fish, and an increase in the growth of noxious plankton species like dinodflagellates.[11] *Worse yet, what happens in Lake Michigan doesn't stay in Lake Michigan. Now stripped of their dissolved silica, the waters of Lake Michigan flow into Lake Huron and then Lake Erie, go over Niagara Falls, flow into Lake Ontario, and then via the Saint Lawrence River, arrive at the Atlantic Ocean at the Gulf of Saint Lawrence in all the full glory of their silica deficiency. You can almost hear the coastal diatoms screaming." (Silica Stories, Conley et. al. 2017.)*

On November 16, 2018, the Atlantic States Maine Fisheries Commission voted to close the Gulf of Maine winter shrimp season for three years. This agency said: "*The stock has shown very little signs of recovery. It's considered a depleted resource."*

With complete respect for these officials, the shrimp have become a depleted resource because we have allowed reservoir hydroelectric facilities to change the historic (before dams) natural silica cycle. This has depleted the essential nutrient dissolved silica from the waters of the Gulf of Maine and northwest Atlantic during the growing season of silica encased diatom phytoplankton.

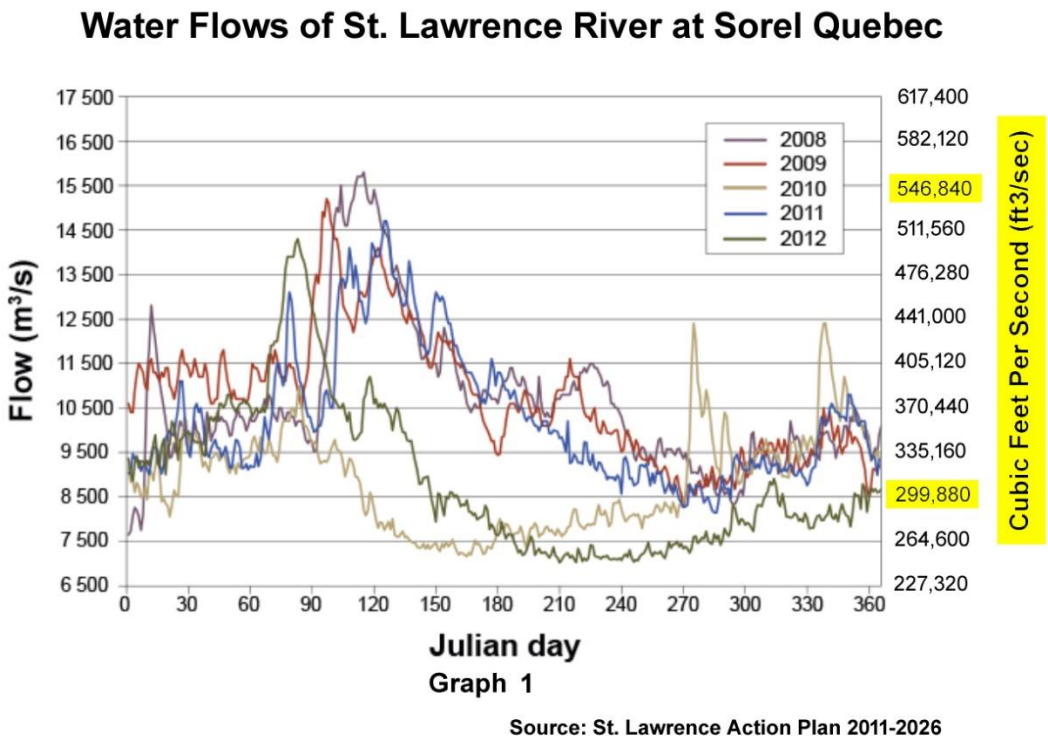
Many of the major rivers now have more than one reservoir on them, which only compounds the negative impacts described above of captured dissolved silicate in the spring and the sinking and burying of biogenic silica in the reservoirs through the process of eutrophication.



Map 1

A. Maine's six major rivers (see Graph 2 on page 4) discharge into the Gulf of Maine in the above area marked "A". The hydroelectric facilities on these rivers typically operate in a "run of river" mode and have an annual capacity of 526 MW. Maine's total capacity is only 723MW.
B. In the area marked "B," Hydro-Quebec has 16 reservoir hydroelectric facilities built on 9 rivers discharging into the St. Lawrence River and /or its Gulf (see Map 2 on page 5 for more details). These facilities have annual capacity of 12,749 MW (see Table I on page 6).

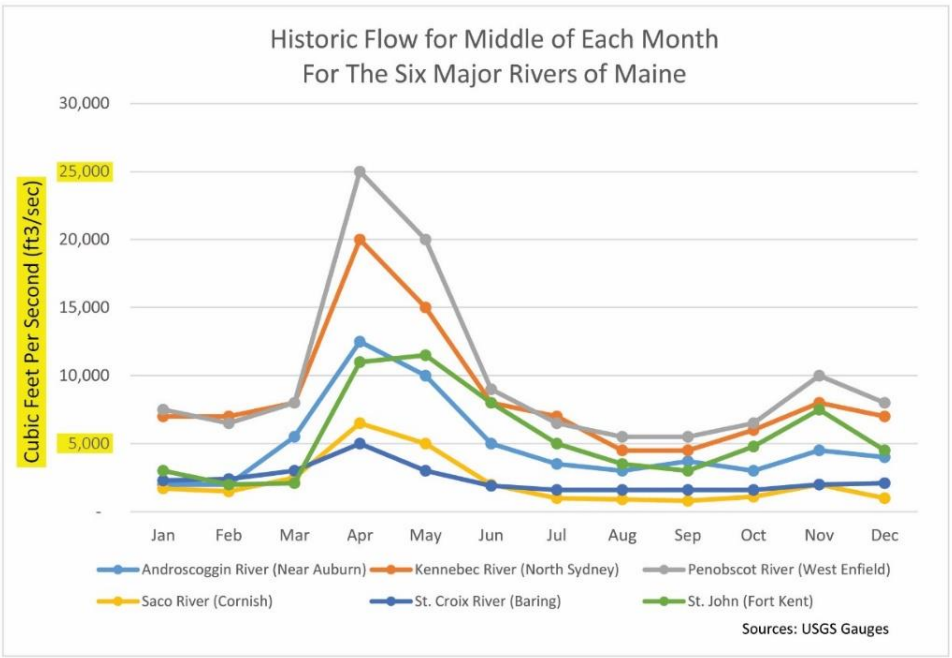
THE ST. LAWRENCE RIVER IS THE 27TH LARGEST RIVER IN THE WORLD AND HISTORICALLY TRANSPORTED WITHIN DAYS THE DISSOLVED SILICATE FROM ITS TRIBUTARIES INTO THE GULF OF MAINE.



Graph 1

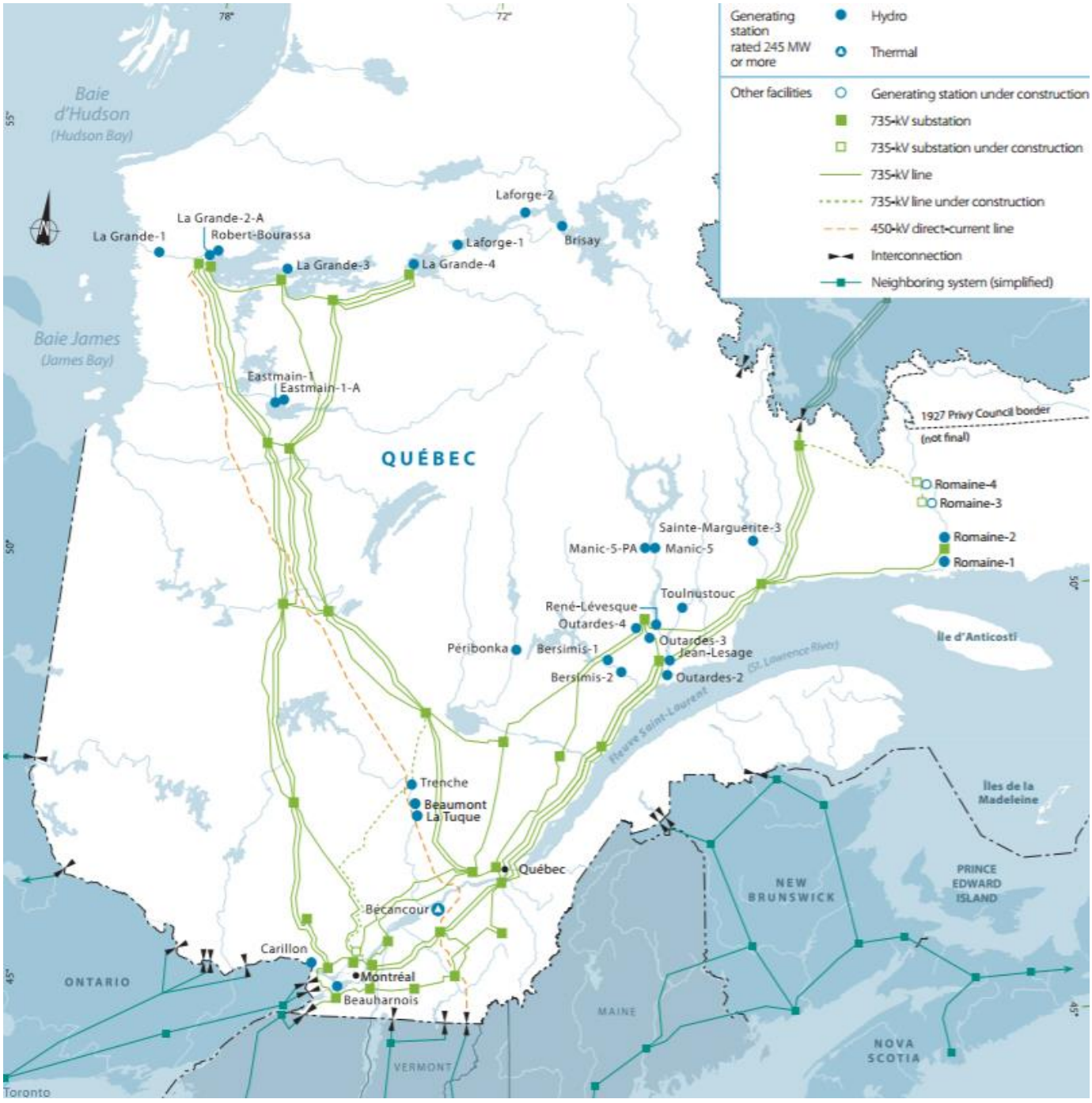
Source: St. Lawrence Action Plan 2011-2026

Water flows of St. Lawrence River dwarf the flows of Maine six major rivers



Graph 2

HYDRO-QUEBEC HAS BUILT 16 RESERVOIR FACILITIES ON 9 RIVERS IN SOUTHEAST QUEBEC THAT FLOW INTO THE ST. LAWRENCE RIVER. THESE 16 FACILITIES HAVE AN ANNUAL CAPACITY OF 12,749 MEGAWATTS (MW), COMPARED TO MAINE'S ANNUAL CAPACITY OF 753 MW.



Map 2

Table I

Reservoir Hydroelectric Generating Stations
Discharging into St. Lawrence River or Gulf

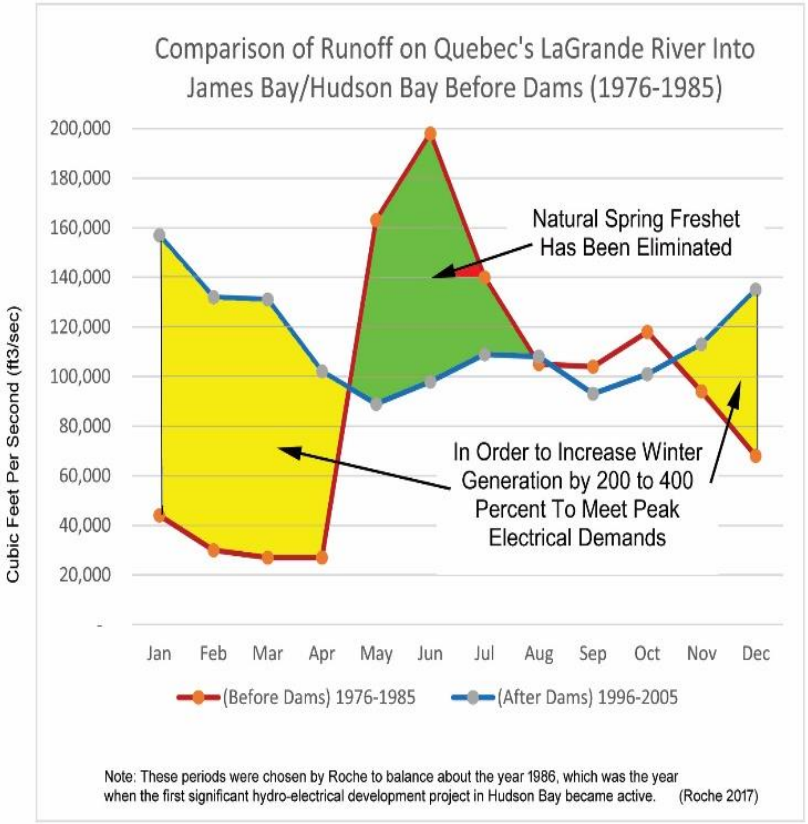
Owner	Name	Capacity In Megawatts (MW)	Commissioned	Watershed
Hydro-Quebec	Rapids Blanc	204	1934-35	St. Maurice
Hydro-Quebec	Bersimis-1	1,178	1956	Betsiamites
Hydro-Quebec	Bersimis-2	869	1959	Betsiamites
Hydro-Quebec	Jean-Lesage (Manic-2)	1,145	1965-67	Manicouagan
Hydro-Quebec	Outardes-4	785	1969	Outardes
Hydro-Quebec	Outardes-3	1,023	1969	Outardes
Hydro-Quebec	Outardes-2	523	1978	Outardes
Hydro-Quebec	Manic-5	1,596	1970	Manicouagan
Hydro-Quebec	Rene-Levesque (Manic-3)	1,244	1975-76	Manicouagan
Hydro-Quebec	Manic-5-PA	1,064	1989	Manicouagan
Hydro-Quebec	Sainte-Marguerite	882	2003	Saint-Marguerite
Hydro-Quebec	Touinstouc	526	2005	Touinstouc
Hydro-Quebec	Peribonka	405	2007-08	Peribonka
Hydro-Quebec	Romaine-2	640	2014	Romaine
Hydro-Quebec	Romaine-1	270	2015-16	Romaine
Hydro-Quebec	Romaine-3	395	2017	Romaine
		12,749		

Discharging into Labrador Current

Churchill Falls (Labrador) Corp.	Churchill Falls	5,428	1971-74	Churchill

THESE RESERVOIR DAMS HAVE CHANGED THE <u>HYDROLOGIC CYCLE</u> AND <u>SILICA CYCLE</u> FOR THE GULF OF MAINE BY CAPTURING AND STORING THE WATERS OF THE SPRING FRESHET IN ORDER TO MEET PEAK WINTER DEMAND FOR ELECTRICITY

I have plotted on Graph No. 1 the monthly flow curve of the LaGrande River before damming (1976-1985) and the flow curve after damming (1996-2005) (Roche 2017). I converted the water flows in Roche 2007 Report from KM^3/month to ft. ^{3}/sec.



Graph 3

Most of the hydroelectric facilities on Maine's rivers are operated in a "run of river" mode and have not eliminated the spring freshet. "Run of river" facilities have very little storage capability. Storage is typically measured in hours unlike large reservoir facilities which can store water for six months or more.

A HEALTHY FISHERY IN THE GULF OF MAINE AND NORTHWEST ATLANTIC IS BASED ON "THREE NUTRIENT-ENRICHMENT PROCESSES: COASTAL UPWELLING, TIDAL MIXING AND LAND-BASED RUNOFF, INCLUDING MAJOR RIVER OUTFLOW" (CADDY AND BAKUN, 1994).

The delivery of nutrients to coastal waters via upwelling is a hypothesis, and *"there is a caveat to this mechanism: nutrients in the up welled waters must be continually replenished in order for this transient upwelling to sustain phytoplankton growth over the long term,"* and "*this supply is only effective as long as there is a mechanism by which nutrients are replenished in the upper thermo cline."* (Williams and Fallows, 2011.) This mechanism was the historic (before dams) silica cycle.

***"EIGHTY PERCENT OF THE ANNUAL INPUT OF DISSOLVED SILICATE TO THE OCEAN IS TRANSPORTED VIA OUR RIVERS AND STREAMS."*(PAUL TREGUER ET. AL. 1995).** In the Gulf of Maine, the majority of this annual budget was historically delivered by the roaring rivers of the spring freshet, which Hydro-Quebec has now eliminated.

> *"Reservoirs built in those cool, temperate zones that play host to much of Europe, Asia, and North America and therefore a large percent of the world's industrialized nations are the worst, retaining nearly half of this region's seaward sediment flux. Nearly half! This enormous retention of sediment occurs because there are a lot of dams in these regions and is made worse by cool, temperate zone rivers tending to be turbid (full of particles.).*
>
> *Less obvious to the naked eye is the deprivation of downstream areas of dissolved silica. This deprivation occurs because a portion of the suspended material normally transported by a river dissolves en route, releasing dissolved silica into the river system to be delivered to the sea. But once particles are buried in a reservoir sealed in their sedimentary tomb, there is little chance of this happening. This is one way that dams starve downstream areas of dissolved silica that would normally have been used to fuel the growth of diatoms, reeds and grasses, and other silica-producing organisms.*
>
> *But there is a second process at work behind dams that is even more insidiously silica-stealing: diatom blooms. When the moving water of the river hits a reservoir and slows down and all those particles that were in suspension sink out, the water becomes a lot more clear. This means light can penetrate into the water more than the couple of feet or inches it could before and that means photosynthetic plankton living in the water can suddenly make a good living. Phytoplankton can finally fix carbon into organic matter faster they respire it away. They can begin to grow.*
>
> *But a dam means not only light, but also the time to put it to good use. Water that would have shot through that stretch of river in hours to days will now spend weeks to months to years in the extra reservoir volume. That's ample opportunity for phytoplankton like diatoms to build up biomass into thick blooms and to remove almost all the dissolved silica in the water. And because these stretches of quiet water with an enormously tall concrete wall at the downstream end are great places to build up sediments, the biogenic silica that has been produced stands a very good chance of sinking down and getting buried. The buck stops here, as they say, and as a result of downstream areas are starved of silica."* (Silica Stories Conley et. al. 2017).

HYDRO QUEBEC AND THE ADVOCATES OF HYDROELECTRICITY CLAIM IT IS A POWER SOURCE THAT IS CLEAN AND RENEWABLE BECAUSE IT USES THE EARTH'S ANNUAL WATER CYCLE TO GENERATE ELECTRICITY. THERE IS SOME TRUTH TO THIS CLAIM, AS IT PERTAINS TO "RUN OF RIVER" HYDROELECTRIC DAMS, BUT IS A FALSEHOOD WHEN IT COMES TO LARGE RESERVOIR DAMS BECAUSE THEY HAVE ALTERED THE "HYDROLOGIC CYCLE," WHICH IS DEFINED AS FOLLOWS BY BRITANNICA:

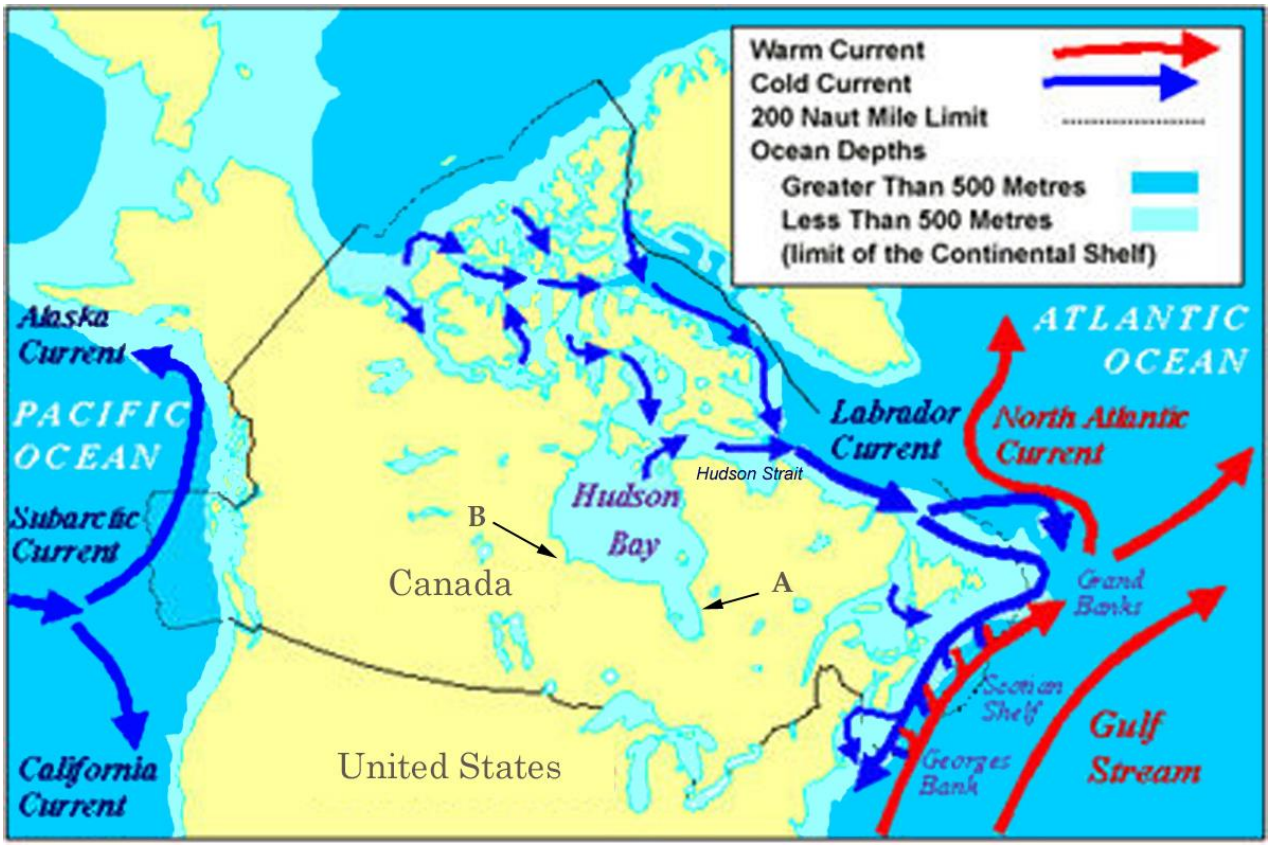
"Water on earth exists in all three of its phases-solid, liquid and gaseous. The liquid phase predominates. By Volume, 97.957 percent of the water on earth exists as oceanic water and associated sea ice. The gaseous phase and droplet water in the atmosphere constitutes 0.001 percent. Fresh water in lakes and streams makes up 0.036 percent, while groundwater is 10 times more abundant at 0.365 percent.

Each of the above is considered to be a reservoir of water. Water continuously circulates between these reservoirs in what is called the "hydrologic cycle," which is driven by energy from the sun, evaporation, precipitation, movement of the atmosphere, and the downhill flow of river water, glaciers, and groundwater keep water in motion between the reservoirs and maintains the hydrologic cycle."

The construction and management of reservoir dams by Hydro Quebec not only has significantly altered the hydrologic cycle, but also negatively impacted the silica cycle.

> *"Today, rivers and the release of groundwater through submarine springs deliver 85% of the reactive silica that enters the oceans.*
>
> *Up at the top of the ocean, dissolved silica taken up by silica biomineralizers like diatoms becomes incorporated into biogenic silica, most of which dissolved before it manages to sink all the way to the seafloor.*
>
> *Once added to the ocean, dissolved silica is available for use by silica biomineralizers such as diatoms. Furthermore, because our friends the diatoms are impressively numerous, fast-growing, and notably siliceous, it is a safe bet that most of the 240 teramoles (240 x 10^{12} mol aka 1.4 x 10 ^{19} metric tons) of biogenic silica produced in the upper ocean each year is being produced by diatoms. Thus the production of biogenic silica in the oceans is depicted in the upper part of the ocean on the silica cycle.*
>
> *The fate of almost all of this biogenic silica that is made each year is to rapidly dissolve. The modern day ocean is after all extremely undersaturated with respect to noncrystalline silica. So strong is the power of this undersaturation, slightly more than half of the biogenic silica produced each year dissolved even before it has had time to sink only 100 to 200 meters. In the end only 2-3% of the biogenic silica produced in the oceans each year becomes permanently buried in ocean sediments.*
>
> *But permanent export of 2-3% of each year's crop of biogenic silica is enough to (more or less) equal the amount of reactive silica coming in to the ocean via rivers, submarine groundwater springs, and mid-ocean ridge hydrothermal fluids. And because the gross amount of biogenic silica production is so high, a removal efficiency of 2-3% is enough to keep ocean waters all but entirely depleted of dissolved silica."* (Silica Stories, Conley et.al. 2017).

IN A RECENT CANADIAN STUDY OF TRENDS IN RIVER DISCHARGE FROM 1964-2014, THE AUTHORS FOUND: ***THAT THERE HAS BEEN A THREE-FOLD INCREASE IN RIVER DISCHARGE DURING WINTER, WHEN ELECTRIC DEMAND PEAKS, INTO THE ESTUARIES OF LABRADOR SEA AND EASTERN HUDSON BAY FOR THE 2006-2013 PERIOD COMPARED TO 1964-1971 AND A FORTY PERCENT REDUCTION IN DISCHARGE DURING THE SUMMER."*** (Recent Trends and Variability in River Discharges Across Northern Canada, Dery et. al. 2016).



Map 3

A. In this area marked "A," Hydro Quebec has 9 reservoir hydroelectric facilities in the watershed of the LaGrande River and 2 on the Eastmain River. The annual capacity of these 11 facilities is 17,383 MW (see Map 2 on page 5 and Tables 2and 3 on page 11 for more detail).
B. In the area marked "B," Manitoba Hydro has 4 reservoir hydroelectric facilities in the watershed of the Nelson River with an annual capacity of 3,837 MW (see Tables 2 and 3 for more details).
C. The proliferation of these reservoir hydroelectric facilities in the Gulf of Maine's ecosystem over the past 70 years is summarized in the next two Tables. I did not include facilities with an annual capacity of less than 200 MW. There are thousands of them also altering the silica cycle.

Table 2

Reservoir Hydroelectric Generating Stations Discharging
Into James Bay and Hudson Bay

Owner	Name	Capacity in Megawatts MW	Commissioned	Watershed
Manitoba hydro	Kelsey	287	1957	Nelson
Manitoba Hydro	Kettle	1,220	1970	Nelson
Manitoba-Hydro	Lang-Spruce	980	1977	Nelson
Hydro Quebec	Robert-Bourassa	5,616	1979-81	LaGrande
Hydro Quebec	LaGrande-3	2,417	1982-84	LaGrande
Hydro Quebec	LaGrande-4	2,779	1984-86	LaGrande
Manitoba-Hydro	Limestone	1,350	1990	Nelson
Hydro-Quebec	Brisay	469	1993	Caniapiscau
Hydro Quebec	LaGrande-2-A	2,106	1991-92	LaGrande
Hydro Quebec	Laforge-1	878	1993-94	Laforge
Hydro Quebec	LaGrande-1	1,463	1994-95	LaGrande
Hydro Quebec	Laforge-2	319	1996	Laforge
Hydro Quebec	Eastmain-1	507	2006	Eastmain
Hydro Quebec	Eastmain-1-A	829	2011-12	Eastmain
		21,220		

Table 3
Summary of Tables 1 & 2

Annual Capacity in Mega Watts (MW) of Reservoir Hydroelectric
Generating Stations Discharging Into

	James Bay and Hudson Bay	St. Lawrence River	Labrador Current	Total
1930-39				
1940-49		204		204
1950-59	2,334	2,047		2,334
1960-69		2,953		2,953
1970-79	2,200	3,363	5,428	10,991
1980-89	10,812	1,064		11,876
1990-99	6,116	469		6,585
2000-2009	507	1,813		2,320
2010-2018	829	1,305		2,134
	21,220	12,749	5,428	39,397

ACCORDING TO A 2007 REPORT BY STRANEO AND SOUCIER: *"OUR RESULTS SUGGEST THAT APPROXIMATELY 15% OF THE VOLUME AND 50% THE FRESHWATER CARRIED BY THE LABRADOR CURRENT IS DUE TO HUDSON STRAIT OUTFLOW."*

The St. Lawrence River is the largest river in Quebec, and the second largest is the LaGrande, which flows into James Bay/Hudson Bay. Hudson Bay flows into Hudson Strait and continues south into the Labrador Current.

The Labrador Current is 6 to 12 miles wide and transports approximately 6 million cubic meters of fresh water each second southward, which is approximately 10% of the volume of the Labrador Current. This fresh water is carrying dissolved silica and other essential nutrients which stimulate biological productivity in the coastal waters of Labrador, which becomes progressively more productive from north to south.

Further south an inshore branch of the Labrador Current continues around the southern shore of Newfoundland and enters the Gulf of St. Lawrence (see Map 3 on page 10). The outflow of the St. Lawrence tends to follow the south shore and mixes with the Labrador Current. The circulation on the Scotia Shelf is dominated by a southwestward coastal current flowing from the Gulf of St. Lawrence to the Gulf of Maine.

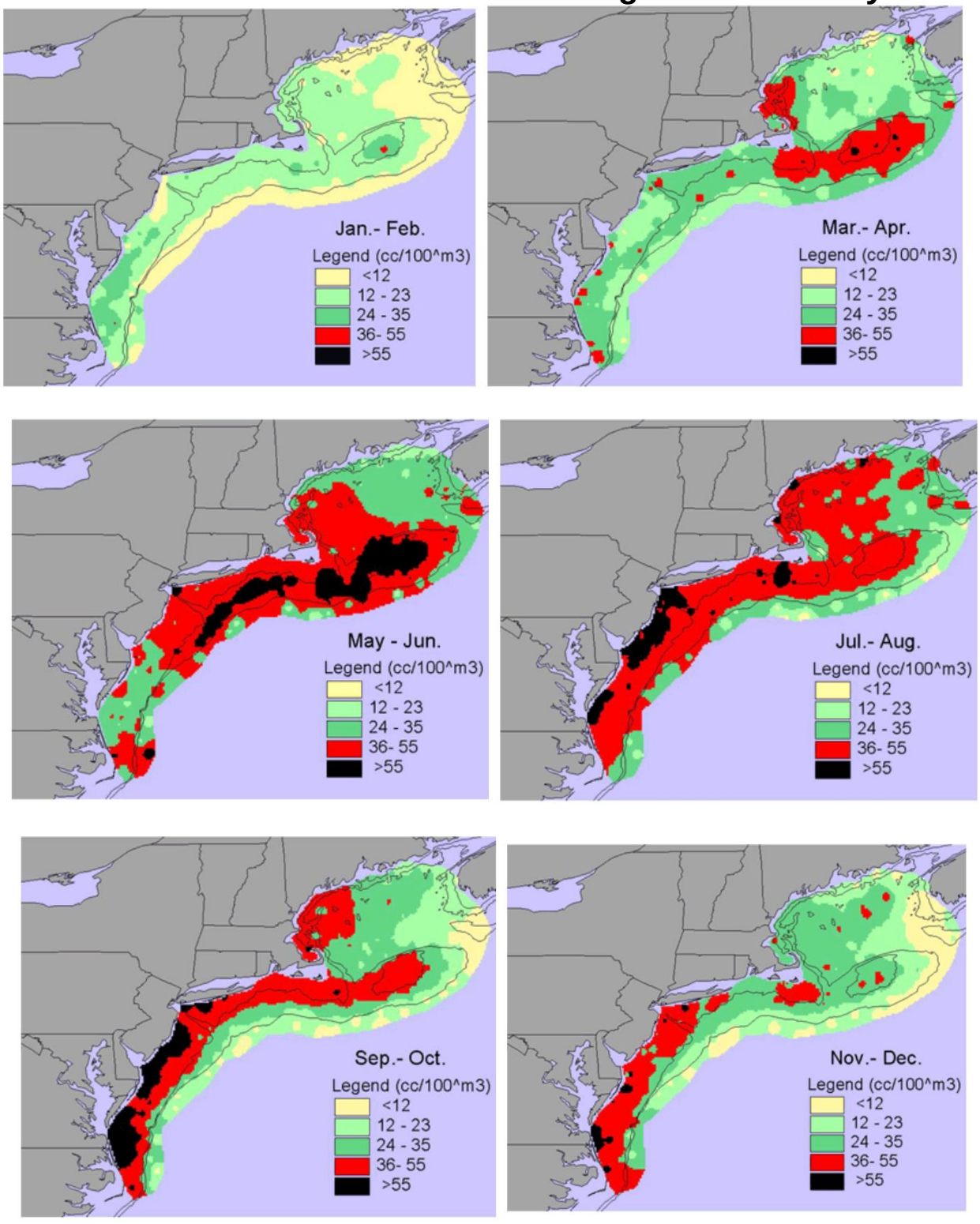
Silica-encased phytoplankton is the foundation of the aquatic food web, the primary producers, feeding everything from microscopic animal-like zooplankton to multi-ton whales. Small fish and invertebrates also graze on the plant-like organisms, and then those smaller animals are eaten by bigger ones. Phytoplankton is responsible for most of the transfer of carbon dioxide from the atmosphere to the ocean.

On the next page are satellite images showing how the pastures of zooplankton start blooming during the March through June period, in conjunction with the March/June period of the spring freshet of Maine's rivers discharging into the Gulf of Maine (see Map 1 on page 3 and Graph No.2 on page 4).

BEFORE RESERVOIR DAMS THE GULF OF MAINE WAS THE BENEFICIARY OF A PROLONGED SPRING FRESHET FROM ITS RIVERS, THE ST. LAWRENCE RIVER AND ITS TRIBUTARIES, AND THEN THE RIVERS OF NL, NORTHWEST QUEBEC AND MANITOBA VIA THE LABRADOR CURRENT.

Hydro-Quebec has eliminated the historical (before reservoir dams) spring freshet from the major rivers into the St. Lawrence River. This freshet occurred during the April/June period, and the dissolved silicate in this freshet was quickly transported to the Gulf of Maine via the high river flows of the St. Lawrence River as measured at Sorel, Quebec in Graph No. 1 on page 3.

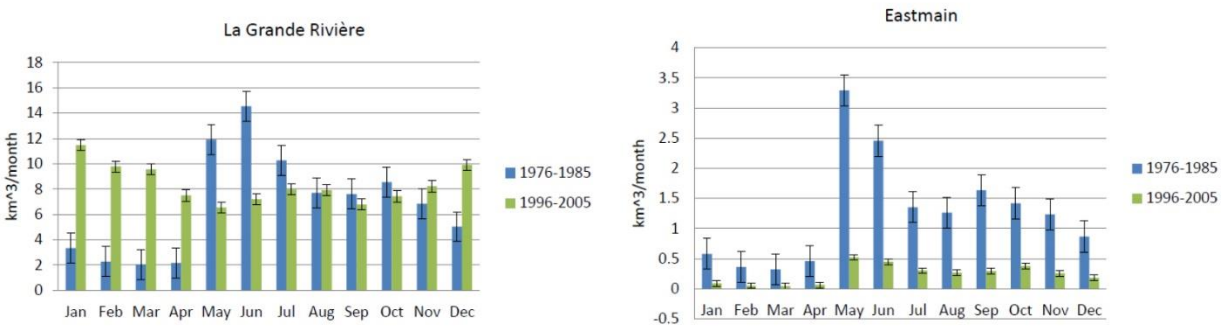
Biovolume of Zooplankton
Northeast U.S. Continental Shelf Large Marine Ecosystem



Source: NOAA – Northeast Fisheries Science Center

Roche wrote the following in his 2007 Report:

"In 1980, 80% of the flow from the Eastmain River was diverted in the LaGrande River, and seasonal runoff was impounded so that it could be released to produce electricity in the winter; consequently, the natural spring freshet into James Bay does not occur at either river. The plume from the Eastmain River is now much smaller and the size and shape of the summer plume from the LaGrande River are essentially unchanged; however, the area of the under-ice plume from the LaGrande River has trebled (Figure 3.1) and can now extend 100 km (62 miles) northward under the land fast ice of James Bay."



Comparison of runoff from two of the major rivers most affected by damming or diversion for the pre-1986 and post-1986 periods.

Source: Ray Roche (2017)

The high influx of dissolved silicate from LaGrande and Eastmain Rivers during the spring freshet is no longer available to be transported via the Labrador Current to the Gulf of Maine.

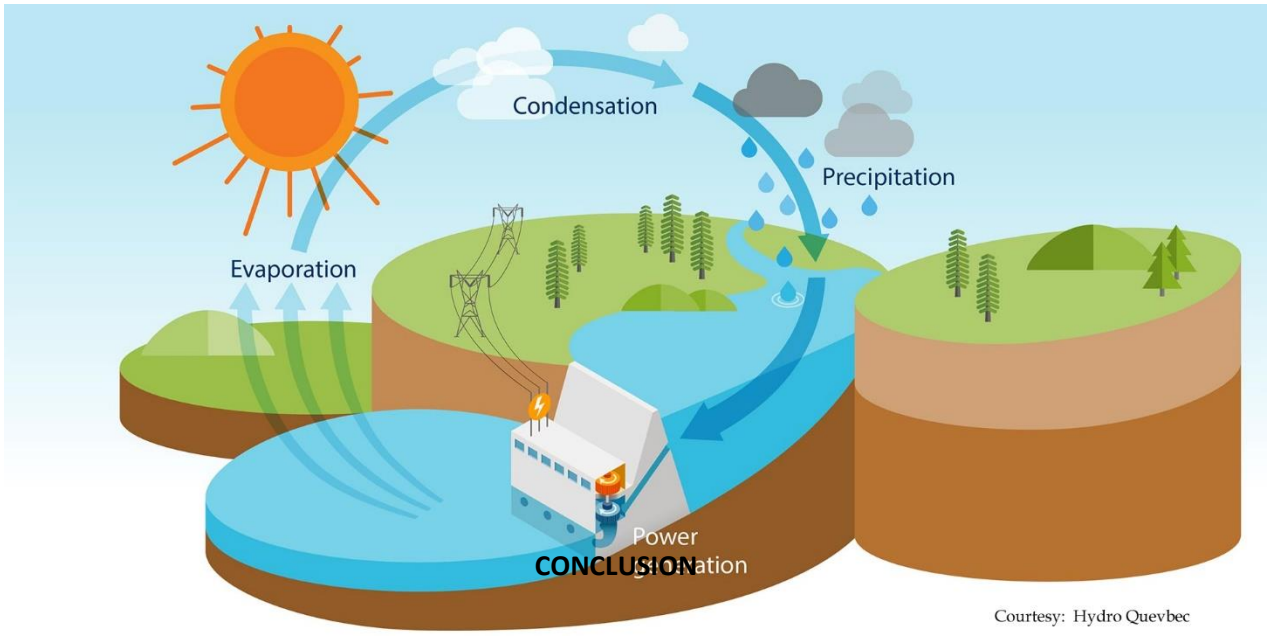
WHO DO YOU BELIEVE, THE AUTHORS OF SILICA STORIES OR HYDRO-QUEBEC?

"Dams in particular have had huge effects on the biogeochemistry, ecology and silica cycling of watersheds, creating lakes where there were not lakes before, trapping particles that would have otherwise been transported downstream, and obliterating seasonal flooding in favor of regulated year-round flow. Altogether this means most rivers of any note have multiple dams upon them and clogging up their spider vein watersheds. This has had a massive effect on the silica cycle, taking a lot of silica entirely out of the game before it can be transported downstream to coastal waterways.

Worse yet, in our humble opinion as silica fans, nitrogen and phosphorus eutrophication frees up diatoms in lakes, ponds, and reservoirs to grow-grow-grow and in so doing strip out incredible amounts of dissolved silica from the water. This is a major double whammy. This silica, now bound up in the beautiful frustules of biogenic silica that diatoms produce, ends up being buried in the sediments accumulating in lakes, ponds, and reservoirs instead of supporting diatom growth in estuaries and the ocean. That represents a serious break in the silica cycle that carried silica, weathered from silicate rocks, out to the ocean to support silica biomineralizers in the sea and the profundity of food webs based upon them." (Silica Stories by Conley et.al. 2017).

Hydropower is renewed through the natural water cycle

Hydropower starts with energy from the sun. The sun's heat causes water to evaporate and rise into the atmosphere, where it condenses and turns into clouds that are blown about by the wind. When the droplets and ice crystals that form clouds become too heavy, they fall back onto the ground as rain or snow. The water then flows through the rivers, and generating stations harness this cycle to produce electricity.



Courtesy: Hydro Quevbec

CONCLUSION

Quebec Hydro paints a benign picture of hydropower as renewable but fails to mention how it wrecks the silica cycle and the natural flow of water and nutrients especially dissolved silica which is critical for healthy fisheries and mediation of climate change.

The coastal diatoms of the Gulf of Maine have never stopped screaming for more dissolved silicate. The depletion of the shrimp, cod and other fisheries in the Gulf are the canaries in the coal mine who have been telling us for decades that there is a silica limitation in the Gulf of Maine.

This limitation has been caused by the proliferation of reservoir hydroelectric dams over the past 50 years on the major Canadian rivers, which for millennia have supplied nutrients to the Gulf.

For the Gulf of Maine's fisheries and mediating climate change nothing could be more important than restoring the natural timing, duration and quantity of fresh water flows transporting the annual load of dissolved silicate to the Gulf.

> *"But a lot of the excessive biogenic silica that freshwater diatoms are now able to produce gets buried in reservoirs and lakes, preventing its delivery downstream to the sea.*
>
> *Scientifically speaking, it took us some time to notice that dissolved silica was disappearing and yet some more time to grasp why. Of course, in retrospect, it's totally obvious. Of course this is what happened when we overloaded waterways with nitrogen and phosphorus. But in the beginning, we were probably too shocked by the eutrophication-fueled overgrowth of phytoplankton in general and all of the clogging and fouling of waterways and all of the fish-killing it was doing. Plus who would expect excessive nutrient addition to result in nutrient loss?*
>
> *And hardly anyone had the cleverness to foresee that dams would sequester silica.*
>
> *It took study of three different systems over an embarrassingly large number of decades for us to figure out what has been going on." (*Silica Stories by Conley & DeLaRocha 2017)

In Attachment 1 of this Report are these three case studies (referred to above) from Silica Stories by Conley and DeLaRocha 2017.

ATTACHMENT 1

EXCERPTS FROM SILICA STORIES, by DANIEL J. CONLEY and CHRISTINE DE LAROCHA 2017

But natural is not the state of many rivers on Earth at this point. Never mind everything else we've done to them, for the last hundred or more years we've been continuously adding mind-boggling amounts nitrogen and phosphorus to rivers, groundwater, and lakes. The main culprits are fertilizers and animal waste flowing out of farms and off of fields, and poorly treated sewage (containing human waste and phosphate-containing detergents) from our houses, villages, towns, cities, and other settlements. As there is no equivalent addition of silica to balance things, the ratios of nitrogen to silica and of phosphate to silica in inland waterways have dramatically shifted against silica.

Thanks to our messiness, for the last few decades, diatoms in eutrophic systems *have not* been limited by nitrogen or phosphorus. They have been able to bloom until they have removed nearly all of the dissolved silica from the lake or river or pond or reservoir they are growing in. Some of this silica has recycled back into the water because some biogenic silica inevitably dissolves after the death of the diatom that made it. But a lot of the excessive biogenic silica that freshwater diatoms are now able to produce gets buried in reservoirs and lakes, preventing its delivery downstream to the sea.

Scientifically speaking, it took us some time to notice that dissolved silica was disappearing and yet some more time to grasp why. Of course, in retrospect, it's totally obvious. Of course this is what happened when we overloaded waterways with nitrogen and phosphorus. But in the beginning, we were probably too shocked by the eutrophication-fueled overgrowth of phytoplankton in general and all of the clogging and fouling of waterways and all of the fish-killing it was doing. Plus who would expect excessive nutrient addition to result in nutrient loss?

And hardly anyone had the cleverness to foresee that dams would sequester silica.

It took study of three different systems over an embarrassingly large number of decades for us to figure out what has been going on.

8.5 Case Study #1: The Laurentian Great Lakes

The first case that came to light of how we're screwing up the silica cycle has nothing to do with a dam, but strictly with eutrophication. It was also our first inkling that freshwater ecosystems were being shifted into silica limitation as a side effect of all the phosphorus and/or nitrogen we were spilling into waterways.

The time was the 1970s. Two to-be-giants in the field of limnology[7], Claire Schelske and Eugene Stoermer[8], both of the University of Michigan, had been

[7]Limnology is the study of inland waters, including rivers, ponds, lakes, reservoirs, wetlands, estuaries, and groundwater, with focus on the interactions between organisms and their environment.

[8]Incidentally, Eugene Stoermer was also the co-namer of the Anthropocene.

studying the Laurentian Great Lakes that lie along the US-Canadian border. Before they started this work, a series of measurements on the intake waters of filtration plants serving the city of Chicago had shown that dissolved silica concentrations in Lake Michigan were decreasing. Claire and Eugene quickly discovered that the situation had escalated to the point where diatoms in Lake Michigan were running out of dissolved silica before the end of summer. This caused the growth of diatoms to screech to a halt several months before the end of their natural growing season, which had previously extended into autumn. Because diatoms serve as the base of key food webs, the knock on effect of premature stoppage in their growth was food shortage for fish and invertebrates in autumn in Lake Michigan.

One of the first things Claire and Eugene wondered was whether the mid-summer silica depletion was something new or if it had merely previously escaped notice. The two of them sleuthed through what old, patchy datasets they could dig up from various water quality agencies. The resulting data, plotted in Fig. 8.2, revealed that the mid-summer exhaustion of dissolved silica was new. It had first showed up in Lake Michigan and settled itself fully in sometime between 1955 and 1969.

Now all they had to do was figure out why it was happening.

At first it must have been a head-scratcher. The decades leading up to and including the one that they were in had seen an explosive growth of algae beginning

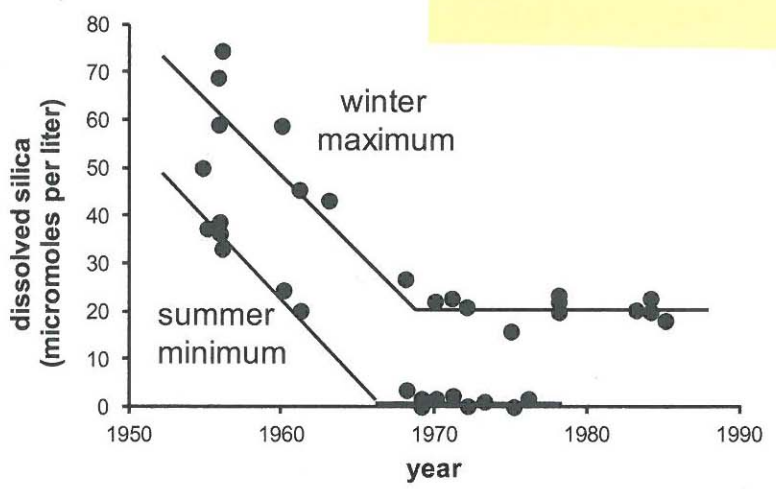


Fig. 8.2 The typical maximal concentrations of dissolved silica in winter and the typical minimum concentrations in summer in the surface waters of Lake Michigan significantly decreased during the 1950s and 1960s. This was due to excess production of biogenic silica fueled by phosphorus eutrophication. This figure has been redrawn from Internationale Revue der gesamten Hydrobiolie und Hydrologie 73, Schelske CL, Historic trends in Lake Michigan silica concentrations, 559–591, (1988), copyright © 1988 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, with permission from Wiley

to choke freshwaters across the globe. Diatom populations hitting the wall due to silica scarcity flew against the grain of this trend. It was out of step with everything turning most rather unexpectedly, unprecedentedly green.

But, when Claire and Eugene sat down and thought about it, the answer became obvious. There was a growing understanding, all over the world, that lakes, ponds, rivers, and estuaries were clogging up with excess algal growth because their concentrations of nitrogenous and phosphatic nutrients (that all phytoplankton, including diatoms, need in order to grow) were going off the charts. One reason, very well accepted at that point, was agricultural runoff that was full of biologically utilizable nitrogen and phosphorus from all the manure produced by livestock and from fertilizers applied to fields. The other widely acknowledged cause for eutrophication was human-generated sewage. But neither of these things, though, was adding much in the way of dissolved silica.

What Claire and Eugene also quickly came to realize was that, in the Great Lakes' case, the problem wasn't so much one of agricultural runoff nor was it one of too many people generating too much sewage. The problem was detergents that contained a lot of phosphate.

Detergents are crafty chemicals. One side of them is good at binding oils and fats (which, on their own, are insoluble in water) and another side of them is good at being dissolved in water. When detergents bind an oil or a fat, they thus drag it into solution. That is their cleaning power.

But detergents are not as effective in hard water, which is water that has a lot of calcium and magnesium dissolved in it. The doubly charged cations of Ca^{2+} and Mg^{2+} bind to detergents, precipitating them. Instead of foaming and doing a spanking great job of cleaning, in hard water, detergents form stubborn scum.

Most store-bought detergents have a water softener included in them to chemically preoccupy Ca^{2+} and Mg^{2+} so the detergent can do what a detergent's gotta do. Starting from about the 1950s and still in many cheaper detergents sold today, that water softener has been a phosphate such as trisodium phosphate or sodium hexametaphosphate (pronounced hexa-meta-phosphate).[9] Washing such phosphate-containing detergent down the drain, especially in areas lacking effective sewage treatment facilities, drains that phosphate straight into the nearest lake, river, or ocean, where it can feed the algae.

Take yourself back to the middle years of the twentieth century, when the human population was just beginning to embark upon the steep, wild, and crazy part of its exponential increase. At the same time modernization was marching along, introducing the washing machine and the dishwasher and then boosting their use. So not

[9]These days we are tending towards using zeolites instead because they don't add massive amounts of a major nutrient to the water, although by even this very late date, there are few *national* laws against the use of phosphate in detergents.

only were there vastly more people than ever before living along the shores of the Great Lakes, flushing toilets and generating agricultural runoff, they were also enthusiastically doing laundry and washing dishes and the detergents they were using consisted of up to *50%* phosphate.

There is only so much even a Great Lake can take, even if it is the fifth largest lake in the world. For Lake Michigan, this was the waste water from millions of loads of laundry and dishes done each week by the people of Chicago, Milwaukee, Green Bay, and other sites on the shore on top of all the other sewage and agricultural runoff. Algae began growing like gangbusters.

As we've said before, Claire Schelske and Eugene Stoermer realized that this phosphorus eutrophication was the key to the disappearance of the silica from Lake Michigan. With the phosphorus brakes released on their growth, diatoms in Lake Michigan could grow until they had converted basically all of the dissolved silica in the lake's sunlit surface waters into diatom frustules that ended up in the sediments.

In other words, dissolved silica was disappearing from Lake Michigan because it was being turned into particulate silica by diatoms growing in the surface waters of the lake and exported, via sinking, to the bottom of the lake.

Ecologically speaking, this was dire news, but intellectually it was kind of cool. Phosphorus eutrophication was leading to silica oligotrophication, a paradox that made perfect sense. And, as ideas go, it was one that Claire and Eugene could test.

Even long-lived lakes are only temporary features of the landscape; they're busy filling up with layer upon layer of sediment. You can take advantage of this if you want to learn about the history of a lake, ecologically and climatically speaking. All you need to do is carefully take a sediment core, slice it lengthwise in half, and, moving downwards from the top of the core, begin your journey back through time.

The core that Claire Schelske, Eugene Stoermer, and their collaborators took in the middle of the deepest part of Lake Michigan (which is found within Grand Transverse Bay) was 40 centimeters long (about 16 inches) and, based on radiometric dating[10], covered the last century and a half. The milligrams of biogenic silica to be found per gram of core versus depth within the sediment core are shown in Fig. 8.3 and that's all that is needed to show the story.

Before 1920 or 1930, only 10 milligrams of every gram of sediment that was accumulating on the lakebed was biogenic silica, a content that can also be expressed as 10 parts per thousand, or 1% biogenic silica. As biogenic silica accumulation rates go, that's pathetic. Those pre-postmodern Lake Michigan diatoms should hang their heads in shame at the poor job they were doing of exporting silica to the sediments. Or maybe they should be proud, because this is the level of export of silica that the lake could maintain, given the amount that was being delivered to it each year in runoff.

[10]Using the isotope lead-210 (^{210}Pb), which has a half-life of 22 years and is a particulate material which is continually falling out of the atmosphere following its production by the decay of radioactive radon gas.

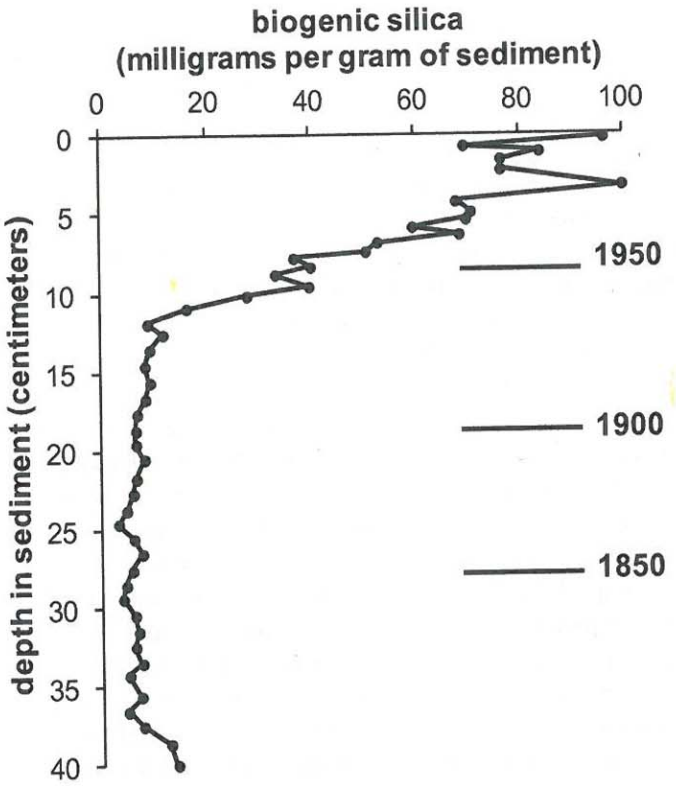


Fig. 8.3 Biogenic silica concentration versus depth in a core from Grand Traverse Bay, Lake Michigan records the transfer of Lake Michigan's silica into the sediments during the twentieth century's explosion in the use of phosphate detergents and fertilizers. This figure has been redrawn from Hydrobiologica 143, Schelske CL, Conley DJ, Stoermer EF, Newberry TL, Campbell CD, Biogenic silica and phosphorus accumulation in sediments as indices of eutrophication in the Laurentian Great Lakes, 79–86, (1986), copyright © Dr W. Junk Publishers, Dordrecht, with permission from Springer

As you move forward in time in the sediment core from 1930 it is like running up a ramp. The biogenic silica content of the sediments steadily climbs, reaching a peak of 100 milligrams of biogenic silica per gram of sediment (or 10% biogenic silica) by 1970. This you can see clearly in Fig. 8.3. What Fig. 8.3 does not show is what you would see if you made this measurement on lake sediments stretching back to the birth of Lake Michigan. The biogenic silica content of the older sediments (not shown here) reveal that such an astonishing change in silica burial had never happened before, not once in Lake Michigan's 14,000 year history.

Thus Claire and Eugene had managed to show that the disappearance of dissolved silica was due to excessive production of biogenic silica and that this excessive production of biogenic silica had never happened before people moved in by the tens of millions and started doing a lot of laundry in cities and towns along the shore of Lake Michigan.

There is another big detail of the shift that is revealed by the sedimentary record —the shift in the composition of the diatom population with the eutrophication of Lake Michigan. Diatom frustules are, after all, quite distinctive, and can be used to tell one diatom species from another.

Sediments older than the expansion of European settlements around Lake Michigan in the 1800s had a lot of different diatom species in them, representing a wide range of ecological niches (high light, low light, high silica, low silica, benthic, planktonic, spring growing, summer growing, autumn growing, etc.). But as phosphorus eutrophication (and silica depletion) increased, the variety of diatoms in the sediments narrowed to only those species that grow in late winter/early spring. This is the very start of each year's growing season, when dissolved silica concentrations are still high from winter mixing. Diatoms that would have grown later in the year were missing because by the time it was their turn to grow, there was no dissolved silica left for them to use. Benthic diatom species, meaning those that grow on the bottom of the lake (in shallow waters), also disappeared, most likely because the overgrowth of plankton due to eutrophication made it too dark down there for them to grow.

Overall, diatoms getting shut out of the latter part of the growing season in Lake Michigan while there is still plenty of nitrogen and phosphorus available for growth is a bad thing. It means a decrease in the flow of energy and materials through diatom-based food webs, which generally efficiently lead to fish, and an increase in the growth of noxious plankton species like dinoflagellates.[11] Worse yet, what happens in Lake Michigan doesn't stay in Lake Michigan. Now stripped of their dissolved silica, the waters of Lake Michigan flow into Lake Huron and then Lake Erie, go over Niagara Falls, flow into Lake Ontario, and then via the Saint Lawrence River, arrive at the Atlantic Ocean at the Gulf of Saint Lawrence in all the full glory of their silica deficiency. You can almost hear the coastal diatoms screaming.

[11]The addendum here is that the water quality (and dissolved silica content) began improving in the first decades of the twenty-first century due to improvements in sewage treatment and to the phasing out of phosphate detergents. Then the quagga mussel invaded, via larval stages that most likely arrived in water released from the ballast tanks of transoceanic shipping vessels. The quagga and its relatives are voracious filter feeders and they've colonized enough of Lake Michigan to keep the waters clear of algal blooms, regardless of the lake's nutrient status. Unfortunately, this means that phytoplankton still aren't making it into the food chains that lead to fish, causing a collapse in the lake's fisheries. Poor Lake Michigan can't catch a break from the trouble caused by human beings.

8.6 Case Study #2: The Baltic Sea

Once the research on Lake Michigan became known, people started to have a look at other large inland bodies of water to see if the same things were happening to their local silica cycles. One of the more recent and most intensively investigated places has been the Baltic Sea.

Lake Michigan is big, but the Baltic Sea is massive. It is that large inland sea that sits in the midst of northern Europe. You could think that the Baltic Sea is too big to be notably affected by the activities of humankind. But once you start paying attention, you quickly come to pity the Baltic Sea. All but entirely encircled by Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Poland, Germany, and Denmark and additionally containing portions of Belarus, Ukraine, Norway, Slovakia, and the Czech Republic in its watershed, the Baltic Sea is subject to continual insult by the agriculture and sewage of 90 million people. This insult, which comes partly in the form of four to eight times more nitrogen and phosphorus than it tended to receive a century ago, is delivered in 16,000 metric tons of freshwater *per second* flowing off the land. Consequently, concentrations of nitrate and phosphate in the Baltic Sea have increased over the last century.

But concentrations of dissolved silica have declined. This decline has been severe. For example, concentrations of dissolved silica in subsurface waters in a central area of the Baltic Sea have decreased by one-third to two-thirds since the late 1960s, the time when monitoring began at that location.

So far so Great Lakes? It seems pretty similar. Just add eutrophication and watch those diatoms go (until they run out of dissolved silica).

Maybe. But maybe not.

There is a certain key difference in the situation of Lake Michigan and the Baltic Sea. Excess phosphorus is mainly delivered to Lake Michigan directly, from sources that originate along the shore. But the Baltic Sea is receiving waters high in phosphorus and nitrogen via rivers that travel great distances to get to the Baltic Sea and generally encounter multiple lakes and dams along the way. This gives silica plenty of opportunity to be removed and trapped in sediments long before it arrives into the Baltic Sea itself. So maybe excess production of biogenic silica within the Baltic Sea itself is stripping dissolved silica out of its waters. But maybe that silica is being removed upstream and because the Baltic Sea is being thus deprived of dissolved silica, its poor diatoms aren't growing (or producing biogenic silica) much at all. If we want to help solve the problem (in part because we'd like to get the Baltic back to supporting food webs that produce something besides enormous swarms of jellyfish) we need to know which one is going on. Plus we're just plain old curious.

The first question to tackle: do outputs of silica from exceed inputs of silica to the Baltic Sea? If so, at least some of the problem is due to eutrophication-fueled diatom growth within the Baltic itself. The straightforward way to answer the question is to put together a silica budget with inputs on one side and outputs on the other.

For a small reservoir or lake, this should be easy. You need to measure three things. One is the amount of dissolved silica flowing in with water flowing in from rivers and streams. Another is the amount of biogenic silica accumulating on the lake bed. The third is the amount of dissolved silica flowing out in the stream that serves as the lake's outflow.

But the Baltic Sea is no little lake. Nearly 100 rivers of note flow into the Baltic Sea and you'd have to monitor each one for several years. There is at least only one outflow of water from the Baltic Sea (aside from evaporation): water leaves via the Denmark Straits to the Atlantic Ocean. But sometimes, because of storms, winds, currents, and tides, the water flows in instead, bringing dissolved (and biogenic) silica with it. As far as measuring how much biogenic silica is getting buried in Baltic Sea sediments, the complication here is that the Baltic Sea is made up of numerous basins, such as Bothnian Bay, the Bothnian Sea, the Gulf of Finland, the Baltic Proper, the Gulf of Riga, the Denmark Straits, and the Kattegat, and they all behave differently (and exchange water with each other). Figuring out how much biogenic silica is accumulating in the sediments requires careful study of sediment accumulation rates (and correction for sediment winnowing and focusing due to currents) in all of these regions.

Despite the near impossibility of the task of determining whether more silica is leaving the Baltic Sea than is coming in, there have been several attempts to put together silica budgets for the Baltic Sea. (Scientists do love them a challenge.)

In their quest, two different groups of researchers have fed monthly measurements of dissolved silica from the major rivers flowing into the Baltic and measurements of wintertime dissolved silica concentrations at various locations within the Baltic Sea into a computer model of Baltic Sea circulation in order to calculate how much dissolved silica is disappearing from Baltic Sea water as it flows out to the North Atlantic. Both groups came up with much the same result, that recently roughly 1,300,000 tons of silica has been accumulating in the sediments of the Baltic Sea each year. As both modeling efforts produced a Baltic Sea whose dissolved silica concentrations decreased from year to year during the model runs, an export of 1,300,000 tons of biogenic silica to the sediments must be enough for the total export of silica from the Baltic Sea to be exceeding silica's input.

So the Baltic Sea is probably at least a little bit like Lake Michigan. Eutrophication is causing it to overproduce biogenic silica. But when you actually look at the data that were fed into the models, you realize that something else pretty major is going on.

Many of the major rivers flowing into the Baltic Sea have concentrations of dissolved silica that are, frankly, shocking.

The Neva River, which is the greatest of the rivers flowing into the Baltic Sea, contains *8* micromoles of dissolved silica per liter when it reaches the Baltic Sea. Can you hear the diatoms weeping? No self-respecting river should contain such a measly amount of dissolved silica. An *average* (as in mediocre, hum-drum, run-of-the-mill) river has 160 micromoles of dissolved silica per liter and an overachiever has 1000 micromoles of dissolved silica per liter. A number like *8* is

almost unfathomable. To yield up only 8 micromoles per liter dissolved silica, the Neva River's catchment is only producing a net 63 kilograms of silica per square kilometer of catchment area per year, another number to make a diatom cry.

The Vistula, the Baltic Sea's number two river in terms of the delivery of water, is better, but at 119 micromoles of dissolved silica per liter and 580 kilograms of silica produced per square kilometer, still below average. The number three river, the Daugava, averages around 60 micromoles of dissolved silica per liter, a yield of 411 kilograms of silica per square kilometer, more dismal numbers.

But if you look at the rivers draining into the Baltic Sea from the emptier, more northern areas of the catchment, you'll find that they are not like this. The Närpiönjoki in Finland has an average dissolved silica content of 267 micromoles of dissolved silica per liter, representing a catchment yield of 2285 kilograms of silica per square kilometer. The numbers for the Isojoki, also in Finland, are similar: 195 micromoles of dissolved silica per liter and 2105 kilograms of silica per square kilometer.

What's the difference between the respectably silica-containing rivers and the failures? The silica-poor rivers draining into the Baltic Sea are found in more heavily populated areas while the silica-rich rivers are running wild. The silica-poor rivers are suffering from notably greater eutrophication and they contain much greater (natural and manmade) reservoir volume.

Take that astonishingly low-silica river, the Neva River, for example. Just upstream of St Petersburg (not so far from the Baltic shore), it runs through Lake Ladoga, one of the largest lakes in Europe. Lake Ladoga has been heavily eutrophicated since the 1960s. You can all but walk on the phytoplankton blooms, they grow so thick. This is where a lot of the Baltic Sea's silica is ending up. Buried in Lake Ladoga's sediments.

Similar, although less severe losses of silica must be occurring in lakes and reservoirs along other eutrophicated rivers that feed into the Baltic Sea.

Once you have data (on silica concentrations, water flows, surface area of river catchments, and so on), you can cross-examine them to tease out the combined effects of eutrophication and damming on the silica content of rivers draining into the Baltic Sea. You could, for example, plot the concentration of dissolved silica in a river (or, if you'd prefer, its yield of dissolved silica per catchment area) versus the amount of time water spends in the river's catchment area. Dams and natural lakes both increase the residence time of the water within the catchment. Thus a long residence time indicates the water spends a lot of time in places favorable to diatom blooms and export of silica to sediments.

In practice, residence time of water in a river catchment is not an easy thing to measure. So you can try to use a proxy, some other more easily or accurately measurable factor that is relatable enough to residence time that it can serve as a stand in. You might try hydraulic load, the amount of water, expressed as meters of height, that passes over a point in the river system each year. High hydraulic loads

are associated with short residence times (fast flowing water) while low hydraulic loads indicate long ones (fairly slow, stagnant flow).

The result? The lower the hydraulic load (and the longer the residence time of water in the river system), the lower the catchment's dissolved silica yield per area and the lower the concentration of dissolved silica in the river. This is true for all types of river feeding into the Baltic Sea, meaning that reservoir volume (be it natural lakes or manmade due to damming) is giving diatoms a chance to bloom and remove silica before the silica reaches the Baltic Sea. That the problem is worse in eutrophicated river systems is also clear because concentrations of dissolved silica are lower in these rivers regardless of their hydraulic load.

This is all illustrated nicely in Fig. 8.4. The yields of dissolved silica per catchment area from a subset of the Baltic Sea catchments that are not eutrophicated and whose flows are not interrupted by dams (represented on the plot by the black triangles) range from 800 to almost 1300 kilograms of silica per square kilometer. These highest silica yields belong to fairly pristine catchments where water doesn't spend too much time hanging around. There is neither the time nor the added nitrogen and phosphorus for diatoms to bloom and remove dissolved silica. These rivers hit the Baltic Sea with a healthy load of dissolved silica and this most likely represents the natural state of the system.

The subset of the Baltic Sea catchments that are not eutrophicated but are subjected to damming (represented by the black circles on Fig. 8.4) give yields of 280 to 1100 kilograms of silica per square kilometer and the yields clearly decrease as the residence time of water in the watershed increases because waters are detained in lakes and reservoirs on their way to the Baltic Sea. There is just enough naturally occurring nitrate and phosphate for diatoms to bloom and remove some dissolved silica from the river system, thus preventing it from reaching the Baltic Sea.

The subset of the Baltic Sea catchments investigated that are both eutrophicated and dammed (the gray circles on Fig. 8.4) have yields of 60 to 600 kilograms of silica per square kilometer. There are two things going on here. Eutrophication in general is keeping the yields low because diatoms are growing and removing silica. But the lowest of the low yields are occurring in catchments where the residence time of the water is the greatest and this is because of lakes and by reservoirs produced by damming.

These are, you might say, damning results for both eutrophication and damming. Worse, we're starting to suspect that there is another process contributing to the problem. Rates of silicate weathering within damned catchment areas are probably lower than in non-dammed catchments. When you build a dam, a lot of what used to be the soils of grasslands and forests becomes the bottom of a reservoir. Weathering reactions tend to be vigorous in the soils of grasslands and forests and the dissolved silica the weathering produces is efficiently flushed into rivers when it rains. But not much silicate weathering is going to be going on at the bottom of a reservoir. As a result, not only is the reservoir sequestering silica that used to flow onwards to the ocean, it is also preventing some silica from being added to the river in the first place.

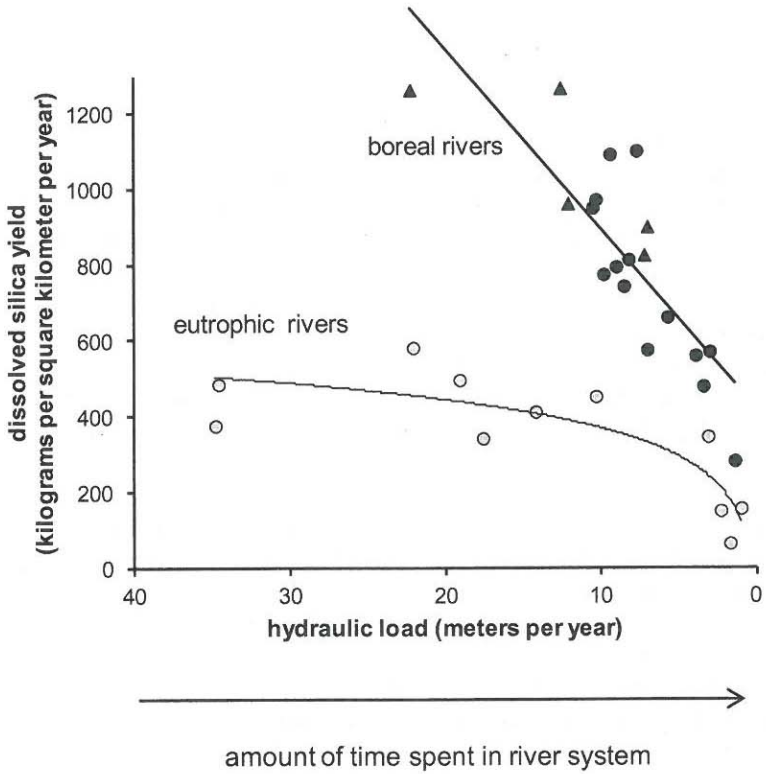


Fig. 8.4 Yield of dissolved silica compared to hydraulic load for pristine boreal rivers (*black triangles*), eutrophicated but undammed boreal rivers (*black circles*), and heavily eutrophicated and dammed rivers (*gray circles*) draining into the Baltic Sea. Hydraulic load serves as a proxy for residence time, with residence time increasing to the *right* of the figure. This figure has been redrawn from Journal of Marine Systems 73, Humborg C, Smedberg E, Medina MA, Mörth C-M, Changes in dissolved silicate loads to the Baltic Sea—the effects of lakes and reservoirs, 223–235, (2008), copyright © 2007 Elsevier B.V., with permission from Elsevier

The patterns revealed by the set of river catchments of Fig. 8.4 can be used to estimate that the combination of eutrophication and damming has decreased the amount of dissolved silica delivered into the Baltic Sea by 30–40% during the last century.

That is the sort of number that you should not announce to a silica enthusiast unless you've taken the precaution of sitting them down in a chair.

In other words, right now is a really lousy time to be a Baltic Sea diatom. All those dams we've built within the Baltic Sea catchment area and all the nitrogen and phosphorus we're pouring into it too… We're denying Baltic Sea diatoms the silica they need to survive.

8.7 Case Study #3: The Black Sea

The same sort of thing has been going on in the Black Sea. But it took us some time to understand the problem here because we got hung up on the idea that the Black Sea's silica problems stemmed from one single spot on the Danube River. It was at the time a compelling story, though, and it got a lot of people interested in the problem of silica and dams.

The Danube River, the second longest river in Europe, arises in the Black Forest, meanders through or along Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria, Moldova, Ukraine, and Romania, collecting water from an even greater portion of Europe, and then pours into the Black Sea. Like the also enormous catchments of the two other major rivers that flow into the Black Sea (the Don and the Dieper), the Danube River catchment was dammed to the hilt between the 1960s and the present day and eutrophication is a serious problem.

At this point, you will probably nod knowingly when we tell you that for decades phytoplankton overgrowth in the Black Sea has been common and concentrations of dissolved silica have declined and that all of this has occurred alongside shifts in the composition of photosynthetic populations away from diatoms. Populations of benthic macrophytes such as seagrasses and macroalgae have also taken a serious hit and anoxia has become more widespread. This is bad, not only for Turkey's Black Sea anchovy fishery, but also for entire Black Sea beach resort industry that is important to the economies and vacations of Turkey, Bulgaria, Romania, Ukraine, Russia, and Georgia.

By 1997, which was long after Claire Schelske's and Eugene Stoermer's groundbreaking discovery that eutrophication resulted in silica removal within the Laurentian Great Lakes but a few years before the work on the Baltic Sea described in the previous section, it became clear that the Black Sea was missing a lot of dissolved silica. Monitoring that had begun in 1960 had revealed that dissolved silica concentrations had briefly shot up and then steadily dived in the Black Sea, dropping from an average of about 60 micromoles of silica per liter in the mid-1970s down to below 10 by about 1995. It was as if some single abrupt change in the system kicked off a dramatic disappearance of silica.

Enter the Iron Gate dam.

Iron Gate I runs across the Danube along a stretch that serves as the Romanian–Serbian border and is a hydroelectric generation plant. It's also the largest dam on the Danube River. It was so very most suspiciously completed in 1972, right before dissolved silica went into its dive. The obvious explanation was that the dissolved silica that was now missing from the Black Sea was accumulating as 1.3 million kilograms of biogenic silica accumulating in the sediments trapped by Iron Gate I every year. It had to be the case! The circumstantial evidence was screaming.

Simple stories are seductive. Impound a single dam on a major tributary of a fair-sized sea and send the downstream coastal areas into silica freefall. Even scientists can get enthusiastic over ideas that are too good to be true.

Of course the story turned out to be wrong, but it also turned out to be the story that got researchers interested in the effect of dams on silica. Although the problem of dams resulting in downstream waters depleted of dissolved silica had first come to light in a well-researched and well-written 1980 publication in a top-notch scientific journal by top-notch scientific researchers[12], somehow the news hadn't sunk in.

The dam's name probably helped too. With a name like that (Iron Gate) the dam had to be: Huge! Solid! Fearsome! Authoritarian! And rather like the Iron Curtain. Nothing, not even silica, could get through. Even silica scientists (initially) felt swayed. Damn that dam for stealing all the Black Sea's silica.

However, the name was merely an accident of history. Iron Gate I and its younger sibling, Iron Gate II, were not named for their formidability. They were named for their locality.

The Iron Gates are a picturesque series of gorges that the Danube runs through. That narrowed stretch of river is over a hundred miles long and its name may have originated from a number of pestilential bedrocks shoals, now long since removed, that could rip apart the hulls of ships that failed to steer around them. Perhaps hundreds of years ago, a person with poetry in their heart likened them to the spikes on an iron gate. In an alternate universe, one with a shortage of poets, there may be two Damned Shoals dams instead and nobody who thinks that particulate silica is piling up behind them.

In this universe, at least, biogeochemists eventually decided to put the hypothesis to the test.

One of the first things they noted was that, yes, the reservoir upstream of Iron Gate I is nothing to sneeze at. It is 120 kilometers (75 miles) long and holds 2.4 billion cubic meters of water. But this has more to do with the river than the dam. The Danube River carries so much water by the time it reaches the Iron Gates, the Iron Gate I dam needs 1100 meters of length in order to span the river. That's 3600 feet. So it doesn't take much diminishment in flow (or increase in water residence time) to create a large reservoir volume at this location.

Indeed, the Iron Gate dams do not significantly increase the residence time of water along this stretch of the Danube. Iron Gate I, like Iron Gate II, is a hydroelectric power generating station. Water flows FAST through the dam. It has to turn turbines.

When you measure how long the water spends in this reservoir (plus in the much smaller one downstream of it now that they've built Iron Gate II), you find that it's six and a half days, which is hardly any time at all. If we were a diatom bloom, we'd file a complaint. It's not enough time to get our work done.

[12]Larry Mayer and Steven Gloss, two widely known and respected biogeochemists, had first noted the effect on dams on dissolved silica in 1980 in a published paper on the Colorado River in Arizona before and after the construction of Edward Abbey's favorite of favorites, the Glen Canyon Dam.

Silica budgets constructed for Iron Gate I, its reservoir, and its sediments have confirmed this. The Iron Gate dams are not a big trap for silica. It looks like about 850,000 tons of silica flows into the reservoir as dissolved silica each year and 810,000 tons flows out. The 40,000 tons of silica trapped is not nothing but it is well short of the postulated 600,000 tons.

Now that the research on silica losses in the Baltic Sea catchment area has been done, it's clear that the disappearance of silica from the Black Sea isn't the work of one fearsome dam. It's due to the tens of thousands of dams that have been built along the often eutrophicated rivers that head ultimately to the Black Sea. And of course, the eutrophication-fueled overgrowth of diatoms within the Black Sea itself has probably contributed to the decades-long decline in dissolved silica concentrations that has occurred within the Black Sea. This isn't as superficially exciting a story as one single dam having an impact so severe it was changing the ecology and biogeochemistry of the entire Black Sea, but it is profound.

8.8 The Global View

The Larentian Great Lakes, the Baltic Sea, and the Black Sea are all major bodies of water, but they are still just a drop in a bucket compared to all the fresh and salt water on Earth. But they represent a crisis that is unfolding across the Earth.

Those 850,000 dams we currently have, about 60,000 of them large, disrupt flow *on more than half* of all river systems. Various different modeling studies have calculated that altogether these dams decrease the total global flux of dissolved silica to the ocean by 5%.

Does that seem small?

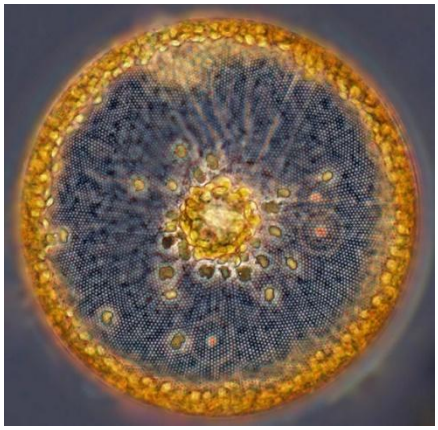
It isn't. Five percent represents a deficit that adds up year after year into enough of an enormous lack of dissolved silica that diatoms in estuaries and the coastal ocean, where they are most needed to support fisheries, could be operating at a disadvantage.

Natural but now eutrophicated lakes are even worse than reservoirs, in that they seem to be better at retaining silica in their sediments. Including them in the global estimate would bring the total amount of silica flux diminished to nearly *30%*, a truly apocalyptic number.

The next time you're down at the beach, you may want to hug a diatom. They could certainly use the moral support. But they'd like it even more if you pushed your legislatures for laws requiring that detergents to be sold phosphate-free. This needs to include dishwasher detergents (which, in many places, are exempt from restrictions). Our diatom friends could also use more and better sewage treatment plants, incentives and support for farmers to do something about the millions of tons of phosphate and nitrogen fertilizers and animal waste flowing off of their lands, the removal of dams no longer needed, and some serious, sober second thoughts about building any more.

THE PROBLEM IS THE LACK OF SILICA

Silica Shelled Diatom Phytoplankton



Atlantic Cod

The Foundation of the Aquatic Food Web

Atlantic Salmon

"Diatoms are at the bottom of the food chain and suck up nearly a quarter of the atmosphere's carbon dioxide . . . Size matters for the creatures that eat them and also for carbon sequestration, as large diatoms are more likely to sink when they die . . . If smaller size diatoms dominate, then carbon sequestration becomes less efficient, and there may be more carbon dioxide in the atmosphere, which would exacerbate global warming. " (Litchman et. Al. 2000).

Stephen M. Kasprzak
October 15, 2018

This Report is being written as a supplement to the editorial "*Reject CMP Power Line Because Hydro-Quebec Facilities Damage Ecosystem,"* which was published in the Portland Press Herald on October 9, 2018 (see Attachment 1). It also documents how Hydro-Quebec has significantly contributed to the lack of silica in northwest Atlantic and Gulf of Maine.

ABSTRACT

There is a commonly held belief that climate change is the driving force behind the decline in the population of cod, salmon, capelin and other fisheries in the Gulf of Maine and northwest Atlantic, as well as warming their waters.

There is another factor, namely, the lack of silica!

This Report documents how the lack of silica is the driving force in the decline of the fisheries and not overfishing. The following two quotes are consistent with my claim that the fisheries are being starved:

Research scientist with the Department of Fisheries and Oceans (DFO) Dr. Mariano Koen-Alonso says the sudden and sharp decline in cod stock is something being seen across the ecosystem.

"We've seen very important reductions in biomass of many species across the board," said Koen-Alonso. "We have to look at the big picture here, there are several factors and species involved."

"With reductions in the biomass of the cod's food sources such as shrimp and capelin, Koen-Alonso says the cause of the cod's decline appears to be more bottom-up than top-down. Bottom-up meaning that a lack of food and poor conditions are the driving force in the shrinking biomass, rather than predators or overfishing which are chief factors in a top-down cause of depletion.

Koen-Alonso says the signs show the capelin's declining numbers can also be traced to the food chain." (Northern Pen May 10, 2018).

and

"Atlantic ocean plant life, the phytoplankton, has been observed to be in tremendous decline. International science teams have measured more than 26% lost in the last 30 years. How bad is 26%? Remember when we destroy just 1 in 10 of any form of life we say that we have decimated that life. It's bad. Very bad. And the starvation and disappearance of Atlantic Cod stand as testimony to the collapse of the Atlantic Ocean pastures. Ocean pasture grass is plankton." (Russ 2014).

The building and management of Quebec Hydropower's reservoir hydroelectric facilities have reduced river discharge during spring freshet into Eastern Hudson Bay and Labrador Sea by forty to fifty percent and increased winter discharge by 300 percent.

"Eighty percent of the annual input of dissolved silicate to the ocean is transported via our rivers and streams." (Paul Treguer et. al. 1995). In our northern latitudes, the majority of this annual budget is delivered by the roaring waters of the spring freshet.

Less dissolved silicon, during spring months, is starving the silicon diatom phytoplankton blooms, which are the essential basis of marine food web.

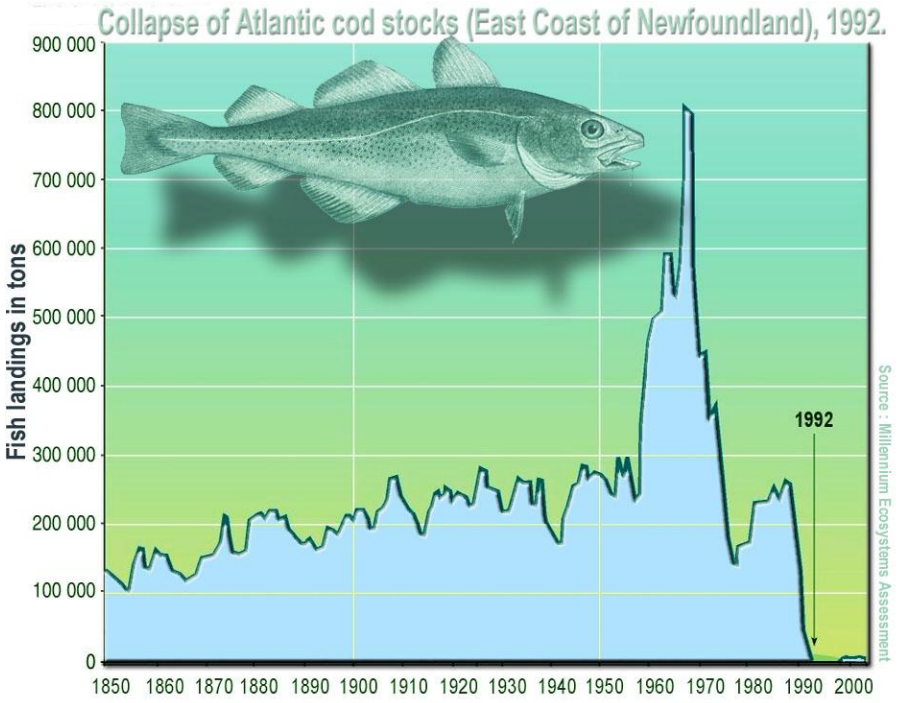
The advocates of hydroelectricity claim it is a power source that is clean and renewable because it uses the earth's annual water cycle to generate electricity.

They fail to mention that hydroelectric reservoir facilities have changed the seasonal pattern of annual natural water cycle by significantly reducing the spring run-off and summer outflows and using the captured waters to double and triple the winter outflows, due to high winter demand for electricity.

This is just the opposite to a typical unregulated river, which experiences low flows in winter when water is stored in the seasonal snowpack, then high flows during the snowmelt-driven freshet in spring and early summer.

STARVATION OF ATLANTIC NORTHWEST COD FISHERY

There have been two collapses of the Atlantic northwest cod fishery in the past fifty years, and they are illustrated in the graph below. Both collapses have been analyzed as one and the cause blamed on overfishing and global warming.



There is no doubt that overfishing caused the spike in cod landings during the 1960's and the subsequent decline in the 1970's.

However, the second and more lasting decline occurred in the 1989-1991 period. The major factor of this decline has been the lack of silica caused by the capture of the spring freshet in the reservoirs of hydroelectric facilities owned by Quebec Hydropower. These facilities have significantly reduced the transport of dissolved silica and other nutrients needed for healthy spring and summer diatom phytoplankton blooms in the northwest Atlantic and Gulf of Maine.

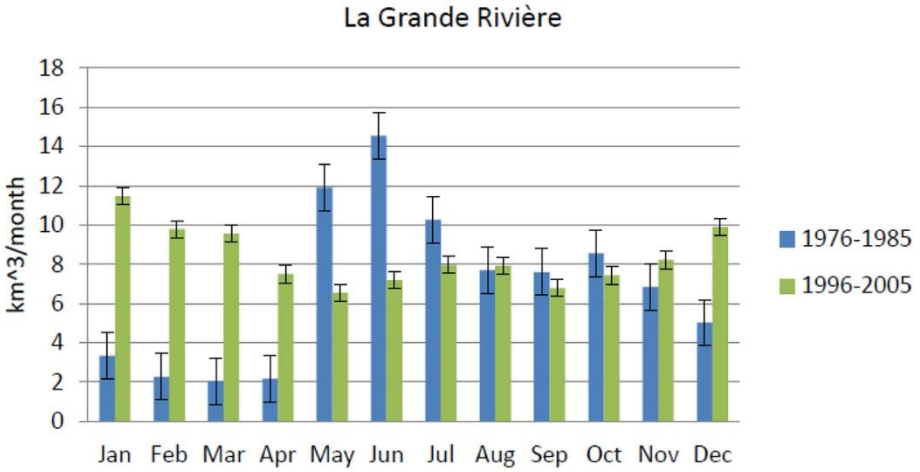
"The growth rate of diatoms (silica-shelled phytoplankton) are determined by the supply of silicate." (Venugopalan Ittekkot et. al. 2000).

"Diatom phytoplankton populations are the usual food for zooplankton and filter feeding fishes and contribute in a direct way to the large fishable populations in coastal zones." (C.B. Officer et. al. 1980).

***"The lack of silica can change aquatic ecosystems from those dominated by diatoms to non-diatom based aquatic ecosystems usually dominated by flagellates."*(**E. Struyf 2009).

QUEBEC HYDROPOWER HAS REDUCED SPRING FRESHET RIVER FLOWS BY 40 TO 50 PERCENT

A good example is the three LaGrande reservoir hydroelectric facilities, which have an annual capacity of 7,302 megawatt (MW). Two of the reservoir facilities went online in 1986 and the third in the early 1990's. The graph below illustrates how the dams have been used to capture the waters of the spring freshet which are then used to increase winter outflows by more than 300%.



Comparison of runoff by damming or diversion for the pre-1986 and post-1986 periods (Ray Roche 2007)

The following points should help put into perspective the scale of this facility:

1. Maine's annual hydroelectric generating capacity is 723 MW, compared to 7382 at LaGrande
2. The June outflow (1976-1985) of 14.5 cubic kilometers (KM^3)/month has been reduced to 7.0 KM^3./month (1996-2005). This reduction of 7.5 KM^3/month equals 102,129 cubic feet ($ft.^3$)/sec
3. The historic median flow in June on the Penobscot River at W. Enfield in Maine is 10,000 ft^3/sec
4. This June reduction in outflows from the LaGrande River into Hudson Bay would be analogous to eliminating 10 Penobscot Rivers flowing into the Gulf of Maine in June
5. The May reduction in outflows of 5.5KM^3/month would be analogous to eliminating 7 Penobscot Rivers flowing into the Gulf during May

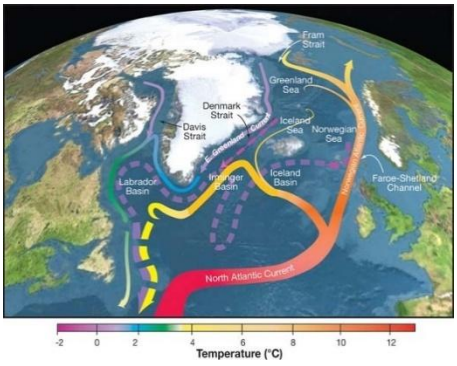
QUEBEC HYDROPOWER IS USING THE CAPTURED WATERS OF THE SPRING FRESHET TO INCREASE WINTER RIVER DISCHARGE THREE-FOLD

In a recent Canadian study of trends in river discharge from 1964-2013, the authors found: ***"that there has been a three-fold increase in river discharge during winter, when electric demand peaks, into the estuaries of Labrador Sea and Eastern Hudson Bay for the 2006-2013 period compared to 1964-1971 and a forty percent reduction in discharge during the summer."*** (*Recent Trends and Variability in River Discharges Across Northern Canada* Dery et. al. 2016).

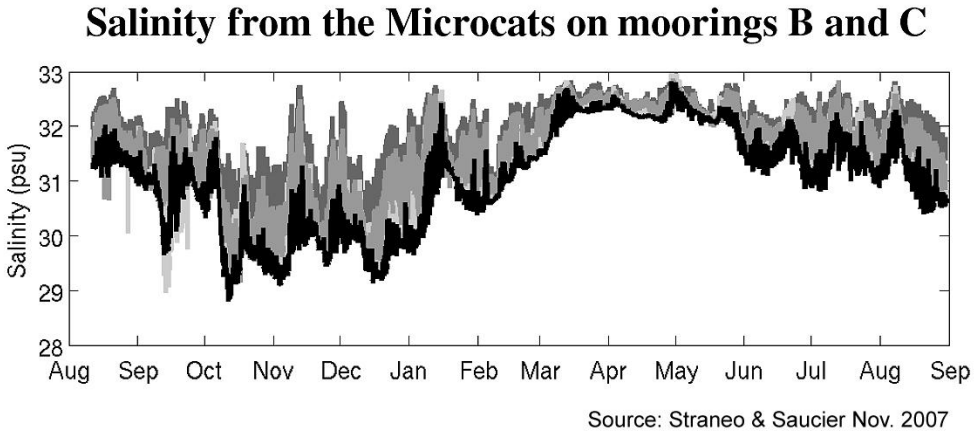
The earlier LaGrande Riverine Graph shows January-April outflows have been increased four-fold on average. Before reservoir hydroelectric facilities were built in Quebec and Newfoundland/Labrador (NL), the brooks, streams and rivers in these watersheds freely and naturally transported 80% of the annual budget of dissolved silica and other nutrients to the ocean.

The riverine spring freshet historically transported the majority of the annual load of silica and other nutrients into the Hudson Bay and eventually the Labrador Sea and Current via the Hudson Strait and then into the Gulf of Maine via the Labrador Current. These captured waters of the spring freshet are now being saved and historic summer generation reduced by forty percent in order to increase winter generation by threefold or more.

ATLANTIC MERIDIONAL OVERTURNING CIRCULATION



THE OUTFLOWS FROM THESE RESERVOIR DAMS ARE SO LARGE THAT SALINITY LEVELS IN HUDSON STRAIT ARE IMPACTED, AS SHOWN IN THE FOLLOWING GRAPH FROM A 2007 STUDY, <u>THE OUTFLOW FROM HUDSON STRAIT AND ITS CONTRIBUTION TO THE LABRADOR CURRENT</u>, BY STRANEO AND SAUCIER.



This graph shows the waters with the highest salinity flow past the moorings in the Hudson Strait during the mid-March through June period. Historically (pre-1970) this time period would have had the lowest salinity waters because of the high flows of the natural spring freshet flowing into Hudson Bay and then into Hudson Strait. This finding is another piece of evidence that these dams are starving the silica diatom phytoplankton of silica and other nutrients during the spring and summer.

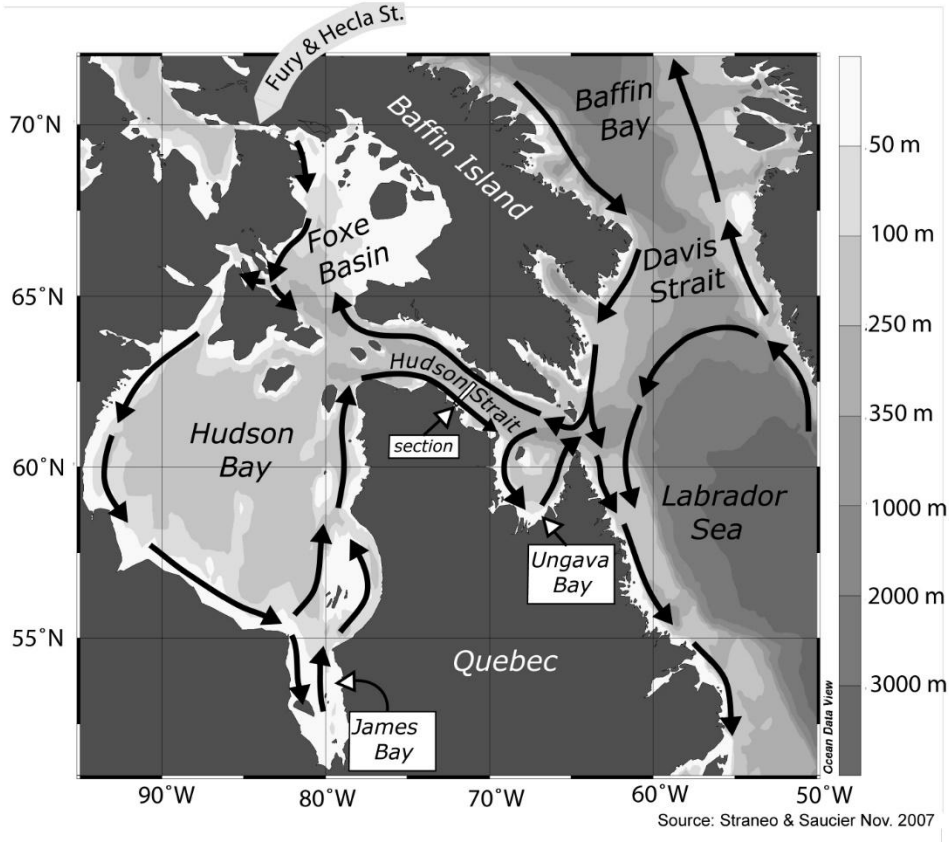
The threefold increase in winter discharge from the dams results in waters with the lowest salinity from mid-October through mid-January.

Straneo and Saucier wrote the following in their 2007 Report:

"Our results suggest that approximately 15% of the volume and 50% of the fresh water carried by the Labrador Current is due to Hudson Strait outflow. This is a striking new result, which suggests that we need to rethink the source waters for the Labrador Current and, in general, the fresh water pathways into the sub polar North Atlantic. They indicate that the role of Hudson Strait had been previously overlooked due to the absence of direct measurements from the Strait."

The surface area of water in Maine is only 4,537 square miles, compared to Quebec with 68,312 square miles and NL with 12,100 square miles. It is obvious that the Gulf of Maine is very dependent on the dissolved silica and nutrients transported by the rivers of these provinces during the spring freshet to fuel the Gulf's diatom phytoplankton blooms.

Hudson Bay System: bathymetry and schematic circulation



These blooms are the essential basis of the marine food web and their decline in both size and quantity are starving all the fisheries.

QUEBEC HYDROPOWER HAS SIGNIFICANTLY REDUCED SILICA AND NUTRIENT-ENRICHMENT ATTRIBUTED TO LAND BASED RUNOFF AND COASTAL UPWELLING IN HUDSON BAY AND LABRADOR SEA

"Most fisheries production world-wide is associated with three nutrient-enrichment processes: coastal upwelling, tidal mixing and land-based runoff, including major river outflow" (Caddy and Bakun, 1994).

"Many documented reductions in fisheries production have been attributed to river regulation, modifying natural variation in freshwater flow. Protecting natural flow regimes is likely to be an effective management strategy to maintain the production of estuarine and coastal fisheries" (Gillson, 2011).

Land based runoff has been significantly reduced as Quebec Hydropower manages it reservoir dams to capture the spring freshet and reduced summer outflows. Compounding this reduction in annual input of silica and other nutrients from land based runoff is the fact that nutrient enrichment from coastal upwelling is so limited in Hudson Bay.

The following was written in Bay Sys 2016 Mooring Program Cruise Report by Claire Hornby: *"The high riverine freshwater input in James Bay is causing a strong thermohaline stratification at the entrance to Hudson Bay,"*

and

"In Hudson Bay, a massive freshwater input by river runoff causes a strong stratification restricting upward nutrient flux into the surface layer and limiting phytoplankton production particularly in summer."

This is a double whammy negatively impacting the abundance of silica shelled diatom phytoplankton.

ABUNDANCE OF DIATOM PHYTIOPLANKTON HAS DECLINED

The results of a 2010 Study by Daniel Boyce using a 100-year data set concluded that the abundance of diatom phytoplankton had declined by 40% since 1950, and in a recent NASA study in "Global Biogeochemical Cycles," the authors have concluded the global diatom populations have declined by 1% per year from 1998 to 2012.

"Atlantic ocean plant life, the phytoplankton, has been observed to be in tremendous decline. International science teams have measured more than a 26% loss in the last 30 years. How bad is 26%? Remember when we destroy just 1 in 10 of any form of life we say that we have decimated that life. It's bad. Very bad. And the starvation and disappearance of Atlantic Cod stand as testimony to the collapse of the Atlantic Ocean pastures. Ocean pasture grass is plankton." (Russ 2014).

I offer the following analogy to help understand these spring blooms of the silicon diatom phytoplankton pastures and their dependence on the timely deliverance of this essential nutrient.

In the winter our lawns and fields are brown and barren. Spring heralds in more sunlight and the ground warms up. After the first rains deliver much needed nutrients to the lawns and fields, they seem to green up almost overnight. The farm animals begin grazing on the fresh and luscious grass, and the grasses begin transferring through photosynthesis carbon dioxide out of the atmosphere.

Out on the ocean, silica diatom phytoplankton are the pastures of the aquatic food web and one of earth's atmospheric thermostats for carbon levels. During late fall and through the winter these phytoplankton pastures are barren.

Spring heralds in more sunlight, and the oceans warm up. As the snow melts and rain falls on the landscape, the spring freshet begins to flow through our brooks and streams turning the rivers into a tumultuous roar.

These roaring waters are scrubbing silica, which is the second most common element, from the earth's crust.

Quebec Hydropower manages its reservoir hydroelectric generating facilities to capture the spring freshet. Spring discharges are now only 40% to 50% of historic (before reservoir damming) flows and silica diatoms are being starved of silica and other nutrients at this critical time of the growing season.

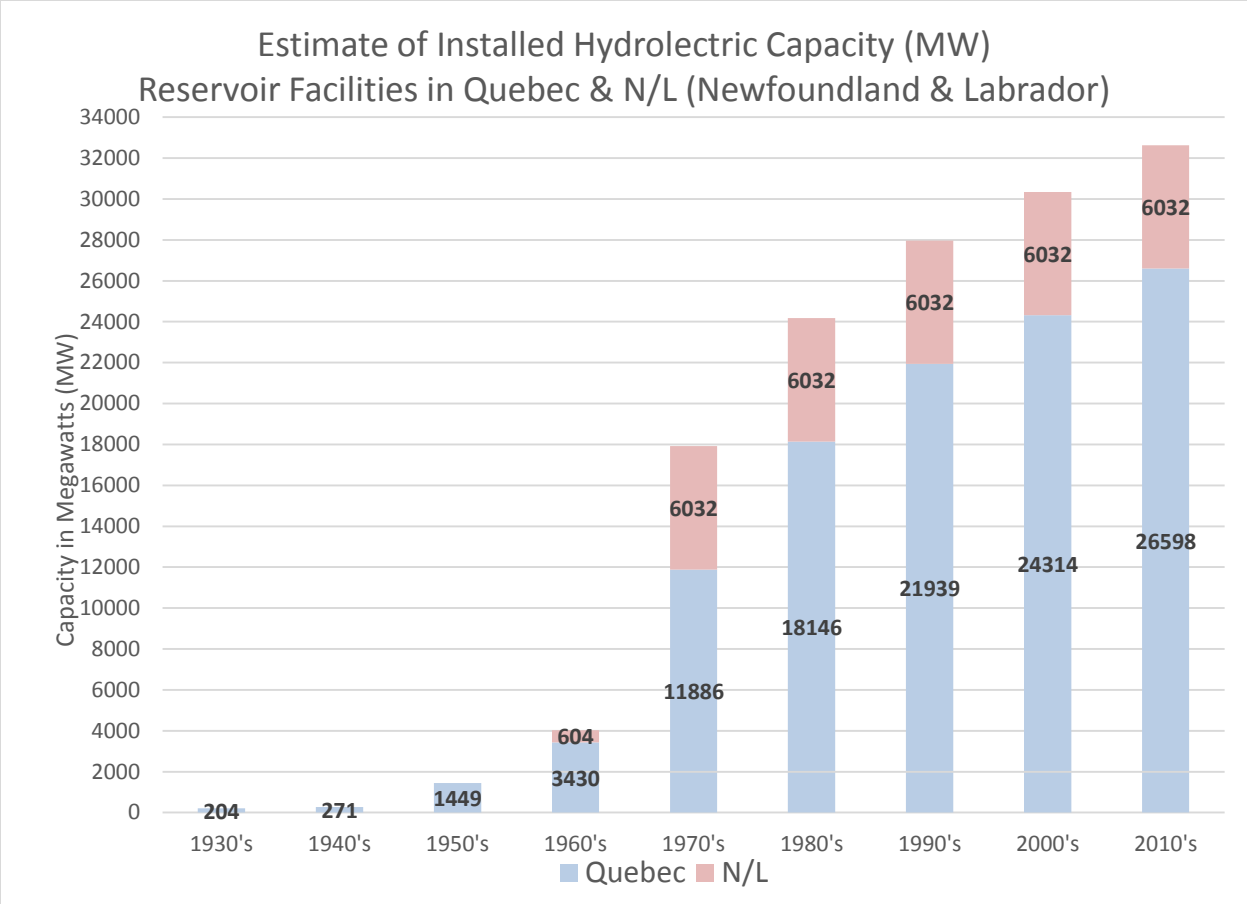
Starving the diatoms of silica means Quebec Hydropower's actions are starving the fisheries and maybe contributing to the increasing levels of carbon in our atmosphere.

Historically (thousands of years) if there was too much carbon in the atmosphere, then the atmosphere and oceans would warm up. This was followed by more evaporation and increased rainfall and snow, which resulted in roaring rivers transporting more silica to the oceans. This increased the size and abundance of silica diatom phytoplankton blooms, which provided more food for the fisheries and increased transference of carbon dioxide to the oceans. This, in turn, cooled off the atmosphere and oceans.

THE PROLIFERATION OF RESERVOIR HYDROELECTRIC FACILITIES OVER THE LAST FIFTY YEARS HAS PRODUCED A <u>LACK OF SILICA</u> WHICH HAS NEGATIVELY IMPACTED THE ABUNDANCE OF DIATOM PHYTOPLANKTON AND STARVED THE FISHERIES AND MAY BE CONTRIBUTING TO CLIMATE CHANGE

Quebec Hydropower not only built huge reservoir hydroelectric facilities throughout Quebec, but also built the 5,428 (MW) Churchill Falls Generating Station in Newfoundland and Labrador (NL).

The graph below illustrates how the annual capacity in MW's from Quebec Hydropower's reservoir hydroelectric facilities increased by 450 percent from 4,034 MW in the 1960's to 17,918 in the 1970's. and by another 200% in the 2010's to 32,630 MW.



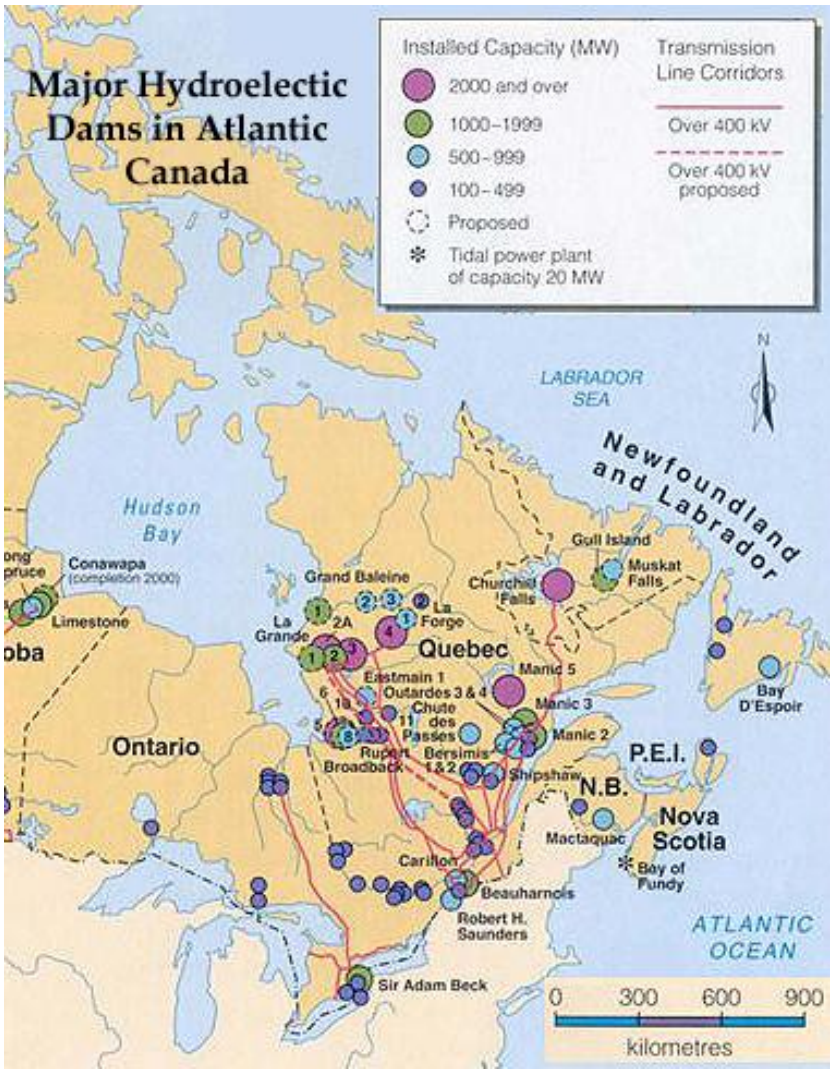
Earlier I used an analogy to show how the reduction in May and June outflows from the LaGrande facilities is equivalent to eliminating 7 Penobscot Rivers flowing into the Gulf of Maine during May and 10 Penobscots flowing into the Gulf in June.

The LaGrande facilities have 3 reservoir facilities and one Run of the River, and their total annual capacity is 8,738 MW.

The graph above shows a total annual capacity for reservoir facilities of 32,630 MW.

It would not be unreasonable to estimate that the reduced May and June outflows from these facilities would be the equivalent of eliminating 26 (7 Penobscots x 32,630 MW ÷ by 8,738 MW) Penobscot Rivers flowing into Gulf during May and 37 in June.

These estimates are conservative as I did not include, in the above graph, facilities in Manitoba and Ontario.



THE CUMULATIVE EFFECT OF FIFTY-PLUS YEARS OF REDUCED ANNUAL INPUT OF DISSOLVED SILICATE FROM ALL THESE DAMS IS DESTROYING BOTH THE FISHERIES AND ECOSYSTEM OF GULF OF MAINE

The following quotes from a scientific report, *Hydrological Alterations and Marine Biogeochemistry: A Silicate Issue?*, by Ittekkat et. al. (2000) describes some of the processes that are responsible for the decline we are seeing in the ecosystem and fisheries of Gulf of Maine and Northwest Atlantic.

"Freshwater and sediment inputs from rivers play a major role in sustaining estuarine and coastal ecosystems. Nutrients from rivers promote biological productivity in estuaries and coastal waters . . . and help to maintain ecosystems along the periphery of land masses."

"Most studies addressing the causes of eutrophication have concentrated on the elements nitrogen and phosphorus, mainly because both these nutrients are discharge by human activities. Silicate, however, also plays a crucial role in algal growth and species composition."

"The source, transport and sink characteristics of silicate, as they relate to change in the hydrology of rivers, are distinct from those of nitrogen and phosphorus. Large-scale hydrological alterations on land, such as river damming and river diversion, could cause reductions of silicate inputs to the sea (Humbug et al 1997). By contrast, although all nutrients (nitrogen, phosphorus and silicon) get trapped in reservoirs behind dams, nitrate and phosphate discharged from human activities downstream of the dam more than make up for what is trapped in reservoirs, for silicate, there is no such compensation. The resulting alteration in the nutrient mix reaching the sea could also exacerbate the effect of eutrophication—that is, silicate limitation in perturbed water bodies can set in much more rapidly than under pristine conditions, leading to changes in the composition of phytoplankton in coastal waters."

QUEBEC HYDROPOWER'S RESERVOIR FACILITIES AND OPERATIONS ARE INCONSISTENT WITH MAINE'S NATURAL RESOURCES PROTECTION ACT

The proliferation of large reservoir hydroelectric dams by Quebec Hydropower over the last 50 years never would have been allowed in Maine because the construction and management of these dams would have violated Section 401 of the Clean Waters Act and Maine's Natural Resources Protection Act.

To put this in perspective, Quebec Hydropower has 66 hydropower generating sites, and 38 are Run of River with a total capacity of 11,100 megawatts (MW), and 28 are reservoirs with a total capacity of 26,800 MW.

Maine's annual hydropower generating capacity is only 723 MW.

Quebec Hydropower's reservoir facilities have basically eliminated the spring freshet on these rivers by capturing and storing the spring run-off.

This would be an act of pollution on Maine's rivers under the Clean Waters Act, because the storage of these free-flowing cold waters has reduced by 40% to 50% the historic and natural delivery of the annual budget of dissolved silicate to the Gulf of Maine via the waters flowing through the Hudson Strait and the Labrador current.

In 2006, the Maine Department of Environmental Protection (MeDEP) and S. D. Warren argued before the U. S. Supreme Court over whether S. D. Warren was polluting the Presumpscot River and violating Section 401 of the Clean Water Act (CWA), because it was using too low a minimum flow during hot summer months.

MeDEP argued that dissolved oxygen levels were too low in the river downstream of the Eel Weir Dam and a higher flow was needed to provide more dissolved oxygen for aquatic life.

The Supreme Court agreed with MeDEP in a 9 to 0 decision, and Justice Souter wrote "***The decision interprets term "discharge" according to its "ordinary and natural meaning"*** and rejects efforts by S. D. Warren to have the Court read into CWA Section 401 any requirement that the regulated activity result in the ***"addition of a pollutant."***

In other words, holding back clean water laden with dissolved oxygen was polluting downstream water, which did not have enough dissolved oxygen to support the river's fisheries and aquatic life.

Furthermore, the construction of these reservoirs have not only flooded and eliminated the functions and values of hundreds of thousands of acres of wetlands, but have also captured the cold and free-flowing water of thousands of miles of brooks, streams and rivers in these reservoirs, along with the dissolved silica, which was being transported in the spring freshet by these once naturally free-flowing water bodies.

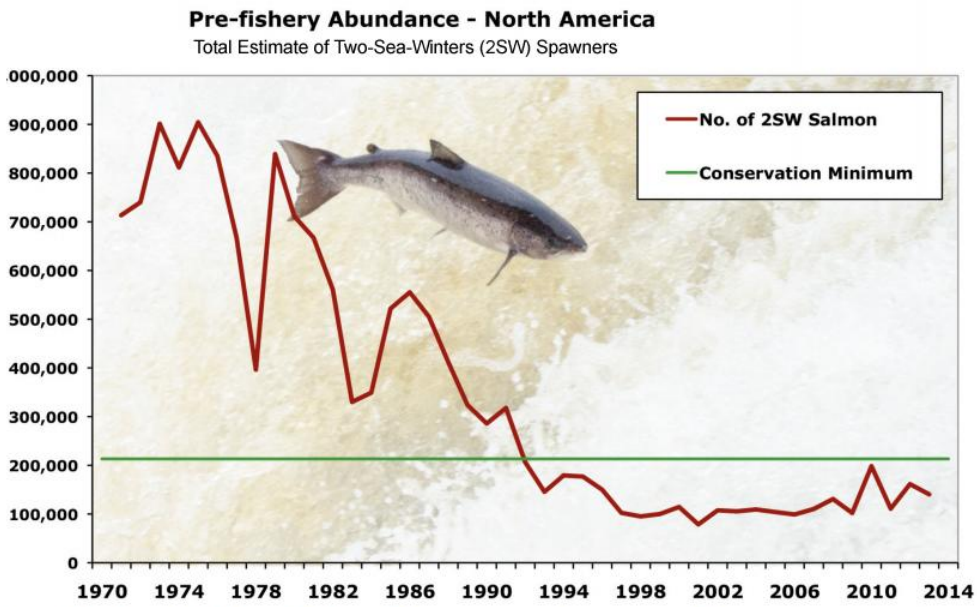
Quebec Hydropower's reduction of spring and summer outflows is polluting Hudson Bay, Labrador Sea and the Gulf of Maine by depriving the silica encased diatom phytoplankton population of its much needed dissolved silica during its growing season.

Diatoms are algae cells enclosed with cell walls made of silica, and their growth rate and size are determined by the availability of dissolved silica and the temperature of the water. In March, with more daylight hours, the diatom population increases its rate of photosynthesis enabling it to start dividing and multiplying into a healthy diatom bloom and the more silica, the bigger the diatoms and bloom.

These reservoirs prevent the cold natural waters of the spring freshet from reaching the coastal estuaries, and these retained waters are then exposed to "aging" as the water temperature quickly rises and changes in its biochemistry occur before being discharged from the dam.

The Gulf of Maine is one of the most important oxygen producing ocean "rain forests" in the world, and its diatom rich ecosystem is responsible for superior fisheries, ameliorating ocean acidification and regulating climate change. The cumulative effect and the proliferation of reservoir hydropower in its ecosystem are destroying it.

QUEBEC HYDROPOWER RESERVOIR FACILITIES ARE NOT ONLY STARVING THE SILICA DIATOM PHYTOPLANKTON POPULATION, BUT ALSO THE ATLANTIC SALMON FISHERY (SEE GRAPH BELOW)



Pre-fishery Abundance (PFA) graph for North American 2SW salmon showing the total number needed to meet the total Minimum Conservation Limit in North American rivers in green (corrected for 11 months of natural mortality). The PFA numbers are those 11 months before they return to their home rivers in North America.

Source: Atlantic Salmon Federation 2015

IT IS NO LONGER A QUESTION OF MAY!

There were early warning signals that the proliferation of these reservoir hydroelectric facilities may have a negative impact on the food chain in the northwest Atlantic and Gulf of Maine.

Sutcliffe et. El. (1983) hypothesized that reducing the spring freshet by hydroelectric regulation in the Hudson Bay area may affect northern cod populations along the Labrador coast.

The following was written in a 1998 Canadian study:

a. ***"Hydroelectric development on major rivers is seasonally altering the physical structure of the water column in coastal waters,"*** **and** ***"the implications of these hydro developments on the marine environment are not fully understood."*** **(Harding 1992)**
b. ***"Hydroelectric development has markedly reduced this spring run-off, and this may be enough to delay the phytoplankton bloom and thereby shorten an already brief growing season for larvae fishes and benthic invertebrates." (*****Morin et al. 1980)**

THE GULF OF MAINE AND CHINA SEA ARE WARMING AT AN ALARMING RATE, AND NOW THERE IS ANOTHER AREA

The countries who are the biggest producers of hydroelectricity are warming their nearby oceans**.** The Gulf of Maine and South China Sea are two areas in the global ocean, which are warming the

fastest, and they are located next to the two largest producers of hydroelectricity in the world. Number one is China, and number two is Canada. Quebec Hydropower is Canada's largest producer, and it's warmer than natural discharge waters flow via the Labrador Current into the Gulf of Maine.

The third area is Barents Sea, and scientists say *"changes are so sudden and vast that in effect, it will soon be another limb of the Atlantic, rather than a characteristically icy Arctic Sea."* The Barents Sea is being impacted by Norway and Russia, which are the 5th and 6th largest producers of hydroelectricity in the world.

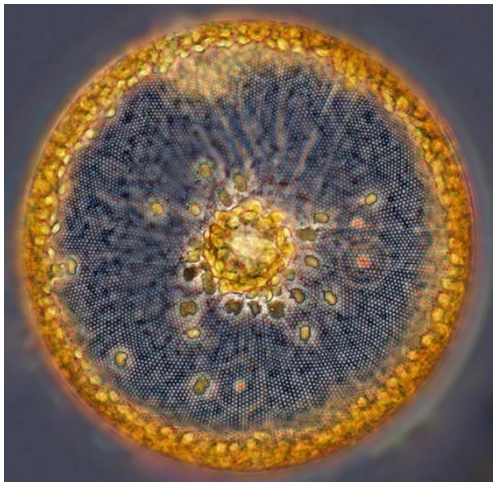
The water impounded by these large reservoirs is heated by the sun, and the discharged water from the impoundment is much warmer than the natural free flowing water upstream of the reservoirs. The temperature of the Gulf of Maine's waters is responding to the cumulative impact of more and more reservoir hydropower generation sites being built in the past fifty years. Since 1969, Quebec Hydro has built 22 reservoir hydropower dams, which is almost one every other year.

Since 1986, the area of the under ice plume from the LaGrande River has trebled and can extend 100 KM (62 miles) under the land fast ice of James Bay in the Hudson Bay (Roche 2017). Plumes of this magnitude, with warmer than natural flowing waters, could be contributing to thinner and weaker ice in the impacted area.

MORE CARBON IN THE AIR

The reduction in both the size and abundance of diatom phytoplankton blooms have contributed to the increased carbon in the air by significantly reducing the natural transference of carbon dioxide from the atmosphere to the ocean.

Mighty Diatom



(silica shelled phytoplankton)

The mighty diatoms are the microscopic plants that dominate all other ocean species in converting carbon dioxide to carbon and releasing oxygen.

"Diatoms are at the bottom of the food chain and suck up nearly a quarter of the atmosphere's carbon dioxide . . . Size matters for the creatures that eat them and also for carbon sequestration, as large diatoms are more likely to sink when they die . . . If smaller sized diatoms dominate, then carbon sequestration becomes less efficient and there may be more carbon dioxide in the atmosphere, which would exacerbate global warming" (Litchman et. al.2000).

Here in Maine, we criticize those that irresponsibly bring destruction to the world's oxygen producing forests, and yet we are fully complicit in policies that diminish the freshwater delivery of the critical necessary nutrients like silica to our own "ocean rain forests."

The proliferation of reservoir hydroelectric facilities on Quebec's major rivers has greatly altered the seasonal timing of silica-laden freshwater quantities delivered to Hudson Bay, Labrador Sea and eventually the Gulf of Maine. The diatom plankton ecosystems have not evolved to be starved of nutrients in the spring and summer and then fed nutrients under lower light and temperature conditions in late fall and winter. As a result, diatom population is adversely affected, and the rest of the food chain is starving and the percent of carbon dioxide in the atmosphere is increasing.

Quebec Hydropower's management is contrary to the good science found in the conclusion of a 2004 scientific report Lost to the Tide: the Importance of Freshwater Flow to Estuaries, by University of Rhode Island oceanographer Scott Nixon, et. al;

1. ***" Realization that fresh water serves an important ecological function in estuaries means that all engineering interventions in the flow of water to the coast should be looked at very carefully to see if diversions are really necessary and to see if releases from storage can be programmed to parallel the natural pattern as closely as possible."***
2. ***"It is important to understand that the freshwater that reaches the coast plays an important role in sustaining the productivity of estuarine ecosystems, which are also very important to people. Maintaining the flow of fresh water to the coast should be a consideration in fresh water management decisions."***

Mr. Jonathan Gilson wrote the following in a 2011 Report, in which, he referenced 217 Reports to support his conclusions:

"Episodic flood and drought events have pronounced impacts on fisheries production due to rapid change in physicochemical conditions modifying species richness and diversity. Many documented reductions in fisheries production have been attributed to river regulation modifying natural variation in freshwater flow. Protecting natural flow regimes is likely to be an effective management strategy to maintain the production of estuarine and coastal fisheries."

CONCLUSION

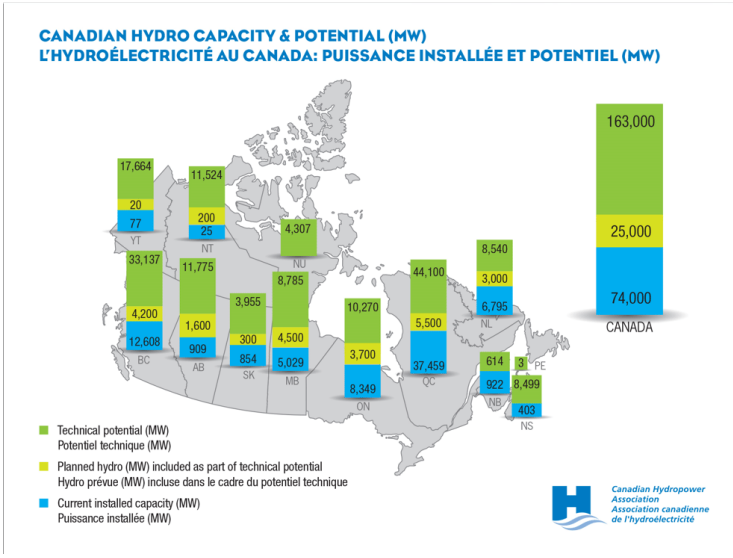
Let's put some of the above observations in layman's terms. It would be declared an extreme drought by meteorologists if total spring and summer precipitation was forty percent below normal. If it happened for fifty continuous years on land in the northern latitudes, the people would have starved to death. In the ocean waters of Newfoundland, Labrador and Maine, the fisheries are being starved to death.

For the past fifty years, a three-fold increase in river discharge of these warmer than normal reservoir waters (mid-thirty degree Fahrenheit) during the three months of winter represents a deluge of biblical proportion to the frozen seas. There are thousands of reservoir hydroelectric facilities throughout the northern latitudes operating in a similar manner.

The cumulative impact is predictable! Since the start of regular satellite observations in 1979, there has been an overall decline in Arctic sea ice in the past forty years. However, total sea ice in the Antarctic has increased by one percent per decade. Is this deluge of warmer than natural discharged waters a key factor in the decline of Arctic sea ice?

This Report has documented how the building and management by Quebec Hydropower of its reservoir hydroelectric facilities has captured the spring freshet and reduced the historic transport of dissolved silica. These actions are the driving force in the starvation of the fisheries and may be contributing to increase carbon levels in the atmosphere. Canada has ambitious plans to build many more reservoir facilities, which will only exacerbate the problem and may prove to be the tipping point.

MAP OF EXISTING AND FUTURE FACILITIES



Reject CMP Power Line Because Hydro-Quebec Facilities Damage Ecosystem

I am publicly writing to ask Maine's Department of Environmental Protection (MeDEP) to deny a permit for the 145-mile transmission corridor proposed by Avangrid-CMP to carry hydroelectricity generated by Quebec Hydropower from Canada to Massachusetts because Quebec Hydropower reservoir hydroelectric facilities are starving the fisheries in the Gulf of Maine and warming its waters.

In a recent 2016 Canadian study of trends in river discharge from 1964-2013, the authors found: that there has been a three-fold increase in river discharge during winter , when electric demand peaks, into the estuaries of Labrador Sea and Eastern Hudson Bay for the 2006-2013 period compared to 1964-1971 and a forty percent reduction in discharge during the summer. (*Recent Trends and Variability in River Discharges Across Northern Canada* Dery et. Al. 2016).

Let's put these findings in layman's terms. It would be declared an extreme drought by meteorologists if total spring and summer precipitation was forty percent below normal. If it happened for fifty continuous years on land in the northern latitudes, the people would have starved to death. In the ocean waters of Newfoundland, Labrador and Maine, the fisheries are being starved to death.

For the past fifty years, a three-fold increase in river discharge of these warm reservoir waters (mid-thirty degree Fahrenheit) during the three months of winter represents a deluge of biblical proportion to the frozen seas. There are thousands of reservoir hydroelectric facilities throughout the northern latitudes operating in a similar manner.

The cumulative impact is predictable! Since the start of regular satellite observations in 1979, there has been an overall decline in Arctic sea ice in the past forty years. However, total sea ice in the Antarctic has increased by one percent per decade. Is this deluge of warmer than natural discharged waters a key factor in the decline of Arctic sea ice?

The proliferation of large reservoir hydroelectric dams by Quebec Hydropower over the last 50 years never would have been allowed in Maine for the following reasons:

1. The construction and management of these dams would have violated Section 401 of the Clean Waters Act and Maine's Natural Resources Protection Act.
2. These dams are starving the fisheries of Hudson Bay, Labrador Sea and the Gulf of Maine, by reducing the transport of the annual budget of dissolved silicate during spring freshet to silicon diatom phytoplankton, which is the essential basis of the marine food web.

3. The reduction in diatom phytoplankton blooms have increased carbon in the air by significantly reducing the natural transference of carbon dioxide from the atmosphere to the ocean.
4. These reservoir dams are warming the waters of the Hudson Bay, Labrador Sea and the Gulf of Maine by capturing the spring freshet behind these dams and holding these waters to maximize hydropower generation during peak demand in the winter months.

If a permit is issued, it should be conditioned on Quebec Hydropower changing the management of their reservoir facilities to a Run of River mode, which uses the natural flow of the river. This would help restore large silicon diatom phytoplankton blooms to feed the fisheries and increase carbon dioxide transference from the atmosphere to the ocean. It should also help reduce the warming of the waters of Hudson Bay, Labrador Sea and the Gulf of Maine.

> *"Half of the Gulf of Maine's ecosystem lies in Canada, where much of the water feeding the Gulf and affecting its temperature comes from*," was written by Colin Woodward in 10/15/15 Maine Sunday Telegram article.
>
> Quebec Hydropower's reservoir facilities have eliminated the spring freshet on these rivers by capturing and storing run-off.

The proliferation of reservoir hydroelectric facilities on Quebec's major rivers has greatly altered the seasonal timing of silica-laden freshwater quantities delivered to Hudson Bay, Labrador Sea and eventually the Gulf of Maine. This would be an act of pollution on Maine's rivers under the Clean Waters Act.

The diatom plankton ecosystems have not evolved to be starved of nutrients in the spring and summer and then fed nutrients under lower light and temperature conditions in late fall and winter. As a result, diatom population is adversely affected, and the rest of the food chain is starving and the percent of carbon dioxide in the atmosphere is increasing.

It is time to recognize that there may be a key regional factor starving the fisheries and warming Hudson Bay, Labrador Sea and the Gulf of Maine. If the fisheries are starving in all these waters, then the obvious place to look is the food chain.

Stephen M. Kasprzak

MAINE VOICES Posted October 9, 2018

Maine Voices: Reject CMP power line because Hydro-Quebec facilities damage ecosystem

Wintertime discharges from the company's dam reservoirs are warming the Gulf of Maine, starving its fisheries and may be a key factor in the decline of Arctic sea ice.

BY **STEPHEN M. KASPRZAK** SPECIAL TO THE PRESS HERALD

CAPE PORPOISE — I am writing to ask the Maine Department of Environmental Protection to deny a permit for the proposed 145-mile Avangrid/Central Maine Power transmission corridor, carrying electricity from Canada to Massachusetts, because Hydro-Quebec reservoir hydroelectric facilities are starving the fisheries in the Gulf of Maine and warming its waters.

In a recent Canadian study comparing trends in river discharge in two time periods – 2006-2013 and 1964-1971 – the authors found that there has been a threefold increase in discharge during winter, when power demand peaks, into the estuaries of the Labrador Sea and eastern Hudson Bay, and a 40 percent reduction in discharge during the summer.

ABOUT THE AUTHOR

Stephen M. Kasprzak is a resident of Cape Porpoise.

It would be declared an extreme drought by meteorologists if total spring and summer precipitation were 40 percent below normal. If it happened for 50 continuous years on land in the northern latitudes, the people would have starved to death. In the ocean waters of Newfoundland, Labrador and Maine, the fisheries are being starved to death.

For the past 50 years, a threefold increase in discharge from these warm (in the mid-30s) reservoir waters during the three months of winter represents a deluge of biblical proportion to the frozen seas. Thousands of reservoir hydroelectric facilities throughout the northern latitudes operate in a similar manner.

The cumulative impact is predictable. Since the start of regular satellite observations in 1979, there has been an overall decline in Arctic sea ice. However, total sea ice in the Antarctic has increased by 1 percent per decade. Is this deluge of warmer-than-natural discharged waters a key factor in the decline of Arctic sea ice?

The proliferation of large reservoir hydropower dams by Hydro-Quebec over the last 50 years never would have been allowed in Maine for the following reasons:

• The construction and management of these dams would have violated Section 401 of the Clean Water Act and Maine's Natural Resources Protection Act.

• These dams are starving the Hudson Bay, Labrador Sea and Gulf of Maine fisheries by reducing the transport of dissolved silicate to silicon diatom phytoplankton, which are the foundation of the marine food web.

• The reduction in diatom phytoplankton blooms has increased carbon in the air by significantly reducing the natural transference of carbon dioxide from the atmosphere to the ocean.

• These reservoir dams are warming the waters of the Hudson Bay, Labrador Sea and the gulf by capturing the spring freshet behind these dams and holding these waters to maximize hydropower generation during peak demand in the winter months.

If a permit is issued, it should be conditioned on Hydro-Quebec's changing the management of its reservoir facilities to run-of-river mode, which uses the natural flow of the river. This would help restore large silicon diatom phytoplankton blooms to feed the fisheries and increase carbon dioxide transference from the atmosphere to the ocean. It should also help reduce the warming of the Gulf of Maine.

"Half of the Gulf of Maine ecosystem lies in Canada, where much of the water feeding the gulf and affecting its temperature comes from," Staff Writer Colin Woodard reported in 2015. Hydro-Quebec reservoir facilities have eliminated the spring freshet on the rivers that feed the gulf by capturing and storing runoff.

MAN-MADE STORAGE OF WATER RESOURCES - A LIABILITY TO THE OCEAN ENVIRONMENT

The above title was also the title of a January 1982 Report by Dr. Hans Neu, a Senior Research Scientist at Bedford Institute of Oceanography in Dartmouth, Nova Scotia. Dr. Neu predicted that the huge storage lakes being built for power development would starve the fisheries (see my Fact Sheet "Hydro-Dams Blamed for Decline in Fish Stocks", Kasprzak, February 4, 2019) and weaken the seasonal strength of the density (thermohaline) current thereby warming the waters. The following excerpts were written by Dr. Neu in his 1982 Report:

> *"The most outstanding feature in the encounter between fresh water and salt water is the formation of a current which oceanographers refer to as haline circulation and engineers as density current"*. (Today, this is called a thermohaline current) and *"Obviously, the two-layer current system acts like a large natural pump which constantly transports large quantities of deep ocean water onto the continental shelf and then into the embayments and estuaries."*

Historically, before reservoir dams, both the natural flowing rivers and the upwelling of large quantities of deep ocean water transported dissolved silica and other essential nutrients to the coastal waters and were the major source of nutrients to the estuaries.

> *"Just as for the winds in the atmosphere, the magnitude of the current is proportional to the pressure difference. Hence in times where more fresh water enters the ocean, the longitudinal gradient seaward increases and with it the strength of the current system. From this it follows that in estuaries the density current varies with the seasonal run-off, being at a minimum during the low discharges in winter and at its peak during the large discharges in spring and summer. In coastal waters which are some distance away from the fresh water source (i.e. the Grand Banks, the Scotian Shelf and Georges Bank) there can be delays of from several month to almost a year before the freshwater peak arrives."*

THE DRIVING FORCE WEAKENING THE THERMOHALINE CURRENT, AND THEREBY WARMING THE WATERS IN GULF OF ST. LAWRENCE, GULF OF MAINE, HUDSON STRAIT AND LABRADOR CURRENT HAS BEEN THE PROLIFERATION OF RESERVOIR DAMS BY HYDRO-QUEBEC.

The dams have created huge storage lakes capable of holding the run-off of large drainage areas and storing it over entire seasons, years and even longer. The water volume in Moosehead Lake in Maine is 5.19 km³ and Hydro Quebec built the equivalent of 80 Moosehead Lakes in the three watersheds listed below and 67 of them were built between 1969-1985, which is an average of almost 4 per year.

Gulf of St. Lawrence Watershed		James Bay/Hudson Bay Watershed		Labrador Sea Watershed	
1956 Bersimis -1	13.9 km³	1979-81 Robert-Bourassa Generating Station	61.7km³	1971-74 Churchill Falls	32.64 km³
1969 Outardes-4	24.3 km³	1982-84 LaGrande -3 Generating Station	60.0km³		
1970 Daniel Johnson Dam	142.0 km³	1984-85 LaGrande-4	24.5 km³		
		1993 Brisay	53.8 km³		
	180.2 km³		200.0 km³		32.64km³

Fact Sheet by Stephen M. Kasprzak
February 11, 2019

NATURAL RIVER FLOW VERSUS REGULATED FLOW

Dr. Neu wrote the following in his 1982 Report:

> *"In higher latitudes during the winter, river run-off is at a minimum while power demand is at its maximum. This is shown in Fig. 7, where an average hydrograph and the seasonal power demand of a city in northern regions are plotted. As can be seen, water supply and power demand are out of phase by nearly half a year."*

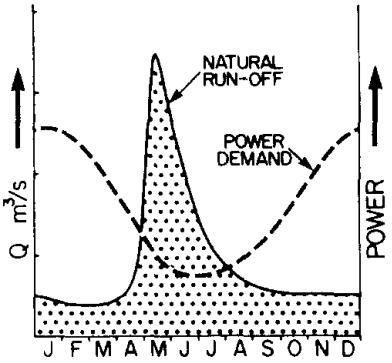


Fig. 7 Typical hydrograph and seasonal power demand.

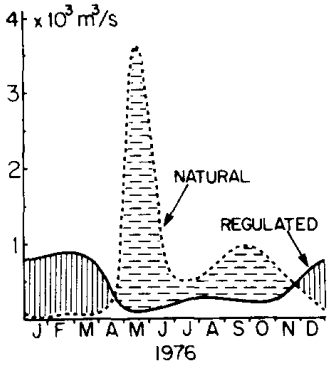


Fig. 8 Natural and regulated discharge of the Manicouagan River at Manic 5 power station.

> *"Developers of electrical energy view this as an inconvenience of nature; thus they reverse the natural run-off cycle by storing the spring and summer flow in artificial lakes to be released during the winter. An example is shown in Fig. 8 for the Manicouagan River at Manic 5 power station.*
>
> *Run-off is transferred from the biologically active to the biologically inactive period of the year. This is analogous to stopping the rain during the growing season and irrigating during the winter, when no growth occurs.*
>
> *Although temperature, particularly during warming in spring, plays an important role in the biological activities of the upper layer, it has less influence on the density of the water, and hence on the motion and mixing, than the fresh water of the river."*

Dr. Neu made the following observations and prediction, which again, have turned out to be true with the passage of time:

> *"Reducing the flow of fresh water during spring and summer and increasing it during the winter changes the seasonal composition of the water in the surface layer and the seasonal strength of the density current.*
>
> *As this trend continues, the cyclic variation will be reversed, the surface salinity becoming saltier in spring and summer, and fresher in the winter. This represents a fundamental change in the seasonal salinity patterns of the coastal region and continental shelf.*
>
> *There is a definite possibility that both winter and summer temperatures of the surface layer will increase; in winter due to an increase in upwelling of deeper warmer water, and in summer due to slower surface currents which will allow the surface layer to absorb more heat during its passage through the system. It can be assumed therefore that fresh water regulation modifies the climate of the coastal region to be more continental-like in the summer and more maritime-like in the winter."*

December 14, 2018

Thorn Dickinson
Vice President, Business Development
Iberdrola USA Management Corporation
52 Farm View Drive
New Gloucester, Maine 04260

Good Afternoon Thorn:

You have requested Hydro-Québec's assistance in responding to certain data requests pertaining to Hydro-Québec operations received in the CPCN proceeding for the New England Clean Energy Connect ("NECEC") project.

Below is information in response to questions 004-001 and 004-002.

004-001

Regarding the existing hydro-electric facilities that will provide electricity for NECEC, have those dams spilled water instead of generating electricity due to a lack of economic transmission in any of the years 2012-2017? If so,

a. Please provide a volume estimate per year of that spillage.

b. Please provide the reason(s) for that spillage.

Answer:

Yes, in 2017 Hydro-Québec spilled water due to a lack of economic transmission.

The quantity of spilled water in 2017 for this reason represents approximately 4.5 TWhs worth of energy. In the normal course of business, Hydro-Québec uses water to generate electricity. Excess water not used to generate electricity is stored in large reservoirs for use in later periods. As the reservoirs become full, and storing water is no longer an option, water is spilled.

In this category to date in 2018, Hydro-Québec has spilled approximately 10.4 TWhs worth of energy. Without additional transmission export capability, the quantity of spilled water in future years is expected to be comparable to the quantity of spilled water in 2018 under comparable market and operational conditions.

For the 2050 horizon, independent meteorological studies indicate that average flows in northern Québec are expected to increase by approximately 12%. This could lead to additional spilling[1].

[1] https://www.ouranos.ca/publication-scientifique/Synthesis_Summary.pdf

004-002

Does Hydro-Québec have an estimate of the maximum export capacity that existed at the end of 2017, without the existence of the NECEC line? (If that estimate is not available, but an estimate from a different year is, please provide that).

a. Please provide that estimate in aggregate or to the four export markets of Ontario, ISO New England, Maritimes, and New York ISO.

b. Please provide a discussion of factors that formed the basis of the estimate.

Answer:

Hydro-Québec's maximum export capability during 2017 is estimated at 34.4 TWh. Below is the breakdown of these exports to Hydro-Québec's primary external markets:

- Ontario: 4.6 TWh
- New England: 18.2 TWh
- Maritimes: 2.1 TWh
- New York: 7.9 TWh
- PJM/MISO/Other: 1.6 TWh

Many factors determine the maximum export capability for Hydro-Québec's hydropower system including the following:

- Water levels in individual Hydro-Québec reservoirs
- Specific transmission availability within Québec
- Specific generation availability
- Transmission availability to external markets
- Transmission congestion in external markets
- Wholesale market prices and demand in Hydro-Québec's export markets
- Operational constraints in Hydro-Québec's export markets

Please don't hesitate to contact me if you have any questions about this information.

Sincerely,

Simon Bergevin
Director, Energy Transactions
Hydro-Québec
75 Réne Levesque Blvd
Montreal, QC H2Z 1A4

Maine State Federation of Firefighters

Feb 12th, 2019

Governor Janet T. Mills, Augusta ME
Maine PUC: chris.simpson@maine.gov
DEP attn Jim Beyer: NECEC.DEP@maine.gov
LUPC attn Bill Hinkel: Bill.Hinkel@Maine.gov
Mass DPU: alan.topalian@state.ma.us & dpu.efiling@mass.gov

Dear Recipients:

This letter is to express concerns for fire and other emergency response capacities within the areas located along and adjacent to the proposed NECEC Corridor. (RE: DPU 18-64; DPU 18-65; DPU 18-66)

The Maine State Federation of Firefighters (MSFFF) has a membership of over 6000 firefighters. Many of our members are volunteers within small departments in rural communities. Several of our volunteer members, who serve areas within the proposed NECEC Corridor, contacted us to express their concerns for fire and safety response. These concerns focus not only on the major construction phases of the project, but also on significant risks that will be established and which will continue to exist long after construction crews have left the area and wide areas of high voltage power lines cross their jurisdictions. Further conversations and investigation indicate that to date, no evaluation, assessment, or documentation of the fire, emergency medical, terrorism and other risks, or the services and equipment needed to mitigate those risks, have been formally identified, discussed, studied, and/or reported on.

While Maine is not a "fire regime" it does not mean that catastrophic fires cannot occur here. Rural fire response has improved in the seventy years since "The Year Maine Burned" in 1947, but we must remember October 1947 followed one of Maine's rainiest seasons on record. *"From October 13 to October 27, firefighters tried to fight 200 Maine fires, consuming a quarter of a million acres of forest, taking the lives of 16 people, and wiping out nine entire towns. The Maine fires destroyed 851 homes and 397 seasonal cottages, leaving 2,500 people homeless".*

As we've seen over the last few years in other parts of our country and around the world, fires of magnitude that quickly overwhelm state and local resources are becoming annual events. Additionally, as was demonstrated in 2018 with the Paridise (CA) Campfire; PG&E, the power company whose transmission power lines were responsible for the fire, quickly declared bankruptcy. The convenience of PG&E and its ability to declare bankruptcy leaves Paradise, its victims, and the American taxpayer, to clean up the 150,000 acres of toxic wasteland before any attempt is made to rebuild from the destruction.

Regarding fire suppression and emergency support within the proposed NECEC Corridor, please see the enclose map and note the following:

Approximately 70 miles, from the Quebec border to Bingham, has no organized fire or emergency response capacity. These areas are covered by the Maine Forest Service (MFS). During a typical fire season, approximately March-October, the MFS has Rangers living the area who provide initial size-up once they arrived on scene. Weather permitting, air support from Augusta is dispatched; if air support is not already assigned to another fire in another part of the state. Ground crew members from around Maine may also be called to fight fires. Organizing and staging MFS wildland firefighters for a significant fire takes an hour or more. Fires on a windy day gain a significant headway before crews can arrive to remote areas. Volunteers from rural Maine towns are also trained in wildland firefighting and may respond to assist with MFS and Rangers when available.

The first 100 miles of the proposed Corridor, including the 70 miles covered by the MFS and Rangers, has only three (3) volunteer departments within a one-mile (1-mile) buffer of the proposed Corridor. These are the Bingham, Anson, and Solon Volunteer Fire Departments. This area has no staffed fire services and daytime coverage is extremely limited.

South of Bingham, and still within Somerset County, there are three (3) additional fire departments with a two-mile (2-mile) buffer of the proposed NECEC transmission line. These are the volunteer departments of Starks, Madison, and Industry. Once again, these three additional departments have no staffed fire and daytime coverage is extremely limited.

Please also note that these fire departments also lack sufficient off-road fire support capacity. While several do have smaller 4WD apparatus, sufficient large scale wildland suppression and emergency mitigation equipment is not available in the rural areas of the proposed NECEC Corridor area.

Non-fire emergency medical services (EMS) paramedic response is provided by Upper Kennebec Valley Ambulance out of Bingham. Emergency transports are taken to Redington-Fariview Hospital, 35-miles away. Redington-Fariview hospital has a Lifeflight landing pad, with helicopter transport dispatched from Bangor, Lewiston, or Sanford, if available.

Initial response for terrorist or other types of emergency incidents would come from either the Franklin or Somerset County Emergency Agencies depending on the location of the incident. We have been unable to locate any reference or notice from NECEC on how risk and incidents of this nature would be mitigated.

An example of a known risk that supports the need to evaluate, assess, document and sufficiently mitigate comprehensive fire and emergency risks associated with the proposed NECEC Corridor is shown by the 2017 (draft) Somerset County ME Hazard Mitigation Plan.

The most current available Somerset County Emergency Management Agency Mitigation Plan states the following:
C3 Goals
Wildfires: Reduce damage, injury and possible loss of life in Somerset County caused by wildfires.
*Somerset County is subject to wild land fires. The most likely damages caused by a wildfire are the loss of life, loss of prime timberland, and the destruction of personal and real property, especially homes. The loss of electricity is also possible, since many high voltage transmission lines pass through heavily wooded areas. Major wildfires may close commerce, resulting in major losses of income to local businesses and individuals. *There were at least 261 wild land fires in Somerset Country in from 2005 to 2010.*

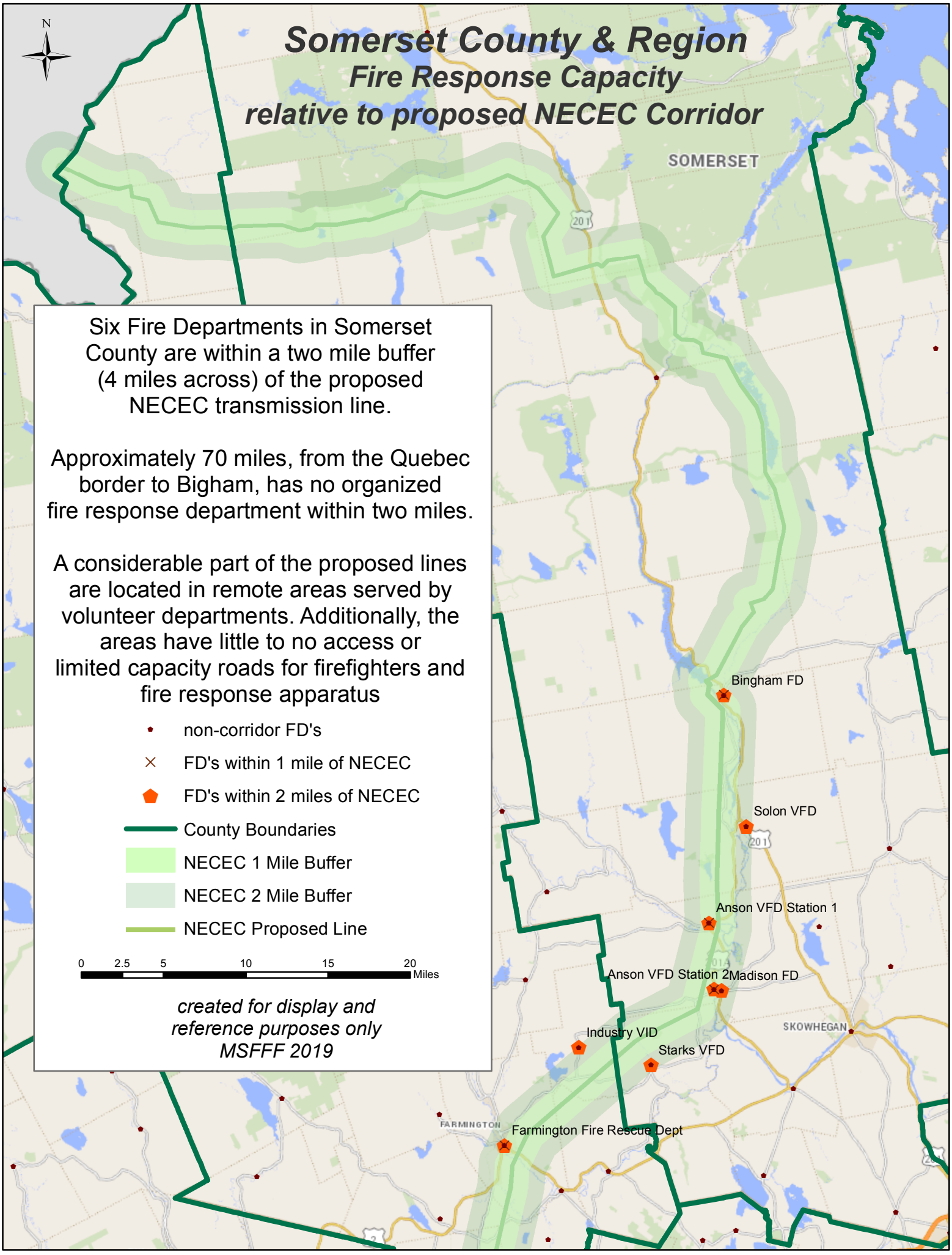
Information to date indicates that consideration of the many emergency hazards associated with the construction and future management of the NECEC Corridor have not been addressed. Due to this oversight, we conclude that the preparedness and safety of our fire fighters, and other first responders who will respond to NECEC Corridor incidents, has been severely overlooked and their security and safety significantly compromised.

The Officers and members of the MSFFF appreciate the opportunity to present these comments and look forward to having the fire, EMS, and other emergency response issues regarding the proposed NECEC Corridor fully evaluated, assessed, and documented. We also encourage the development of and look forward to reviewing mitigation and implementation plans to address associated Corridor risks, and fully support these risks being formally discussed, studied, disclosed, and reported.

Respectfully submitted,

Kenneth Desmond
President, MSFFF
PO Box 911
Sabattus, ME 04280

enc: map of Somerset Cnty Region


Somerset County & Region
Fire Response Capacity
relative to proposed NECEC Corridor
SOMERSET
201
Six Fire Departments in Somerset County are within a two mile buffer (4 miles across) of the proposed NECEC transmission line.
Approximately 70 miles, from the Quebec border to Bigham, has no organized fire response department within two miles.
A considerable part of the proposed lines are located in remote areas served by volunteer departments. Additionally, the areas have little to no access or limited capacity roads for firefighters and fire response apparatus
non-corridor FD's
FD's within 1 mile of NECEC
FD's within 2 miles of NECEC
County Boundaries
NECEC 1 Mile Buffer
NECEC 2 Mile Buffer
NECEC Proposed Line
0 2.5 5 10 15 20 Miles
created for display and reference purposes only
MSFFF 2019
Bingham FD
Solon VFD
Anson VFD Station 1
Anson VFD Station 2
Madison FD
Industry VID
Starks VFD
SKOWHEGAN
FARMINGTON
Farmington Fire Rescue Dept

October 17, 2018

To: Maine Department of Environmental Protection, and Land Use Planning Commission
Re: New England Clean Energy Connect (NECEC) proposal

This project does not benefit Mainers. Rather, it benefits only CMP to the tune of $60 million annually. Hydro-Quebec power is merely redirected through Maine to Massachusetts, with no benefit to the Maine electrical supply. As such, the project does nothing to reduce aggregate fossil fuel power generation. Instead, it actually discourages Maine renewable energy projects, and the jobs they would create.

The project would also have a negative impact to Maine's natural resources. I recently had the opportunity to view Aroostook County in a ride with BikeMaine. I was awestruck with spectacular landscapes that no doubt are matched by that of the North Woods. I can't imaging despoiling such beauty by cutting it up for some unnecessary power lines! That would be irresponsible not only to Maine's natural resources, but also to Maine's tourism economy.

I urge the PUC to deny any permit to CMP for this Transmission Project.

Respectfully,

Stephen Moriarty
1 Checkerberry Lane
West Bath ME 04530

Hinkel, Bill

From: Jeffrey Stone <jeffreystone22@yahoo.com>
Sent: Monday, March 04, 2019 5:15 PM
To: Hinkel, Bill
Subject: Opposition to NECEC

I am writing to express what a poor presidencie it would set, to sell out Maine's natural capital resources to forward a power corridor from Canada to Massachusetts.

The overall loss of carbon scrubbing trees will eliminate any benefit. The damage caused by pesticides washing into streams and making way to watersheds is alarming and will harm the ecosystems and the natural habitat for native species let alone provide the ability for invasive plant species to move in to fill the gap created by the NECEC corridor thus causing a greater need for CMP to utilize greater amounts of pesticides which will poison our lands and waterways.

Overwhelmingly, the majority of Mainers do NOT support any proposal which sells out our natural capital resources to a power company. CMP clearly does not have "we the people's" best interests in mind as clearly demonstrated by the poor business, billing and reliability practices since CMP was sold in 2015 to a foreign entity.

I urge you respectfully to not endorse this project.

Sincerely,
Jeffrey C. Stone
South Portland, Maine 04106
1-207-831-1835

Sent from Yahoo Mail for iPhone

Hinkel, Bill

From: Andy Webb <andy@riverdrivers.com>
Sent: Tuesday, March 05, 2019 7:59 AM
To: DEP, NECEC; Hinkel, Bill
Subject: Public comment concerning NECEC

To: The Department of Environmental Protection and The Land Use Planning Commission

This letter is in response to an Editorial from the Bangor Daily News March 2, 2019 and perhaps other as well. Peggy Dwyer, an agent from Dirigo Partners (A Land acquisition firm employed by CMP to negotiate land for NECEC) In the article. She stated that the protesters was staging on town owned property donated by CMP.

For starters, that land "donated" by CMP was a conservation "bribe", if you will, from their Reliability Project several years ago. This deal was a *Front Page-Shaking Hands with a Small Town Look What We Did* Opportunity for CMP. This was excess land to be put into conservation to offset land used for an expansion of their pole lines in Southern Maine. At that time, I was 1st Assessor of West Forks and fought against it but in the end, either the town or the state was going to own it- meaning we lost about $2000 in taxes then. Reluctantly, the Board of Assessors thought that the town should own it and control what little we could on it. It was prime land, some with water frontage, some with road frontage. Now the town has no tax revenue from it, must insure it, can't generate any meaningful revenues or use it to expand the town. How this land was acquired by CMP years ago raises many other questions as well. Did the ratepayers buy it for Hydro exploration in the 1950's? This parcel of land was in the tree growth program as well. So potentially the town could have made much more in taxes than the $2000 +/_.

Maine is bombarded with tax free conservation land. It's not sustainable for its residents. Or is it beneficial to tourism in the long run. No matter what the "selling " point is, the people lose freedoms and pick up more of the tab. I believe that in a few more years, that the Northwoods will be unrecognizable. While CMP has pledged to add to the tax base with the NECEC Project, it's not beneficial to the existing taxpayers, people who make their living from the land, folks who rely on tourism and the trickle down economy that ensues. An argument that you are well aware of.

She states that the Opposition rode for miles to Coburn Mountain (on snowmobiles) on state owned lands as well as private and more land owned by CMP. Most of this journey was in West Forks Plantation. These lands are mostly all enrolled in tree growth program. Lands with reduced taxes for sustainable forestry practices. Maine residents in any plantation, town or unorganized territory that have "Tree Growth" actually are subsidizing the owner to profit from timber harvesting. Unfortunately, there is no law giving people a right to use the lands but there should be some benefits to the public for the big company's tax breaks on the properties. Her letter intends to shame the protesters for using and wanting to keep the woodlands in traditional ways but the taxpayers have already paid their fair share for the big corporations to profit off Maine. I wholeheartedly disagree with her argument . We have plenty of "skin in the game" when we pay our taxes. Incidentally, the protesters live, work, recreate and are raising families, all who SPEND money in the area now. These people are the future.

I urge you to make the right decision for the People of Maine. Say No to the corridor.

Respectfully,

Andrew Webb, resident of West Forks

Former Tax Assessor of West Forks of 17 years, campground owner, outdoor enthusiast and owner of Andy Webb & Daughter Construction Company

Hinkel, Bill

From: Debbie May <DMay235@aol.com>
Sent: Tuesday, March 05, 2019 5:40 PM
To: DEP, NECEC; Hinkel, Bill
Subject: NECEC intervenor prefiled testimony

State of Maine Department of Environmental Protection

and

Land Use Planning Commission

I would like to make a comment on the prefiled testimony I have read regarding the NECEC. In intervenor group 5 the testimony from Wagner Forest Management suggests that you should not consider the detrimental effect the NECEC will have on scenic views from private property.

The statement submitted by Wagner Forest Management states "We strongly believe that regulators should not be considering views from any private land or private roads in evaluating whether or not the CMP project will have an adverse effect on scenic character."

I disagree with this statement as I own private property in the West Forks and feel that views from private owned property should be a consideration. I feel it is your responsibility to protect the value of my property by not permitting something that will have a detrimental effect on it.

This statement made from Wagner Forest Management is showing no consideration for all of the other property owners that will be effected by the NECEC.

I am asking that you disregard the testimony from Wagner.

Thank you for your consideration.

Sincerely

Debra J May

PO Box235

New Gloucester, Maine

207-926-3726

From:	Jeffrey Stone
To:	Hinkel, Bill
Subject:	Q'uebec hydro - Sierra Club
Date:	Sunday, March 17, 2019 6:11:14 PM

Mr. Henkel

I wanted to bring this published commentary to your attention, Published by CommonWealth Magazine September 28, 2018. In which The Sierra Club "fires back on Q'uebec hydro" explaining why electricity imported from Québec is not clean.

"... The focus was on the adverse environmental impacts directly related to flooding large areas of land for hydroelectricity. But that's only part of the story. As a result of Hydro-Québec's ability to arbitrage between markets and greenwash its electrons, Massachusetts ratepayers could be signing up to pay a sizable "clean energy" premium in exchange for no net environmental benefit.
Under the terms of the power purchase agreements that are pending before the Massachusetts Department of Public Utilities, Hydro-Québec does not have to commit any capacity from its hydroelectric plants to supply Massachusetts ratepayers via Central Maine Power's New England Clean Energy Connect power line. Instead, Hydro-Québec could supply energy through the power line by reducing its exports into other markets or by purchasing energy from other markets during low-priced hours in order to sell it to Massachusetts under the higher contract price. Both strategies could increase carbon emissions in other markets, thereby negating any potential reduction in New England's carbon emissions...."

Please take this into consideration as an opportunity to re-think your position on the NECEC project which will permanently alter Maine's environment and permanently destroy our natural ecosystems.

Thank you for your consideration of the facts exposed.

Sincerely,

Jeffrey C. Stone

South Portland, Maine

Maine Land Use Planning Commission
Chairman Everett Worcester
18 Elkins Lane
22 State House Station
Augusta, Maine 04333-0022

John and Nancy Nicholas
208 Gayton Lane
Winthrop, Maine 04364

Date: March 6, 2019

Case: Proposed hydro power transmission corridor – New England Clean Energy Connect, NECEC.

Subject: Updated letter of opposition to the Central Maine Power Company's (CMP) proposed 53.8 miles of new transmission corridor in the State of Maine.

Dear Chairman Worcester and members of the Maine Land Use Planning Commission (MLUPC):

Thank you for the opportunity to write about the proposed CMP transmission corridor regarding the first 53.8 miles. As stated in a previous letter, we own property in Upper Enchanted Township, Maine, approximately two miles from CMP's proposed 145-mile Hydro Quebec transmission corridor in the State of Maine. We are very concerned about the damaging effects of the proposed transmission corridor on the environment and natural resources around the first 53.8 miles. We are also concerned about the negative impact the proposed transmission corridor will have on the scenic character of the area and the tourism economy of Jackman, West Forks and the Forks. Lastly, we are concerned about the negative impact of the proposed transmission corridor on public reserved land through which the proposed transmission corridor is planned to traverse by means of a lease agreement between CMP and the Maine Bureau of Parks and Public Lands, and whether this lease agreement is even legal.

We strongly recommend that you deny the necessary permits for this project, so that the Massachusetts Department of Public Utilities may have a contractual basis on which to terminate its contract with CMP and contract with Vermont's New England Clean Energy Powerlink that proposes a 154-mile transmission corridor to carry DC power from Hydro Quebec to Massachusetts. The entire 154 miles of proposed transmission corridor would be under water and underground, thus, avoiding damage to the environment, natural resources, scenic character and tourism economy of Vermont.

A report prepared by the Maine Department of Inland Fisheries and Wildlife identified potentially serious impacts on the wildlife, wild and native brook trout, endangered wildlife and rare ecosystems and plants around the 53.8 miles of proposed transmission corridor. Janet S. McMahon, Consulting Ecologist also testified before the MLUPC about the serious, damaging effects on cold water fisheries and wildlife habitats that would occur around the proposed transmission corridor. Most alarming is that the negative impact on habitat integrity would extend ½ kilometer up to one kilometer beyond the "high contrast edges" of the proposed 150-foot-wide transmission corridor into adjacent forest land.

The immensity of the possible damaging impact on cold water fisheries and wildlife is best appreciated by the fact that the first 53.8 miles of the proposed transmission corridor would cross 115

streams, 263 wetlands, vernal pools and several deer wintering areas. Maine contains 97 percent of the wild and native brook trout in the Eastern United States. CMP has proposed a 25-foot setback from streams in the area when a 100-foot setback is required. I have spent that past 20 years fly fishing the remote ponds around the 53.8 miles of proposed transmission corridor. Most of the streams in this area flow into and out of the remote ponds that support the spawning of wild and native brook trout. For example, two streams flow through our property and support the spawning of wild and native brook trout that access the two streams from Grace Pond. Survival of the wild and native brook trout in this area will be threatened by rising temperatures that brook trout cannot tolerate in the exposed streams within the 150-foot-wide corridor, and from herbicide that CMP will use to retard forest growth in the 150-foot-wide corridor.

The area around the proposed 53.8 miles of transmission corridor is used for hunting, remote open water fishing (especially fly fishing), ice fishing, hiking, remote camping, canoeing, kayaking, boating, snowshoeing, cross country skiing, snowmobiling, ATVing, ecotourism, mountain climbing, related outdoor recreational pursuits and timber harvesting. Representatives from CMP describe the area as a ravaged, industrial forest wasteland in order to promote an alternate and inaccurate reality about the area. The area is unique in the continental United States and Maine as one of the largest and most intact contiguous temperate forests remaining in North America, perhaps in the entire world, and because of its breathtaking scenery of mountainous terrain containing approximately seven mountains exceeding 3,000 feet in height and another 14 mountains between 2,000 and 3,000 feet in height, picturesque forests and approximately 20 remote ponds and 100 or more streams that contain wild and native brook trout. The area can most accurately be described as multiple outdoor use/multiple ownership which would be incompatible with a large scale industrial infrastructure represented by a 150-foot-wide transmission corridor containing 100-foot-high, nonliving towers that would look like ugly monster truck transformers, some with red aviation lights, standing starkly out of place in a living, breathing forest that abounds with wildlife such as deer, moose, black bear and lynx. We are not aware of any desire for visitors to observe 100-foot-high transmission towers. Comments submitted to the Maine Public Utilities Commission (MPUC) from out-of-state visitors and land owners have consistently stated that, “They do not need to come to Maine to hike, snowmobile and view electric transmission lines.” And, based on a recent survey, they won’t come here, thus, detrimentally impacting the tourism economy of the area.

The area around the proposed transmission corridor is owned by the Nature Conservancy (16,500 acres), a single landowner (15,000 acres around Spencer Lake and Fish Pond), approximately 350 acres of public reserved land owned by the people of Maine, 5,000 acres owned by 151 families, two Sporting Lodges/Camps, the Passamaquoddy Nation and large landowners engaged in timber harvesting.

Coburn Mountain is the highest mountain in the Jackman, West Forks and Forks area. At 3,717 feet it is a prominent feature of this beautiful landscape. The proposed transmission corridor is planned to traverse up the north slope of the mountain and continue approximately 3 miles along the eastern slope of Coburn Mountain. As a result, the proposed transmission corridor would be easily observed over approximately 20 miles of Route 201 (a Maine Scenic Byway,) significantly impairing the beauty of the area for visitors traveling Route 201. The proposed transmission corridor and towers would be

visible over most of the 25 miles of the Spencer Road, and from the Attean Overlook in Jackman as it meanders through the Western Mountains of Maine from Route 201 to the Canadian border. Visitors from away will stop at the Attean Overlook expecting to see a stunning forest landscape. Much to their chagrin, they will observe a fragmented forest with hundreds of electrical transmission towers.

It appears from the video simulations of the proposed corridor that the transmission towers may be visible from many popular remote ponds west and north of Coburn Mountain including Grace Pond, Enchanted Pond, Little Enchanted Pond, Gordon Pond, Rock Pond and Iron Pond, significantly diminishing the remote experience that visitors enjoy when visiting these ponds. The transmission towers will also be visible from Spencer Lake, and from the Cold Stream Forest east of Route 201 that was recently purchased by the Land for Maine's Future program and added to our public lands. The transmission towers also will be visible from two, nearby sporting camps/lodges, and from Parlin Pond.

Families who own property in the Unorganized Territory (UT), and would be directly affected by the proposed transmission corridor, will receive only a fraction of the property tax benefits from the proposed transmission corridor, as the entire UT is treated as one taxing unit. What they will receive is 100% of the decline in property values of between 10% and 30%.

Coburn Mountain ranks #21 among northeast US peaks with 2000 feet of prominence (source: peakbagger.com), which may explain why it is able to hold storm clouds and act as a water source for the surrounding area. Coburn Mountain is the water source for Grace Pond, a native brook trout resource. Colburn Mountain also drains into Enchanted Pond, a large native brook trout resource, Parlin Pond, the dead River and the Moose River. It also supplies water from its extensive bedrock aquifers to approximately 40 families on the western side of the mountain. Any disruption or herbicide contamination of this water flow from the proposed transmission corridor and towers on Coburn Mountain would forever destroy Grace Pond and Enchanted Pond, and their native brook trout fishery, as well as other fishery resources and the families whose water supply comes from Coburn Mountain. The commission should require CMP to conduct a hydrogeologic analysis of Coburn Mountain to determine if there would be any threat to water supplies emanating from the mountain from the proposed path of the transmission corridor.

A lease agreement executed in December 2014 between CMP and the Department of Agriculture, Conservation and Forestry, Bureau of Parks and Public Lands allows CMP to use public reserved land located on the border between Johnson Mountain Township and the West Forks Plantation at T2 R6 BKP WKR for a section of CMP's proposed transmission corridor that would be one-mile long and 300-feet-wide. The authority cited in the lease agreement is Title 12 MRSA, section 1852, subsection 4 that permits the Bureau of Parks and Public Lands to lease public reserved land for "utilities and rights-of-way." Paragraph A of that statutory language permits the bureau to lease the right to "Set and maintain poles, electric power transmission and telecommunications transmission facilities, roads, bridges and landing strips; ……." CMP would be required to make a $1,400 annual payment for a mile of proposed transmission corridor worth $413,793 a year ($60,000,000 divided by 145 miles) for CMP and its parent, Iberdrola.

My opinion is that this lease agreement requires the approval of 2/3 of both houses of the Maine Legislature, in accordance with Article IX, section 23 of the Maine Constitution, because the lease agreement exceeds the intent of the statute and represents a "substantial alteration" of that public reserved land. The statute, in my opinion, is meant to allow a public utility right-of-way, through lease agreement, to carry power over public reserved land for local users and not to allow the use of public reserved land for the benefit of another state (Massachusetts) and two multinational corporations. The statute does not mention transmission corridors or towers. Also, the lease agreement allows CMP to build a 300-foot-wide by one-mile long transmission corridor through the middle of this public reserved land when their application only requests a 150-foot-wide corridor. Why? Based upon the testimony of Janet S. McMahon, Consulting Ecologist, before the MLUPC, deforestation of the proposed 150- foot-wide corridor through this public reserved lot would extend damage to cold water fisheries and wildlife habitat ½ kilometer up to one kilometer beyond the "high contrast edges" of the proposed transmission corridor, resulting in a "substantial alteration" of the entire public reserved lot.

Again, thank you for the opportunity to write about this project proposal.

Sincerely,

John and Nancy Nicholas

Contact:

Phone: 207-377-6352 or 207-462-4049
E-mail: jrnicholas@roadrunner.com

DEBRA J MAY
P. O. BOX 235
NEW GLOUCESTER, MAINE 04260
207-926-3726

To: Maine Land Use Planning Commission

I am asking you to deny the proposed CMP power line through the mountains of western Maine. This area is a prestigious remote section of Maine that should remain that way. The fishing, hunting and scenic values of that area will be forever changed if the proposed power line is constructed.

CMP agrees that the power line will cause a negative change and that is why they are offering mitigation to compensate for the destruction the line will cause. However, in 25 years from now, the mitigation money will be gone and the western mountains of Maine will still be negatively affected. Once the power line is constructed—the mountains, steams, ponds and views will never, ever be the same.

The main reason people go to that area will be gone. The businesses in that area need the exceptional fishing, hunting and scenic values to draw their customers to the region. Maine does not need to provide power to Massachusetts. Maine need to protect the resources we have.

Last fall, I was at out camp in the West Forks. While we were driving on Rt 201 just south of the Capital Road, we saw a couple on an ATV that was broken down at the Rt 201 trail crossing. We stopped to offer help and tried to fix their problem. We were at the intersection of the current power line and Rt 201. The humming noise that was coming from the power line was upsetting to say the least. We all felt like we were being invaded by electrical current. The noise at the power line has been that way for some time now. Last year, while having a snack while snowmobiling, the same continuous annoying noise interrupted the peacefulness of the area. I can't imagine the deer, moose, bobcat, lynx and other animals are attracted to the noise any more than we were.

It appears the only people that are in support of the power line either have no interest in the western mountains, they have not researched the facts and are just listening to CMP or they are getting a monetary benefit from it.

This project will have a massive negative effect on so many people as

well as the state of Maine. To all of those that are supporting it because of the monetary benefit—Shame on you. As far as I am concerned, supporting something that will have such a negative effect on others and the State of Maine, in exchange for money is worse than prostitution-- which is illegal. Maybe mitigation money should be illegal as well.

A project like will causes so much damage to so many people that would never sell or lower their morals for money.

I hope you will consider this and deny the approval of this project.

Sincerely,

Debra J May

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Sincerely,

Debra J May

H. LLOYD MAY, JR.
P. O. BOX 235
NEW GLOUCESTER, MAINE 04260
207-926-3726

To: Maine Department of Environmental Protection

I am writing to express my opposition to the CMP proposed power line project.

I am a property owner in the West Forks and have been for 30 years. I have been going to the area with my grandfather and parents since I was a child. I can remember standing on top of a mountain with my grandfather and admiring the view. I remember fishing so many of his favorite remote trout spots. It was beautiful and peaceful. The environment lead to one being able to get away from the everyday pressures and worries in life. There was no phones and no power. It was easy to really forget about the hubbub of the city and really take a moment to realize what was important in life and appreciate the beauty of Maine in that area.

My children have been going to the West Forks since they were born. They have seen trees cut, trees grow, roads being built, and roads growing up. They have been able to experience the untouched beauty and peacefulness of the view from mountains and remote ponds. They have hiked mountains and traveled by snowmobile and jeeps. They both have memories of just sitting on top a mountain and admiring the view. There are no phones, no power, no people and no pressure of everyday life.

The fifth generation of our family to go to the West Forks on a regular basis is less than two years old. She has been on top of Colburn mountain in a backpack and on a snowmobile. Although she may be too young to remember, she deserves the chance to grow up and experience the same feeling that the prior four generation have. She deserves the chance to be able to go to a brook, stream or pond and be able to catch her trout for lunch. She deserves the right to see the spectacular views from all the mountains.

Over the last 50 years, I have seen many changes in the area. Roads that we used to travel to a pond are no longer used and have grown up so much it is hard to tell where the road went. This last weekend, my son, wife and I walked down a road that we drove down 10 years ago. The road had

grown up so much with bushes and trees it was actually easier walking in the woods next to the road.

New roads have been built and again, I have started to see them stop getting used and now trees are growing where gravel once was. I have seen large areas of big trees clear cut and be nothing but a big brown area. Soon the underbrush starts growing and as time has passed, I have seen the same area grow back to a large forested area again.

Aside from the main roads for the infrastructure, one thing has never changed. That is the power lines from Indian dam—the one that goes to Bingham and the one that goes to RT 201 just south of the capital road. These strips of land have never changed. Trees have never grown, and the view has never changed. A power line is permanent structure. It changes the area forever—and it will never be forested again.

If the CMP is granted, this will change the scenic view forever. Power line mean civilization—people, houses, business, cities. It is hard for me and I am sure many others to experience the full peacefulness and beauty of the mountains, streams when you look out and the scene is divided by a strip of power lines.

I hope you consider this letter and protect the precious mountains. Please deny the permit for the power line.

Sincerely,

Lloyd May

H. LLOYD MAY, JR.
P. O. BOX 235
NEW GLOUCESTER, MAINE 04260
207-926-3726

To: Maine Land Use Planning Commission

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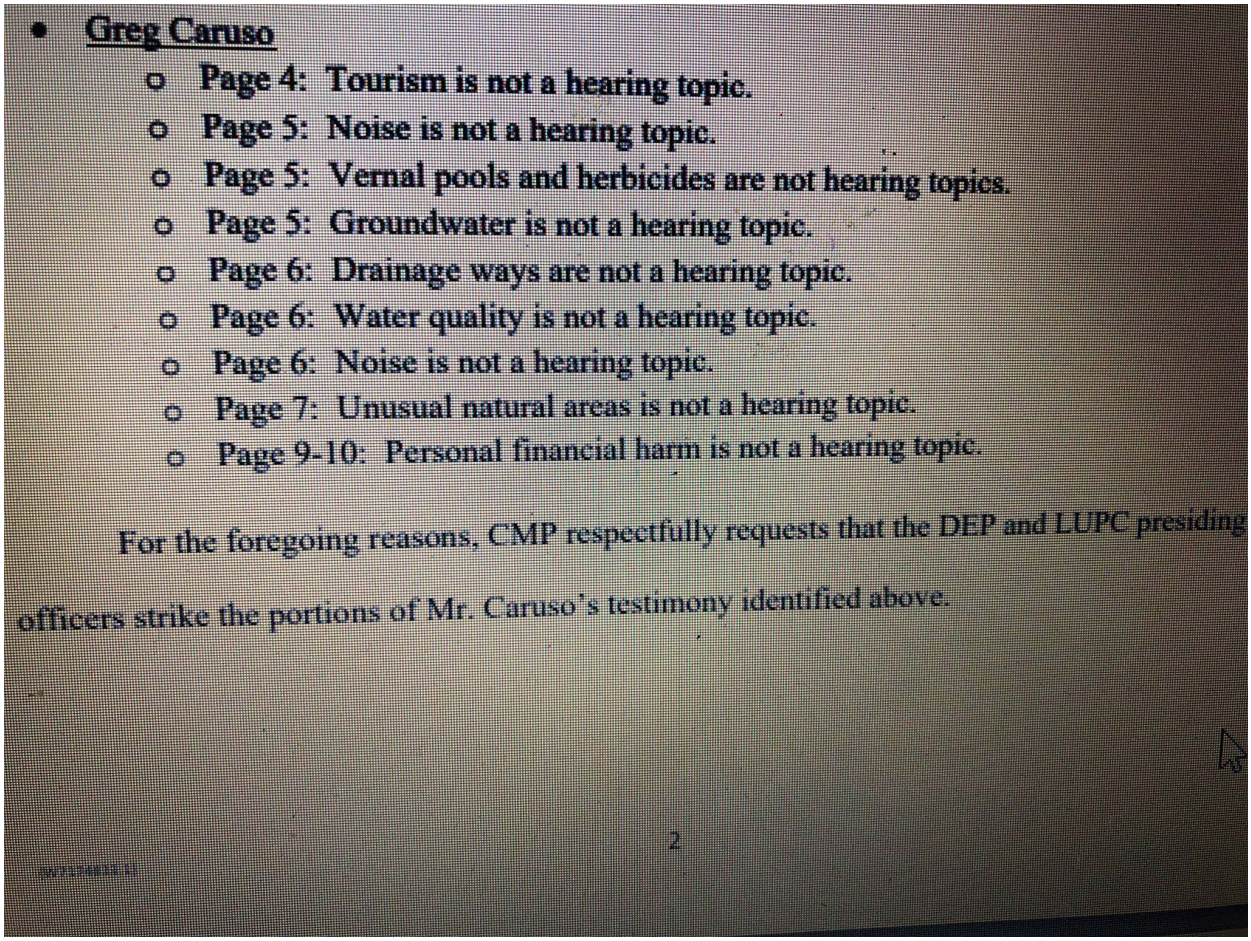
Sincerely,

Lloyd May

From: nancy sopinsky
To: Hinkel, Bill
Subject: Central Maine Power smothering Mainers.
Date: Wednesday, March 20, 2019 12:02:33 PM

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Wow...disgusting. Every official elected or non is party to cmp's shameful shameless hubris. The more official/public support they garner the more audacious they become. Dont our reps in government get it. So few willing to step up. If they are allowed to retire analog meters, ratepayers havent seen the end of the criminal theft.



- **Greg Caruso**
  - Page 4: Tourism is not a hearing topic.
  - Page 5: Noise is not a hearing topic.
  - Page 5: Vernal pools and herbicides are not hearing topics.
  - Page 5: Groundwater is not a hearing topic.
  - Page 6: Drainage ways are not a hearing topic.
  - Page 6: Water quality is not a hearing topic.
  - Page 6: Noise is not a hearing topic.
  - Page 7: Unusual natural areas is not a hearing topic.
  - Page 9-10: Personal financial harm is not a hearing topic.

For the foregoing reasons, CMP respectfully requests that the DEP and LUPC presiding officers strike the portions of Mr. Caruso's testimony identified above.

2

From:	Paul Sheridan
To:	Beyer, Jim R; Hinkel, Bill
Subject:	WRITTEN COMMENTS: The CMP corridor is a bad deal for Maine:
Date:	Friday, March 22, 2019 6:11:30 PM

Below, my WRITTEN COMMENTS:

the CMP corridor is a bad deal for Maine because:

- The transmission line would cut 53 miles of new power lines through undeveloped forests in Maine's North Woods, harming brook trout and deer habitat, and damaging the tourism economy.

- On top of fragmentation and wildlife impacts, there's no evidence that the project would reduce climate-changing pollution.

- It would jeopardize the construction of new in-state renewable energy projects and clean energy jobs.

- CMP and Hydro-Quebec would make billions of dollars in profit while offering very little in return to Maine's people, businesses, and environment

Paul Sheridan
88 Hart Rd.
Northport, ME 04849
207-322-3961
sheridanpa@earthlink.net

Hinkel, Bill

From: Roger Merchant <rogmerch@gmail.com>
Sent: Monday, March 25, 2019 3:46 PM
To: DEP, NECEC; Hinkel, Bill
Cc: Roger Merchant
Subject: NECEC Public Comment
Attachments: MH_THC REVIEW & RESPONSE.docx

Dear LUPC and DEP Staff,

I am submitting to you this Public Comment concerning the NECEC Project. Please confirm back to me receipt, and that it has been posted to public comment. A file of the same is attached.

Thank you,

Roger Merchant
Glenburn, Maine

.....

REVIEW & RESPONSE
Roger Merchant, ME LPF#727
Glenburn, Maine

To:
The Nature Conservancy in Maine Testimony
By
Malcolm L. Hunter Jr., PhD.

Preface: The following *referenced citations* from my review of Malcolm Hunter's document for TNC, lends credence to petitioning and requesting that the Governors Office, The State Energy Office, LUPC and DEP, and the Legislature slow down, if not halt, the NECEC review process. In the interim, an independent assessment of the full range of social, economic and environmental **costs and benefits** of NECEC needs to occur and brought before the public, before any decisions on permitting.

Point #1... Incomplete Analysis
"The Conservancy strongly asserts that the project will have significant cumulative and long-term impacts on the regions wildlife, and that the compensation and mitigation currently proposed are inadequate and not commensurate with those impacts."(Pg. 2, Par.3)

Since day one NECEC has focused solely on economic benefits and the necessity of HQ power being transmitted through Maine to customers in Massachusetts. The deep pool of benefits includes million upon millions of promised financial resources to Maine individuals, organizations, towns, counties and the State of Maine. Given this exclusive emphasis on benefits only, then from a true Sustainable Development perspective it's fair and wise to ask, "okay benefits, benefits, but what about the full range of costs and benefits: socially, economically, environmentally"

Point #2... Fragmentation Impact Minimization by NECEC

Habitat fragmentation is the focus of Hunters research-based document, *"it is widely recognized that fragmentation is one of the leading causes of biodiversity decline across the globe." (Pg.3,Par.1)*

The working forests in NECEC Segment 1 are a shifting patchwork of forest types and harvests, all linked by an extensive network of interconnecting roads, some already contributing to fragmentation. It's worth noting in Hunter's findings, "*The proposed NECEC corridor would be a permanent fragmenting feature, much like the few major forest roads in the region...A 150 foot wide power line will create a wider barrier to movement than a typical woods logging road." (Pg.3, Par.2&3)*

Point #3... Landscapes, Wildlife Habitat, Regulatory Review Short-Sidedness

- The Nature Conservancy has experience with mapping and evaluating lands that are Resilient and Connected and in relation to growing concerns about climate change and biodiversity. *"There are no known examples of comparable development projects [power lines] in Maine that traverse lands mapped as Resilient and Connected." (Pg.3, Par.4)* Given the reality and emergence of climate change-forest change, as well as the permanent fragmentation impact of the power line, this comment suggests a significant information gap in NECEC's environmental assessment and impact information base.

- In terms of habitat loss and alteration, Hunter's report states, "S*egment 1 will result in a loss of nearly 1000 acres of habitat for forest-dwelling species... For species with small home ranges such as red-backed salamanders, a thousand acres could impact millions of individuals...For larger species, the altered habitat in a utility corridor may serve as a barrier to movement (Pg.4,Par.2).* The deforestation of 1000 acres is also a loss of 1000 acres of forest carbon storage, Additionally, a significant portion of boreal-forest carbon storage loss has occurred within the 15,000 square km area flooded at the HQ power source for the NECEC Project.

- Further troubling are edge effects from an open corridor, extending deeper into adjacent forests either side a power line, *"forest edge microclimates are typically windier, warmer, and dryer than forest interiors." (Pg.4,Par.3)* The complexities skirted by NECEC have higher stakes, "*many studies suggest that the distribution and density of ungulates (deer, moose) are affected by power line ROW's, especially when combined with roads" (Pg.4,Par.2)*

Wildlife impacts and some mitigation ideas appear in CMP reporting, and they address a few key species like deer. However, NECEC comes nowhere near addressing the range and extent of species vulnerable and at risk as documented on *Pages 4 & 5* in Hunter's report. The point is reinforced in Janet McMahon's comprehensive, detailed report, "Forest Fragmentation in the Western Mountains Region."

- Hunter's bottom line on edge effects from NECEC, "*assuming an edge effect of 330 feet the acreage affected by segment 1 jumps roughly five-fold to 5,000 acres, and, assuming an edge effect of 1,000 feet, the acreage affected increases nearly fifteen fold." (Pg.6, Par.1)*

- Hunter further notes that long-term impacts from fragmentation take years, even decades to play out on any landscape. Of particular concern to any regulatory review and permitting is this citation, "*the regulatory framework often falls short in acknowledging cumulative impacts..."most impact assessments neglect the long-term effects of transmission lines on biodiversity. (Pg.7,Par.2)*

Closing Remarks:

My review of Hunter's credible testimony has brought me to a deeper under-standing of the environmental impacts that NECEC will have across the Maine landscape. As stated in my preface, NECEC emphasis has been solely, exclusively on the benefits, benefits, benefits. Absent in their pitch, and underscored in Malcolm Hunter's paper is a fair and complete assessment of environmental **costs and benefits**. His closing remarks mirror public shared concerns about NECEC...

"The proposed mitigation and compensation plan does not adequately address the cumulative impacts to the full array of Maine's wildlife... Because of the global ecological importance of this region and the substantial length of the new corridor, it is challenging to find comparable examples of regulatory review and commensurate mitigation and compensation... It is my contention that based on the evidence presented, CMP has not made adequate provisions for the protection of wildlife and fisheries."(Pg.8,Par.2&3)

A Last Note... A Get-Real Sustainable Development Assessment

The essence of sustainability has been co-opted by the erroneous notion of keeping the development peddle to the metal, to sustain what we've always done. I would argue that NECEC needs a full, rigorous application of Sustainable Development tools, a reasoned assessment of the three key, interrelated components that comprise true sustainability; the economic, the social, the environmental.

In Sustainability Solutions each and all three are vital to restoring, protecting, utilizing, growing the economy, as well as nourishing and growing our shared sense of place and rural quality of life.

That being said, I come back to this fundamental position... <u>That we the public need to petition and request that the Governors Office, The State Energy Office, LUPC and DEP, and the Legislature put on hold for 18 months, the NECEC review process and any decisions, to permit. In the interim, an independent assessment needs to be made on the full range of social, economic, environmental **costs and benefits** and this needs to brought before the public, before any decisions on permitting are made on NECEC.</u>

Roger Merchant, Nature Photography
NAI: Certified Interpretive Guide
Forestry Naturalist and Educator - MLPF#727
UMaine Cooperative Extension-Emeritus
1018 Pushaw Road, Glenburn, Maine 04401
207-343-0969 rogmerch@gmail.com
https://www.rogermerchant.com/

REVIEW & RESPONSE

Roger Merchant, ME LPF#727
Glenburn, Maine

To:
The Nature Conservancy in Maine Testimony
By
Malcolm L. Hunter Jr., PhD.

Preface: The following *referenced citations* from my review of Malcolm Hunter's document for TNC, lends credence to petitioning and requesting that the Governors Office, The State Energy Office, LUPC and DEP, and the Legislature slow down, if not halt, the NECEC review process. In the interim, an independent assessment of the full range of social, economic and environmental **costs and benefits** of NECEC needs to occur and brought before the public, before any decisions on permitting.

Point #1... Incomplete Analysis

"The Conservancy strongly asserts that the project will have significant cumulative and long-term impacts on the regions wildlife, and that the compensation and mitigation currently proposed are inadequate and not commensurate with those impacts."(Pg. 2, Par.3)

Since day one NECEC has focused solely on economic benefits and the necessity of HQ power being transmitted through Maine to customers in Massachusetts. The deep pool of benefits includes million upon millions of promised financial resources to Maine individuals, organizations, towns, counties and the State of Maine. Given this exclusive emphasis on benefits only, then from a true Sustainable Development perspective it's fair and wise to ask, "okay benefits, benefits, but what about the full range of costs and benefits: socially, economically, environmentally"

Point #2... Fragmentation Impact Minimization by NECEC

Habitat fragmentation is the focus of Hunters research-based document, *"it is widely recognized that fragmentation is one of the leading causes of biodiversity decline across the globe." (Pg.3,Par.1)*

The working forests in NECEC Segment 1 are a shifting patchwork of forest types and harvests, all linked by an extensive network of interconnecting roads, some already contributing to fragmentation. It's worth noting in Hunter's findings, "*The proposed NECEC corridor would be a permanent fragmenting feature, much like the few major forest roads in the region...A 150 foot wide power line will create a wider barrier to movement than a typical woods logging road." (Pg.3, Par.2&3)*

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From:	Geri Vistein
To:	Hinkel, Bill
Subject:	CMP Transmission Line
Date:	Tuesday, March 26, 2019 2:24:52 PM
Attachments:	CMP Transmission line.docx

Greetings Mr. Hinkel,

I truly wish that I could be at the meetings in Farmington regarding the CMP Transmission Line, but I am not able, due to commitments I have in my work as a biologist.

So I have attached my written testimony opposing it. What a tragedy to Maine if this is permitted.

Respectfully,
Geri Vistein

Geri Vistein
Carnivore Conservation Biologist
(207) 323-9959
www.CoyoteLivesinMaine.org

Regarding: CMP Transmission Line

Greetings Mr. Beyer.

I am writing this letter to express my total opposition of the CMP Transmission Line making its way through Maine's North Woods.

There is NO compensation and there is NO mitigation plan that could make up for the destruction of Maine's undeveloped North Woods by running 53 miles of power lines through them. Maine will have lost, and CMP and Hydro-Quebec will make their billions!

As a carnivore conservation biologist practicing here in Maine, I have grave concerns for our returning carnivores that are so badly needed on this landscape. They need large swaths of unbroken land where they can live and move, and have just a few places left to be safe from human persecution. To open up a 53 mile swath through unbroken forests is not just disrupting that alone, but all life on either side of that line. It will change everything in the life of the forest and those who require it to survive.

In the years to come, if we continue to protect the wildness of our North Woods, Maine will be one of the last special places in the East, where people from around the globe can come and experience wildness and the wild beings that call it home. If we do not, Maine will be just like the rest of the East, swallowed up in development.

In closing, this is my personal story ~ I grew up in Ohio in a small town where my young parents wanted us to be away from the city. Many, many years later I remember all the adventures my siblings and I experienced in our own wild world. One incident has stayed with me all my life…I was probably 7 years old, it was Spring time and I walked into my forest and there…..was this most wondrous large patch of dew glistening violets. I can remember how my child's heart sang.

Now when I go back to the place of my childhood….everything is gone….only developments after developments swallowed up the forest I loved.

Once a special place is destroyed…….it can never return again.

Please…look into the future….

Respectfully,

Geri Vistein, Carnivore Conservation Biologist

www.CoyoteLivesinMaine.org

From: Darryl Wood
To: Hinkel, Bill
Subject: Public comments on CMP power line
Date: Wednesday, March 27, 2019 3:40:07 PM

My name is Darryl Wood, I am a registered Maine Guide and a registered nurse. I live in New Sharon and have a camp in T3R4. I could not be more strongly opposed to the CMP corridor. The experiences of the unorganized territories are priceless for those that own camps and/or visit and recreate there. Those experiences are diminished by the appearance of manmade structures. I really see no benefits to Mainers in this project, just shortcomings now, becoming even more shortsighted into the future when development has encroached from all angles and people will pay dearly for a more natural outdoor experience.

Sincerely,

Darryl Wood

From: stephen wood
To: Beyer, Jim R; Hinkel, Bill
Subject: CMP transmission line
Date: Friday, March 29, 2019 9:20:27 AM

Dear Mr. Beyer and Mr. Hinkel,

Please oppose the 53 mile CMP transmission line through western Maine forests, streams, and wetlands, which is only designed for CMP corporate profit. You are well educated on the economics and general impact of this line of towers. Now consider the river otters, salamanders, bees, chickadees and all other creatures that live in this region and are counting on you to preserve their homes.

Respectfully,
Stephen Wood
22Hovey Ln.
Brunswick, Me. 04011

From:	Margaret Sheehan
To:	DEP, NECEC; Hinkel, Bill
Subject:	Position Statement on NECEC Transmission Corridor
Date:	Friday, March 29, 2019 12:35:29 PM

Dear Maine Officials,

The North American Megadams Resistance Alliance (NAMRA), an international coalition of social justice and environmental groups, has issued a formal statement regarding the NECEC transmission corridor. This statement is as follows:

"NAMRA opposes the CMP transmission corridor. The electricity it will bring from Hydro-Quebec's megadams in Canada is dirty energy and a climate disaster. The cultural, environmental and economic burdens imposed on those impacted by the Hydro-Quebec's megadam projects are unacceptable. We stand in solidarity with local communities in Labrador and Quebec opposing the dams and with the many Maine residents and communities opposing the corridor."

Our position is further explained below.

Importing the electricity proposed for the NECEC project requires a transmission corridor extending approximately 1,200 miles -- from Hydro-Quebec's megaproject dams in remote James Bay and through Maine to Massachusetts.

Importing hydroelectricity from Quebec and Labrador over a 1,000 mile+ transmission corridor is not the solution to the energy needs of the northeastern states. The large dams in Canada where this electricity is sourced are catastrophically destructive for ecosystems and for communities, in particular Aboriginal peoples. While it is argued these dams are "already built" both Hydro-Quebec and Nalcor Energy (in Newfoundland/Labrador Province) are in the midst of a construction boom, with massive projects underway on the Romaine and Churchill Rivers and more dams in the planning stages. The justification for this construction, in a region with a glut of hydropower, is to increase exports to the United States.

Over a half century, Hydro-Quebec flooded an area the size of Vermont (and that does not include the flooding associated with the Churchill Falls megaproject in Labrador, which flooded an area the size of New Brunswick), diverted and dammed some of North America's last big wild rivers, many of them salmon rivers, and destroyed vast swarths of boreal forest; it has altered the homelands of Aboriginal peoples beyond recognition, destroyed their sources of wild foods, the rivers they used as highways, their burial grounds and cultural sites.

This energy is neither clean nor green.

Please deny approval for the CMP/NECEC transmission corridor.

Thank you for considering our position.

Margaret E. Sheehan, Esq.
Coordinator
North American Megadams Resistance
Skype MegEcolaw
www.northeastmegadamsresistance.org
Cell 508-259-9154

From:	Ike Johnson
To:	Beyer, Jim R
Cc:	Hinkel, Bill
Subject:	CMP"s Proposed Transmission Lines ~ Comments
Date:	Sunday, March 31, 2019 1:56:42 PM

Dear DEP & PUC - I've been reading and listening about CMP's proposed transmission lines in western Maine. I'm very apposed to the project for these reasons:

- They would cut 53 miles through undeveloped forests in Maine's North Woods, harming brook trout and deer habitat, and damaging the tourism economy.
- It will bring invasive species into this part of Maine. (Shrub honeysuckle, black swallowwort, Asiatic bittersweet, etc.)
- On top of fragmentation and wildlife impacts, very little has been mentioned about the maintenance of the corridor with herbicides.
- It would jeopardize the construction of new in-state renewable energy projects and clean energy jobs.
- CMP & Hydro-Quebec would profit disproportionately to what they have offered Maine.
- It will destroy the pristine nature of this part of Maine for future generations.

Thank you for listening to my concerns.

Elizabeth Stanley
970 Wotton's Mill Road
Warren, Maine 04864
liznike@tds.net

From: steve o"connell
To: Hinkel, Bill
Subject: Public comments on CMP power line
Date: Sunday, March 31, 2019 8:32:26 AM

I am for the project!

My concern is we start moving backwards and not being able to continue the successes of reducing CO2. Here in Maine, As you know, since 1997 commercial emissions have fallen behind trafficPollution in fact as the greatest threat for Co2 emissions. Currently today as we speak for example acadia national park's crunch of vehicle traffic that not only causes parking congestion but also impales the atmosphere in the air we breathe in Maine during the summer months which add to the summer effect of visiting air pollution that settles in On Mount desert from I guess coal power plants and other industrial emissions yet creates caution days for the air we breathe on dozens of days during the summer on that island. And I dare say the vehicle traffic to these hearings in Farmington will certainly produce more of a carbon imprint than this project will in it's entirety.

We always come back to Everybody has a subjective point of view as to what "good" infrastructure looks like for their own Agendas, i.e. economic development or ecotourism.

Power lines for needed economic growth in the region as most actual entities will tell you the cost of energy here in the state of Maine is a detriment to expansion or coming to me. So the site of powerlines is certainly a trade off to keep people employed. And because the state of Maine has some of the most stringent forest, wildlife management, and environmental laws and regulations that project will be able to adhere to these and thus the impact seems to me to be very negligible.

So now the "sight" of power line towers and the path cut to accommodate those towers as the visual and economic devil. Yet , For example, The hut systems that line the Appalachian Trail are not seen as an "eyesore" nor seen as a negative to put man-made structures on the trail of what some described as "pristine forests of me". And the miles of cars parked on both sides of say the sandy beach on the Park Loop Rd., Or the crunch of traffic into the Jordan Pond House also in Acadia national Park is Aesthetically tolerated. Point is, will we be hampered by the new "aestheticsNIMBYs" When we try to reduce carbon and require the project can't go through unless meets with look pleasing to the picture this situation police ?

And I would like to address what some groups Have labeled this project as the crisis of immense proportion that “no one” wants to come to maine because of this project. And also legislature support or oppose sounds nice but Even lawmakers which you are aware also where the voice in the heart of some of these groups now turn legislator, have Created a perverse pro qui pro situation where The activist becomes a legislator.

I’ll agree that outrages is hard to gauge so I try to do it by the numbers. During the rank choice voting ramp up to put rank choice voting on the ballot over 70,000 Mainers who were registered voters signed petition for this cause. Now Roughly 1% of mainers (not Reg voters ?) are “outraged” and where about according to Natural Resources Council of Maine, a 10,000 Maine residents have signed a petition against the power line. And maybe a fraction, 001 % of Reg voters, have filed comments against per project according to SayNOtoNECEC.

I voted for Governor Janet Mills and she she negotiated a compromise which puts ME in a better position all around.

Thanks for listening

Steve O’Connell

34 Crosby St.

Orono, ME 04473

Sent from my iPhone

From: Cordelia Seeley
To: Hinkel, Bill
Subject: Opposing the Corridor
Date: Monday, April 1, 2019 11:56:09 AM

I am opposing the corridor. Please do not let this happen!!!! PLEASE. People visit the Moosehead Lake region and Maine in general for its beauty!!!!

--

Cordelia M. Seeley
Greenville Consolidated School/Union 60
P.O. Box 100
Greenville, ME 04441
207.695.2666
cordelia.seeley@ghslakers.org

There ARE real clean energy alternatives to CMP's proposed Corridor project. We have the potential to dramatically expand solar energy production throughout New England, especially in Maine. Why isn't CMP exploring this much less expensive, more environmentally friendly alternative – that could potentially bring more jobs and revenue to our state? The Corridor (NECEC) project will even jeopardize the construction of new in-state renewable energy projects.

The stakes are much too high. The CMP Corridor project is bad for Maine, for our environment, for reducing carbon emissions, and for our entire region - including eastern Canada.

Jill Linzee

New Harbor

jlinzee@comcast.net
207-677-3703

*from OP-ed in Portland Press Herald by Jonathan Carter, director of Forest Ecology Network in Lexington Township

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P.O. Box 100
Greenville, ME 04441
207.695.2666
cordelia.seeley@ghslakers.org

From: Bill Vaughan
To: Hinkel, Bill
Cc: Bill Vaughan
Subject: public hearing on CMP"s proposed transmission line-written comments
Date: Monday, April 1, 2019 11:45:06 AM

Mr. Hinkel,

I fully support all efforts to improve our environment and to make Maine a "Greener" state for our youth and future generations to inherit. However, this proposed powerline project by Central Maine Power (CMP) is not one of those efforts. First, it is causing over 50 miles by 150-foot-wide clear cut through northern Maine. What is the impact on our air and water as a result of the loss of those woodlands on the carbon equation and siltation of our rivers and streams…over a duration of __? This loss does not reduce Maine or New England's (NE) carbon footprint. I have seen interviews of Maine residents on TV concerning the project. One stated that "shorter" trees would be planted under the power lines within the corridor. I don't know if that statement is true or a misconception. However, I have lived on property in NH that was crossed by a power line right of way. The power company routinely sprayed or chopped down all brush and small trees. Keeping the area clear is required to maintain the corridor and protect the lines. There is no such thing as "short" trees.

CMP is proposing this project to improve their profit line not the environment. A better effort by CMP for Maine and all of NE is for them to invest in their infrastructure. It does not take a hurricane to cut off our electricity any more. Because of these frequent power losses, homeowners are investing in back-up home generators. Add that exhaust to our current carbon problem. These generators typically do a test run every week for about 15 minutes. That contribution needs to be included in the mathematics.

Although these may appear as generalities, I challenge our state government to do the math and generate the true numbers (loss of trees/vegetation and generator carbon emissions), impacts caused by maintaining the corridor and assess what the cost is for the loss of the forest to "Vacation land". Once these are added to the overall assessment, then the CMP carbon reduction would evaporate. Please investigate this project thoroughly.

Sincerely,
William H. Vaughan
Freeport, ME

Testimony of John (Jack) R. Nicholas Before the Maine Land Use Planning Commission (MLUPC) and the Maine Department of Environmental Protection (DEP) About the Central Maine Power Company's proposal to build a 145-mile Quebec Hydro Transmission line, 53.8 Miles of which is Proposed to Pass Through Land Under the Jurisdiction of the MLUPC Represented by Three P-RR Subdistricts in the Unorganized Territory.

Maine Land Use Planning Commission
Chairman Everett Worcester
18 Elkins Lane
22 State House Station
Augusta, Maine 04333-0022

John (Jack) Nicholas
208 Gayton Lane
Winthrop, Maine 04364

Date: April 2, 2019

Case: Proposed hydro power transmission corridor – New England Clean Energy Connect, NECEC.

Subject: Testimony about the new 53.8 miles of proposed transmission corridor from the Central Maine Power Company (CMP).

Dear Chairman Worcester and members of the Maine Land Use Planning Commission (MLUPC):

Thank you for the opportunity to testify about the new 53.8 miles of proposed CMP transmission corridor. My wife Nancy and I own property in Upper Enchanted Township, Maine, approximately two miles from CMP's proposed 145-mile Hydro Quebec transmission corridor in the State of Maine.

My testimony will focus on all four of the public hearing topics as follows:

1. **Potential impacts to scenic character and existing uses.**

   Coburn Mountain is the highest mountain in the Jackman, West Forks and Forks area. At 3,717 feet it is a prominent feature of this beautiful landscape. The proposed transmission corridor is planned to traverse the north slope of the mountain and continue approximately 3 miles along the eastern slope. As a result, the proposed transmission corridor would be easily observed over approximately 20 miles of Route 201 (a Maine Scenic Byway,) significantly impairing the beauty of the area for visitors traveling Route 201. At the Capitol Road, scenic views would be marred by large transmission towers carrying power over Route 201, and from there ugly transmission towers would unprotect the scenic character of the Cold Stream Forest and the Cold Stream. The proposed transmission corridor and towers would also be visible from the Attean Overlook in Jackman as it meanders through the Western Maine Mountains from Route 201 to the

Canadian border. Visitors from away will stop at the Attean Overlook expecting to see a stunning forest landscape. Much to their chagrin, they will observe a fragmented forest with hundreds of electrical transmission towers.

Eight popular remote fly-fishing ponds, that support wild and native brook trout and are within the viewshed of the proposed transmission corridor, appear likely to have their scenic views negatively affected by the proposed transmission corridor and transmission towers including Grace Pond, Enchanted Pond, Little Enchanted Pond, Rock Pond, Iron Pond, Beattie Pond, Whipple Pond and Moore Pond. Two less accessible remote fly-fishing ponds, that support native brook trout and are within the viewshed of the proposed transmission corridor, also appear to have scenic views that would be vulnerable to the proposed transmission corridor and transmission towers including Tobey Pond and Hall Pond. Two ponds, that are popular fishing destinations and are stocked by the Maine Department of Inland Fisheries and Wildlife, are within the viewshed of the proposed transmission corridor and appear likely to have their scenic character disrupted by the transmission corridor and transmission towers including Fish Pond and Chub Pond. Spencer Lake and Parlin Pond are very popular fishing destinations. Both are stocked by the Maine Department of Inland Fisheries and Wildlife and are within the viewshed of the proposed transmission corridor and seem likely to have their scenic character negatively impacted by the proposed transmission corridor and transmission towers. I am not as familiar with the remote ponds containing wild and native brook trout east of Route 201. There is one I have fly fished on occasion and one I am familiar with by reputation. Both are popular fly-fishing destinations and are within the viewshed on the proposed transmission corridor and appear likely to have their scenic character negatively impacted by the proposed transmission corridor and transmission towers. These two remote ponds are Round Pond and Ellis Pond.

The proposed transmission corridor and transmission towers, with red aviation lights, would be prominently visible over the entire eastern slope of Coburn Mountain from the access road to the Cold Stream Forest. The Cold Stream Forest was recently purchased by the Land for Maine's Future and added to our public lands. One of the reasons for the purchase was to protect wild and native brook trout.

The area around the proposed transmission corridor is owned by the Nature Conservancy (16,500 acres), a single landowner (15,000 acres around Spencer Lake and Fish Pond), approximately 2,300 acres of public reserved land owned by the people of Maine, 8,159 acres of public lands known as the Cold Stream Forest, 5,000 acres owned by 151 families, two Sporting Lodges/Camps, the Passamaquoddy Nation and large landowners engaged in timber harvesting. Most of the scenic views from Public Reserved Land on Coburn Mountain would be impinged upon over the entire 53.8 miles of the proposed transmission corridor and transmission towers, some of which will have red aviation lights. From the top of Number 5 Mountain, owned by the Nature Conservancy, most of the spectacular, scenic views from Coburn Mountain to the

Canadian border would be impaired by the proposed transmission corridor and transmission towers, including red aviation lights.

The area around the proposed 53.8 miles of transmission corridor is used for hunting, remote open water fishing (especially fly fishing), ice fishing, hiking, remote camping, canoeing, kayaking, boating, snowshoeing, snowmobiling, ATVing, ecotourism, mountain climbing, related outdoor recreational pursuits and timber harvesting. Representatives from CMP describe the area as a ravaged, industrial forest wasteland in order to promote an alternate and inaccurate reality about the area. The area is unique in the continental United States and Maine as one of the largest and most intact contiguous temperate forests remaining in North America, perhaps in the entire world, and because of its breathtaking scenery of mountainous terrain containing approximately seven mountains exceeding 3,000 feet in height and another 14 mountains between 2,000 and 3,000 feet in height, picturesque forests and approximately 20 remote ponds and 100 or more streams that contain wild and native brook trout. The area can most accurately be described as multiple outdoor use/multiple ownership which would be incompatible with a large scale industrial infrastructure represented by a 150-foot-wide transmission corridor containing 100-foot-high, nonliving transmission towers that would look like ugly monster truck transformers, some with red aviation lights, standing starkly out of place in a living, breathing forest that abounds with wildlife such as deer, moose, black bear and lynx. I am not aware of any desire for visitors to observe 100-foot-high transmission towers. Comments submitted to the Maine Public Utilities Commission (MPUC) from out-of-state visitors and land owners have consistently stated that, “They do not need to come to Maine to hike, snowmobile and view electric transmission lines.” And, based upon a recent survey, they won’t come here, thus, detrimentally impacting the tourism economy of the area. There exists at least circumstantial evidence, therefore, that the 53.8 miles of proposed transmission corridor will alter the use of the area and negatively affect the tourism economy.

2. Potential impacts to wildlife habitat and fisheries.

Reports from the Maine Department of Inland Fisheries and Wildlife and the Maine Natural Areas Program identified potentially serious impacts on the wildlife, wild and native brook trout, endangered wildlife and rare ecosystems and plants around the 53.8 miles of proposed transmission corridor. Janet S. McMahon, Consulting Ecologist also testified before the MLUPC about the serious, damaging effects on cold water fisheries and wildlife habitats that would occur around the proposed transmission corridor. Most alarming is that the negative impact on habitat integrity would extend ½ kilometer up to one kilometer beyond the “high contrast edges” of the proposed 150-foot-wide transmission corridor into adjacent forest land.

The immensity of the possible damaging impact on cold water fisheries and wildlife is best appreciated by the fact that the first 53.8 miles of the proposed transmission corridor would cross 115 streams, 263 wetlands, vernal pools and several deer wintering areas. Maine contains 97 percent of the wild and native brook trout in the Eastern United States. The Maine Department of Inland Fisheries and Wildlife has established as a high priority the protection of wild and native brook trout in Maine. This project does the opposite.

CMP has proposed a 25-foot setback from streams in the area when a 100-foot setback is required. I have spent that past 20 years fly fishing the remote ponds around the 53.8 miles of proposed transmission corridor. Most of the streams in this area flow into and out of the remote ponds that support the spawning of wild and native brook trout. For example, two streams flow through our property and support the spawning of wild and native brook trout that access the two streams from Grace Pond. Survival of the wild and native brook trout in this area will be threatened by rising temperatures that brook trout cannot tolerate in the exposed streams within the 150-foot-wide corridor, and from herbicide that CMP will use to retard forest growth in the 150-foot-wide corridor.

3. Alternative analysis.

The most sensible alternative for the proposed CMP transmission corridor would be for the Commission to deny the necessary permits for this project. Such action would furnish the Massachusetts Department of Public Utilities a contractual basis on which to terminate its contract with CMP and contract with Vermont's New England Clean Energy Powerlink that proposes a 154-mile transmission corridor to carry DC power from Hydro Quebec to Massachusetts. The Vermont transmission corridor is fully permitted and ready to go and represents the most environmentally sound proposal. The entire 154 miles of proposed transmission corridor would be underwater and underground, avoiding damage to the environment, natural resources, scenic character and tourism economy of Vermont. Any scientifically determined reduction in carbon emissions and verifiable savings in Maine electric rates from the purchase by Massachusetts of power from Hydro Quebec would still occur without damaging Maine's environment, natural resources, scenic character and tourism economy.

If the Commission declines the above alternative, the second alternative would be for the Commission to require CMP to place the transmission cables underground and underwater, which has been the preferred approach for HVDC transmission lines (see the PRE-FILED TESTIMONY OF CHRISTOPHER RUSSO). Vermont, the City of New York and New Hampshire have planned to place their transmission lines underground and underwater, each of which would exceed the 53.8 miles of new transmission corridor. Undergrounding the transmission lines would allow this project to overcome many serious deficiencies by realizing advantages over aboveground lines including the following:

- Reduces significantly the negative environmental and natural resource impacts of overhead transmission lines by substantially narrowing the path of the proposed transmission corridor from 150-feet-wide to between one meter and 10 meters wide, also requiring less herbicide and deforestation;
- Avoids negative effects on important scenic views and scenic character;
- Eliminates probable reductions in property values for families near and around the new 53.8 miles of proposed transmission corridor;
- Minimizes effects on wildlife from electromagnetic fields;
- Eliminates threats to low flying aircraft;
- Minimizes damage from wind and severe weather conditions;
- Decreases the risk of wildfires;

- Increases the useful life of the transmission lines by twice that of overhead transmission lines (e.g., 25 v. 50 years or 20 v. 40 years); and,
- Reduces maintenance costs compared to overhead transmission lines.

If CMP rejects this transmission alternative, it would prove that this project was always about profit. If this alternative is evaluated, it must be undertaken independent of CMP.

The final alternative concerns the lease agreement executed in December 2014 between CMP and the Maine Department of Agriculture, Conservation and Forestry, Bureau of Parks and Public Lands that allows CMP to use Public Reserved Land located on the border between Johnson Mountain Township and the West Forks Plantation at T2 R6 BKP WKR for CMP's proposed transmission corridor that would be one-mile long and 300-feet-wide. This Public Reserved Land is owned by the people of Maine, including Maine residents who oppose CMP's proposed transmission corridor. The Commission should require CMP to use an acceptable, alternate path for this one mile of the proposed transmission corridor. According to Maine law, Public Reserved Land must be used for the benefit of Maine people. Such land should not be used primarily for the financial benefit of Massachusetts and two wealthy, foreign corporations over the concerns of Maine people who own this land.

4. Proposed compensation for impacts and mitigation of impacts.

There is no amount of compensation or mitigation that could offset the immense damage that this proposed 53.8 miles of new transmission corridor would cause. A recent Op Ed article stated that CMP had offered 2,800 acres of conservation land, although 1,997 scattered parcels, as far away as 110 miles, appear in the record. Regardless, that land would only offset the use of Public Reserved Land through lease agreement with the Maine Bureau of Parks and Public Lands. Even if there was a fair land offset, it would require CMP to contribute 40,000 acres (source: Janet S. McMahon testimony) of conservation land to offset the damage up to one kilometer beyond the edges of the proposed 150-foot-wide corridor. And, that would not cover the damage to scenic views and the tourism economy that add to the enormity of the threat.

The $254 million stipulation is an illusion of compensation, since the payout spans many years, up to 40 years, making it worth 35 cents a month for each CMP customer, on a net present value basis.

This concludes my testimony. Again, thank you for the opportunity to testify about this very concerning 53.8 miles of new transmission corridor proposed by CMP.

Sincerely,

John (Jack) Nicholas

Contact:
Phone: 207-377-6352 or 207-462-4049
E-mail: jrnicholas@roadrunner.com

NECEC UNDERGROUND LIFE CYCLE COST

	3 X Cost	4 X COST
1. Underground @ $5 million per mile x 53.8 miles	$269,000,000	$269,000,000
2. Less cost avoidance - overhead	($90,000,000)	($67,000,000)
3. Less cost avoidance - underground life expectancy 2x	($135,000,000)	($135,000,000)
4. Less cost avoidance conservation land $685 x 10,000	($14,000,000)	($14,000,000)
5. Less public reserved land windfall profit $200,000 x 20 years	($4,000,000)	($4,000,000)
Net Cost Underground	$26,000,000	$49,000,000

From: Colin Durrant
Sent: Monday, April 01, 2019 9:04 AM
Subject: Statewide Poll Shows Strong Opposition to CMP Corridor in Maine

FOR IMMEDIATE RELEASE

Contact: Pete Didisheim, (207) 430-0113; Colin Durrant, (207) 430-0103
April 1, 2019

STATEWIDE POLL SHOWS STRONG OPPOSITION TO CMP CORRIDOR

As DEP/LUPC public hearings begin, 65% of Mainers oppose the project

Augusta, ME – The vast majority of registered Maine voters are firmly opposed to Central Maine Power's (CMP) proposed electricity corridor project, according to a new statewide poll conducted by the Portland-based research firm Critical Insights.

The survey shows that **65% of Mainers oppose** the project, with **only 15% expressing support**. Fifty-one percent (51%) of respondents "strongly oppose," while only 7% "strongly support." Every demographic subgroup in Maine opposes the project, including Republicans, Democrats, and Independents; men and women; Mainers of all ages; and voters in every part of the state.

"This survey shows that Maine people overwhelmingly oppose the CMP corridor. By huge margins, they believe it is a bad deal for Maine and will cause more harm than good to our environment. Opposition is red hot in western Maine, where barely one in ten people supports the project," said Pete Didisheim, Advocacy Director for the Natural Resources Council of Maine, which sponsored the poll.

The survey included an oversample of voters in western Maine, where the project would cut a new 53-mile corridor through forestlands in that region:

- **90% of voters in Franklin County oppose** the project, with 80% "strongly opposed" and only 6% in support.
- **83% of voters in Somerset County oppose** the project, with 75% "strongly opposed" and only 9% in support.

This is the most detailed survey publicly released about the attitudes of Maine people toward the CMP corridor, and it comes as the Department of Environmental Protection (DEP) and Land Use Planning Commission (LUPC) begin a week of hearings on the project in Farmington. The survey also comes on the heels of a memo from staff at the Public Utilities Commission (PUC) recommending that the PUC grant a Certificate of Public Convenience and Necessity for the project. Additional permitting in Maine and Massachusetts will continue well into the summer.

The survey of 850 Maine residents took place between March 11 and March 27, several weeks after Maine Governor Janet Mills, CMP, and other parties announced a settlement agreement. The statewide survey has a margin of error of +/- 3.3 percentage points at the 95% confidence level.

Summary of Survey Findings:

The survey shows a very high level of awareness of the project, with 89% saying that they had seen, read, or heard about CMP's plan to build the power line. The data showing statewide opposition outpacing support by 65% to 15%, with 20% unsure or having no opinion, came in response to a "top of mind" question with no positive or negative information provided about the project. This indicates that Mainers have strong opinions on the issue.

Based on everything you may know about the proposed CMP corridor, would you support or oppose its construction?

	Total	Male	Female	Republican	Democrat	Independent	Franklin Co.	Somerset Co.
Net Oppose	65%	63%	66%	71%	56%	66%	90%	83%
Net Support	15%	18%	12%	17%	12%	16%	6%	9%
Undecided	20%	19%	22%	12%	32%	18%	5%	8%

When asked ***which statement comes closest to your view***, Mainers responded as following:

- 72% statewide say the CMP corridor would be **a bad deal** for Maine people
    - 88% in Franklin County feel this way, and 85% in Somerset County
- 27% statewide say the CMP corridor would be **a good deal** for Maine people
    - 5% in Franklin County feel this way, and 10% in Somerset County

- 68% statewide say the CMP corridor would do **more harm than good** to our environment
    - 87% in Franklin County feel this way, and 70% in Somerset County
- 16% statewide say the CMP corridor would do **more good than harm** to our environment
    - 8% in Franklin County feel this way, and 18% in Somerset County

Mainers also expressed support for several proposed bills that are pending in the Maine Legislature that could affect the CMP corridor.

- 65% support passage of a bill that would require the DEP to conduct an independent review of the CMP corridor before a permit is granted, to determine whether the project would actually benefit the climate by reducing greenhouse gas pollution, as CMP claims. (as called for in LD 640)

- 62% support passage of a bill that would prevent CMP from forcing towns to accept the transmission line passing through their town. (as called for in LD 1383)

Only one in ten Mainers think the governor should support the proposed CMP transmission line, compared to half who believe the governor should oppose the project. A full 70% of Mainers believe the governor should oppose the CMP corridor or take no position.

Do you believe the governor of Maine should support the CMP transmission corridor, oppose the CMP transmission corridor, or take no position on the CMP corridor?

	Total	Male	Female	Republican	Democrat	Independent	Franklin Co.	Somerset Co.
Support	11%	16%	6%	8%	13%	13%	2%	9%
Oppose	47%	43%	51%	48%	46%	44%	65%	59%
Take No Position	23%	28%	18%	29%	16%	28%	24%	19%
Unsure	19%	13%	24%	16%	25%	15%	8%	12%

The survey results are consistent with recent votes by towns in western Maine to oppose the project. To date, 11 towns and the Franklin County Commissioners have voted to oppose or rescind their support for the project. Most recently, on March 25, Farmington residents voted 262-102 to rescind their support and adopt a new position in opposition. On March 5, residents of Wilton voted 162-1 to rescind support and adopt a position of opposition to the project.

The level of opposition in Maine is striking when compared to the public sentiment in New Hampshire for a similar project called the Northern Pass. That project was ultimately rejected by regulators, and opposition over many years hovered between 30% and 40%. At no point did opposition in New Hampshire to the Northern Pass project reach the level of 65% opposition currently held by Maine voters.

The survey was conducted by telephone between March 11 and March 27, 2019. Among the 850 respondents surveyed, a total of 299 are residents of Franklin County (124 respondents) or

Somerset County (175 respondents). Respondents were required to live in Maine and be registered to vote in the state. Final data were statistically weighted to reflect the age, gender, and county populations of the state.

Additional Survey Resources:

- Survey Charts with Summary Data
- Survey Data Tables with Demographic Data
- Survey Questions

For further information about the survey, contact:

Traverse Burnett
CRITICAL INSIGHTS
Phone: (207) 985-7660
traverse.burnett@digitalresearch.com

From:	Millett,Merideth,Poland Spring,NWNA SC Divisional Customer Facing SC
To:	Beyer, Jim R; Hinkel, Bill
Subject:	Testimony in opposition of NECEC-April 2nd and April 4th hearings
Date:	Tuesday, April 2, 2019 4:56:05 PM
Attachments:	Testimony for April 2nd-DEP and LUPC hearings.docx
Importance:	High

Good afternoon gentlemen. Attached please find my written testimony in opposition to the CMP/NECEC project. Apologies for the late email, but unfortunately I am no longer able to attend the hearings in person this week. I respectfully ask that you read and take into account my testimony. Typically I do not speak out publicly with my opinion, but the placement of this corridor directly impacts my family and our camp neighbors in Moxie Gore.

While I do realize you have a great deal of testimonies to read and hear this evening and again on Thursday, I appreciate you taking the time to review my testimony today. We feel so strongly that this project is bad for Maine and more importantly for the wildlife and environment. At the risk of sounding corny, our state has a soul which is made up of its beautiful and rich forests, the breathtaking views of the mountains, the streams, ponds and wetlands, and the living breathing wildlife that lives within it. Once we clear through these areas, there's no putting it back together once we realize the mistake.

Thank you in advance.

Respectfully,
Merideth Millett

Merideth S. Millett
136 Highland Cliff Road
Windham, Maine 04062

Thank you for the opportunity to provide my testimony today that outlines my opposition to the NECEC project. Before I begin, let me first explain that I am not a public speaker, nor have I ever felt inclined to attend hearings or speak publicly about my personal opinion…until now.

My husband and I have lived in Maine for our entire lives, we have each been employed by companies here in Maine for over 20 years, and also own a camp in Moxie Gore. Not only is the proposed corridor a general impact to our environment and wildlife in this part of our beloved state, but it is a direct impact to my family personally. I am here today to speak about the detrimental impacts that clearly show that the NECEC project negatively and significantly impacts our scenic, historic, and recreational areas.

My husband and I had saved for many years to purchase a camp in the northern woods. We were very specific in our criteria, such as a remote place in the woods to get away and relax, to hunt, fish, ATV and snowmobile, and to spend time as a family. We looked all around Maine to find what we felt was the perfect camp. In 2016 after several years of searching, we found our perfect camp near Moxie Stream on Arctic Way. There are no words to express how much we love spending time at camp and how we miss it when we're not there. When we found out in 2017 that the NECEC project would clear cut directly next to our camp (removing the privacy and beautiful tree line that drew us there in the first place), we were absolutely devastated. Should this line go in, the quality of life that we know and love there will never be the same. Not only will our scenic and recreational activity there be greatly impacted, we will personally have a significant loss of property value, damaged wildlife habitats all around us (on No Bridge Road, Fish Pond road and Black Brook Pond road), as well as see the negative impacts to the businesses and recreational activities in the Moxie Gore area. To quote from a letter one of our camp neighbors sent to CMP, *Of major concern to all of us here (presently more than a dozen camps and a full time residence) is that once the road is improved in order to provide CMP access (parts of the road where CMP plans to clear is difficult to access), it will open up the area to the general public. Opening that road will completely change the complexion of our area forever. Traffic will increase and the wilderness that we all cherish, and have spent large dollars to access, improve and live in ourselves, will be destroyed. The power line right of way actually impinges directly on several camps along No Bridge Road including Arctic Way, and while I don't presume to speak for those camp owners I know the value of properties will be severely affected. Any hope of eventually selling a property with a power line overlooking it, even for its original cost, would be futile.*

No offer of electric cars or chargers, or heat pumps, or slightly lower electricity bills for a select group of people can justify this devastation to the Maine woods. My personal heartbreak over this aside, there are so many concerns over the entire project and its complete lack of non-biased 3rd party research to validate CMP's claims. While CMP lawyers and glorified salesmen push the so called benefits of this project (without specific facts or a clearly validated process), they cannot possibly outweigh the obvious and factual negative impacts on our environment, our wildlife, our outdoor recreation, or the decrease in property values. There are still dozens of unanswered questions waiting for a response from CMP and our governing bodies.

I am sad and frankly appalled that the PUC announced that the NECEC provides a "public need". The majority of Mainers do not feel there is a public need and do not support this project. These are Mainers that elect the officials to their positions and unfortunately will not forget that their passionate and valid concerns were ignored.

Please remember, that once this beautiful land is cleared, there is no going back to correct the mistake. What are the consequences if CMP/NECEC does not deliver what it promises? There are other Maine towns in our recent past that were swayed by the promises of CMP, only to still be waiting for those benefits today. The words and promises from a company that has proven to be untrustworthy and dishonest in recent years, are simply not enough to outweigh the detrimental impacts of this project.

In closing, I recently heard a CMP representative say on the record that the groups and people opposing NECEC have just jumped on the bandwagon looking for anything to oppose and protest. While I know that does sometimes happen with controversial topics, this is not the case here. Those opposing this project are proud and loyal Mainers with common sense and a great love for our state. We simply want to preserve our wildlife and the scenic beauty of our forests, let our hidden streams and wetlands flourish, and keep the treasured and historic lands safe from unnecessary harm. These are Mainers that simply want to do what is best for our environment and to do our part, but it is clear that NECEC would cause irreparable harm to wildlife and our historic, scenic, and recreation areas. Again, I implore you to hear the people of Maine, and your own conscience when reviewing our testimonies today. Thank you very much for your time.

Respectfully,

Merideth Millett

From:	Stephen Shaw
To:	Hinkel, Bill
Subject:	Comment to LPUC re: NECEC
Date:	Tuesday, April 2, 2019 3:32:19 PM

Dear Mr. Hinkel:

I am writing to share my opposition to the proposed CMP power-line corridor project.

I see Maine as one of the crown jewels of the United States. The primary reason for this distinction is Maine's natural resources and natural beauty. I feel it should be a high priority of State government to preserve the integrity and wild character of our remote lands. Our collective human impacts on nature have been relentless. I believe it is time to lean in the other direction - honoring the immense role that intact nature plays in the quality of our lives.

I see no net benefit to Mainer’s in this project, and urge you to deny its permit.

Sincerely,

Stephen Shaw
Brunswick

From: bwells@oakleafs.com
To: Beyer, Jim R; Hinkel, Bill
Subject: We Oppose the CMP Corridor
Date: Monday, April 1, 2019 9:51:12 PM

Jim, Bill:

My wife Pam and I own 1100 acres of forest adjacent to Sunkhaze Meadows National Wildlife Refuge along the Studmill Road in Milford and Greenfield. Because of our use of best forestry practices, we were selected as Maine's Tree Farmers of the Year in 2017. Sunkhaze Stream, one of the most productive natural fish hatcheries in the state of Maine, runs through our property for several miles. We were designated as a Demonstration Forest by the Maine Forest Service. Our list can go on and on for all the great things about our forest, its uses and our plans for the future.

We feel very strongly that we do NOT want to see our wilderness forest destroyed by a giant expressway that runs adjacent to or down the middle of our property. You will go to great lengths to avoid seeing our forested wilderness be impacted by the proposed CMP Corridor. We do not want to spend years in court defending our right to keep our forest intact. Maintaining our forest as a Demonstration Forest for Maine's future land owners to learn how to adopt sustainable forestry practices is fundamental to our vision. It would be our preference that you not allow the CMP Corridor at all. At least we urge you to find an alternate route, away from the Studmill Road, Milford and Greenfield.

Thank you,

Pam and Bryan Wells
32 Gilman Falls Ave
Old Town, ME 04468
207-827-1942

From: Bindy P
To: Beyer, Jim R; Hinkel, Bill
Subject: Testimony re: CMP Corridor
Date: Thursday, April 4, 2019 2:30:37 PM

Since I am unable to attend the hearings in Farmington I wanted to submit my testimony in writing re: CMP Corridor Plan to Me. DEP & LUPC .

1- There are multiple 'recreational' & "scenic beauty" sites areas along the corridor that I have visited/camped in/skied/snowshoed/hiked/paddled over my 65years of living in Maine. *The CMP corridor would impact the outdoor experience of these areas dramatically*. Roughly more than 3/4 of the proposed corridor occurs in areas that Natives & paying tourist consider significant special places that cannot be experienced in other parts of the Northeast. Nor can they be easily reproduced after the impact is done.

2- Many of the areas include or are or very adjacent to *Maine State Public Lands* acquired & run off our taxes. And here is a proposal that disregards the impact on these areas.

3- Beauty aside, the *environmental impact* of building & maintaining the infrastructure of the corridor would significantly be *contrary* to the State's attempt to mitigate climate change and carbon foot print impacts.

- the erosion caused by disrupting these fragile natural areas- the many wet lands, watersheds draining down from mountainous and hilly regions would destroy fish and plant habitats all along it's descent to the sea hundreds of miles away
- one of the common impacts of climate change is increased "heavy rain & wind" which leads to increased erosion; I have experienced this first hand in helping to maintain hiking trails that now need constant erosion attention; think of the many roads that will have to be maintained all 4 seasons & the environmental impact of this.
- pesticide use all along the corridor compounding toxicity issues for those people, plants, and animals sensitive; additionally running into the runoff into the fragile wetlands & watersheds.

4- Add to your *carbon foot imprint* the sequestration of all the trees and shrubs and plants all along the corridor that will be destroy and maintaince done to keep the thorofare open all the way from Canada to the sea…

This proposal is not good for the Maine people who are intrinsically woven into its woods, watersheds, wildlife, and mountains for both their livelihoods and recreation.

Thank you for your consideration of these perspectives.
5th generation Mainer
Belinda Pendleton
Belfast, Maine

Upper Enchanted Owners Road Association

PO Box 66722 • Falmouth, ME 04105

15 AUG 2018

To whom it may concern:

The Board of Directors of the Upper Enchanted Owners Road Association has voted on a resolution in opposition to the CMP New England Clean Energy Connect (NECEC) proposal. The Upper Enchanted Owners Road Association has 50 members, all of whom own land near Coburn Mountain where the proposed powerline will go. We feel that it would be a detriment to wildlife and native brook trout habitat, a visual detraction of undeveloped pristine contiguous wilderness, will negatively affect our property values and provides no benefit to Maine for electricity needs.

This beneficiary of this massive project is Central Maine Power, Canada and Massachusetts. Massachusetts has declined to support their own electricity needs. Because of this, they are now proposing that we permanently clear cut thousands of acres for a power corridor causing permanent harm to the region and we feel that this is wrong to force this on the area, the environment and the people that enjoy this wilderness whether it be landowners, residents or non-residents.

We, the undersigned, endorse this resolution this 15th day of August, 2018.

Kaleb Jacob, President
Norma Elwell, Vice President
Rita Feeney, Sec/Treasurer
Bob Benson
Tom Dunbar
Larry Hodgkins

To: Bill Hinkel

RE: Proposed CMP Transmission Line in Western Maine

If one set out to construct a project for Maine and New England that was both environmentally and economically profoundly deficient and ill-conceived, it would be impossible to surpass the proposed power line project through Western Maine. This disastrous debacle must not be allowed to move forward.

Not only is there no significant economic benefit to Maine, the act of scarring and degrading the picturesque Western Maine mountains would have a negative impact in tourism and the region's invaluable market brand as one of the few remaining large tracts of relatively wild land east of the Mississippi. People don't visit Western Maine to see power lines marring the scenery.

The cash incentive are an insult and a joke. Iberdrola (which may not even exist four decades hence) must take Maine citizens to be ignorant rubes based on the laughable economic deal put forth.

Neither Quebec Hydro nor CMP have produced scientific data supporting net permanent reductions in greenhouse gases.

Aside from being a visual monstrosity, this is a huge environmental risk to wetlands, streams, deer yards, bird habitat, and one of the last populations of wild brook trout in the country.

With no meaningful economic or environmental benefit to Maine, this project needs to be denied. It's time for Maine to send the hucksters packing.

Sincerely,

Mark F. Norton
126 Town Farm Rd.
New Gloucester, ME 04260

Hinkel, Bill

Subject: RE: NECEC

From: Lisa White [mailto:220tomwhite@gmail.com]
Sent: Thursday, April 04, 2019 1:29 PM
To: Livesay, Nicholas <Nicholas.Livesay@maine.gov>
Subject: NECEC

April, 4 2019

Mr. Nicolas Livesay, Executive Director
Land Use Planning Commission
18 Elkins Lane
Augusta, Maine 04333

Dear Sir:

I am writing to express my dismay at the "proposed" Central Maine Power Company DC power line transecting through Maine into Massachusetts. I recognize the need for more clean energy for New England but after research and study there are several areas of concern in the proposal as presented to Maine citizens. After being refused by the states of Vermont and New Hampshire for either construction stipulations or lack of monetary consideration the proposer came to Maine.
On August 28, 2017 Central Maine Power Company filed with the Maine Public Utilities Commission a Request for Approval to build a DC power line through Maine to Massachusetts. That date filed in 2017 is very important to some of my concern. During my study of the principles in the project, one which is Quebec Hydro, I read an article in the March/April 2019 of the Canadian Geographic Magazine, which is published by the Royal Canadian Geographic Society. The article *Hydroelectricity in Quebec* four experts discussed hydro power in Quebec. One of the expects was a gentleman named Benoit Gagnon who is the Chief Environmentalist for Hydro Québec's Equipment and Shared Services Division. In the article Mr. Gagnon talks about the La Romaine Complex that has four generating stations. He speaks about the work that had to be done prior to building the complex part of which follows:
"Before we began work on the project our team of archeologists, ethnologists, biologist, forestry expects, chemists and acoustic expects spent 4 years completing 70 different environmental impact studies, the results dictated everything from where the dams were constructed to were the transmission lines and towers should go."
I realize that not all the impact studies were done solely on transmission and towers lines but the length of the studies indicate they were thorough. CMP from filling, with the Public Utilities Commission, has only spent 20 months to study an area that has verified *Endangered Species* to include the Roaring Brook Mayfly and Spring Salamanders.
Another example is the Great Northern Transmission Line from Manitoba, Canada to Grand Rapids, Minnesota which is a 220 mile 500 Kv DC power line that was first proposed in February of 2012 by Minnesota Power Company. After 5 years of permitting, Right of Way (ROW) acquisitions and scientific impact studies they started pole line construction in 2017 and will complete the project in 2020. A total time of *5 years from proposal and permitting to actual construction start.*

I have many concerns of why Central Maine Power Company has been aided and fast tracked to this point in their quest to construct this line since 2017. I, as a Maine citizen, am very concerned that the permitting agencies have not, as of yet, been diligent with protecting the rights and ideals of Maine rate payers, taxpayers and environmentalists.
As a citizen and taxpayer of the state of Maine I ask that you delay any decision in regards to this application until I, along with other citizens, have had ample time to digest and investigate the thousands of pages of documents summitted by Central Maine Power Company and its agents, a wholly owned business operated by a foreign company. I believe, as others do, that the opportunity for proper scrutiny of all applications, permits, correspondence, environmental impact studies and other pertinent documents has been denied me, and others, because of the volume of documents and time allowed to do so.

Sincerely,

Thomas White II
220 Chesterville Road
Jay, Maine 04239
Sent from Mail for Windows 10

RECEIVED
APR 16 2019
LUPC - AUGUSTA

April 15, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

I am writing you to express my support to the New England Clean Energy Project (NECEC). There are several reasons that justify my support to the project:

- **Siting:**
  - NECEC siting has avoided some of the most sensitive and beautiful recreational areas in Maine such as Moosehead Lake, Bigelow Preserve, Kennebago, the Rangeley Lake region, and others – this preserves some very special areas.
  - The project uses mainly existing corridor. In the area that does not include use of existing corridor, the NECEC project runs through working forest land.
  - NECEC has been designed to avoid, wherever possible, impacts to important protected and sensitive natural resources such as vernal pools, rivers/streams, wetlands, and inland waterfowl and wading bird habitat. This protects these resources for both wildlife and for humans.

- **Minimum Impact:**
  - As described above, the new corridor runs through a working forest. This land is privately held, and constitutes a commercially harvested and well managed forest, which is laced with clear-cuts and strip cuts, dirt roads, skid trails, log yards, and larger roads. In additional, private landowners actively manage the harvesting to protect important environmental attributes and the area is nonetheless heavily utilized for recreational purposes like fishing, hiking, and ATV/snowmobiling, and the NECEC will in no way adversely affect these uses. Visual impacts will not be unreasonable and will be in keeping with the character of the area; Recreational users are well aware of the commercial nature of this area, yet their use is unhindered by the sights, sounds, and smells of the working forest.
  - Additionally, the applicant has significantly improved its design since the process was started. A clear example is the underground crossing of the upper Kennebec River, a valuable and special resource which is, in fact, an Outstanding River

Segment under state law. CMP did the right thing in preserving what makes this stretch of river so outstanding by proposing to bury the transmission line beneath the river.

- **Benefits to Maine**
  - The NECEC Project has significant benefits for Maine, which offset the minimal environmental impacts the Project will have. These benefits include jobs, taxes, lower electric rates, and the addition of energy infrastructure. These benefits are directly produced by the project (reduction in energy costs, fuel security, etc.). as well as through the Settlement Agreement, as it has been recently recognized and approved by Maine's Public Utility Commission (PUC)

For all these reasons, I urge you to support and concede the permits that the NECEC project is applying for to your Department.

Yours sincerely,

Pablo Fuentes-Cantillana
Falmouth, Maine

PABLO FUGATT
30 WOODLANDS DR
FALMOUTH, ME 04105

SO. MAINE P&DC 040

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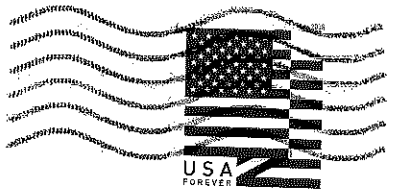

MR. BILL HINKEL
LAND USE PLANNING COMMISSION
22 STATE HOUSE STATION
AUGUSTA, ME 04333

(REF. NRCC)

04333-

April 12, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

I am supporting the New England Clean Energy Connect. It has been designed to avoid wetlands, and bird habitats. In western Maine, the negative environmental impact is small. Across all of Maine and New England, the impact is hugely positive. The project takes millions of metric tons of carbon out of the air. Having clean air to breath is extremely important to my family. This project gets us moving in the right direction. I ask you to support NECEC.

Regards,

Justin B. Lagasse

Justin Lagasse
390 Walnut Hill Rd.
North Yarmouth, ME 04097

Judy Diaz
194 Macomber Hill Road
Jay, Me 04239
207-500-9434

April 14, 2019

William Hinkel
Land Use Planning Commission
22 State House Station
Augusta, Me 04333-0022

RE: SUPPORT LETTER FOR NEW ENGLAND CLEAN ENERGY CONNECT

Dear LURC Commissioners;

I am writing in support of the NECEC. I am a resident of Jay, a selectwoman of the Town of Jay and I own property in the unorganized territory, West Carry Pond. I'm a retired bridge contractor, I built $18MM of the turnpike widening in 2000-2004. I have dealt with the DEP, Army Corps of Engineers, LURC and angry citizens on numerous projects. Prior to this, I was in the surety business, bonding State, Federal and Private projects. I believe Jay is one of the last few Towns supporting this project. The No CMP Corridor has eloquently provided my personal cell phone number to the entire community in the last mailer, attached. I continue to stand firm with my opinion and conviction that this project is in the best interest of Jay, Maine and New England.

I gave public testimony in support of the project in Farmington after returning from Aswan, Egypt where I was touring the High Dam and 3000 megawatt Hydro Plant.

We are living in a time when everything is instant gratification and on demand: inventory, information, cell phones, computers, how can we do it faster and more efficient. We continue to use more and more electricity to have instance access to everything. In the Northeast we continue to use more electricity every year and our power plants are in the same state of affairs as our roads and bridges....they are old and in need of replacement, such as Pilgrim Nuclear, which is shutting down and produces 680 megawatts. Where will the replacement come from, currently primarily fossil fuels....

I understand the passion people have with this project, but I believe it's motivated by distrust of big business, misinformation and profit. The truth always comes out if you follow the money. Massachusetts is paying for the project. Why? They have clean power mandates and several older power plants going off line in the next few years, thus higher energy prices and fines are on their radar. CMP and parent companies have extensive experience with clean energy and obviously could see the writing on the wall and see the mandates coming from Washington. CMP worked diligently to acquire the working forests in the least invasive path to their existing power corridors. You don't have to be a rocket scientist to calculate the plants going off line to estimate the significant deficit facing the New England Power Grid. The opposition, funded by the fossil fuel providers will benefit producing electricity at inflated prices.

We have an obligation to our children and the planet to be good stewards of our natural resources. At the same time, we have an obligation to meet the needs of our population to provide safe clean renewable energy that minimizes the impact on our natural resources. I believe CMP/NECEC has worked with all the State, Federal and Local agencies to provide a responsible RFP on this project and minimize the impact to the environment. (Let's look at the alternatives, blow a new line through NH or VT, can you imagine? The problem is Massachusetts isn't next to Quebec.

NECEC is using "their" existing corridor, thus the impact will be minimal, compared to new construction. The new corridor will be through "their" right of ways and commercial working forests. I own property adjacent to a working forest, the infrastructure is incredible and I often see tandem tractor trailers hauling logs at a steady clip. Lets keep in mind these are also the working forests they allow companies to operate white water rafting companies, snowmobile clubs/ATV clubs to use the trails, hunters and trappers to use their property, and hikers and outdoorsmen to enjoy the habitat, but remember its their property that they allow us to enjoy at no cost.

Now they ask for your permit to utilize their property to provide a clean renewable energy project that will benefit us all. Yes, there will be impacts and they have worked diligently with numerous parties to mitigate the impact and offer exchanges to offset the impact. They have taken great care to avoid some of the most sensitive beautiful recreational areas. They have designed the project to avoid impacts to important protected and sensitive natural resources including crossing the Kennebec River underground to preserve the beauty of the area. The conservation package offered is impressive and will provide years of enjoyment to future generations; 3000 acres of conservation land, 1000 areas along the Dead River, 8 miles of River frontage, and nearly $6MM to be used for programs benefitting natural resources including minimizing impacts on fisheries and wildlife. You must ask yourself, are they being good stewards of the land? Have they chosen the least impactful route? Is this project in the best interest of New Englanders? I feel they analyzed all the options and chose the best solution, further they continue to modify their plan as stakeholders request changes.

I read the RFP when NECEC initially presented the project. The western Maine towns need economic development, this project through the construction and mitigation process addresses those needs. The new tax revenue will offset the continuing increases in school funding and the broadband infrastructure expansion will promote new businesses to the area. A project of this size will add 3500 jobs during construction and inject daily revenue into the small towns along the corridor. There are significant funds proposed to help low income families. The project will reduce our energy costs. The mix of hydropower to the NE power grid will prevent electricity price spikes we have during cold snaps. The project provides a $200MM investment in the NE Power Grid enhancing renewable energy and grid reliability. Grants for heat pumps, electric car charging stations, support for electric vehicles will exchange fossil fuels for clean energy and lower our carbon output. Educational related grants to study marine wind generation, funding for internships and scholarships at the University of Maine Farmington, funding for our Vocational Programs and emphasis on math and science programs will benefits the students and young adults in our area. The economic benefits to Western Maine will spur new businesses and growth to our area that has lagged behind Southern Maine for years.

NECEC is an impressive project, and they have built a strong team to execute the project with a wealth of experience in renewable energy projects. Reducing greenhouse gas emissions is essential to slowing the pace of climate change, caused by burning fossil fuels for electricity, heat and transportation. We acknowledge we need to decrease the use of gas, coal and oil to reduce the release of CO2 into the atmosphere. This project will deliver 1200 megawatts of clean hydropower to New England, the equivalent of removing 676,000 cars off the road or 3MM metric tons of emissions annually. Maine has the highest rate of homes heated by heating oil, this project will provide $15MM to expand the use of heat pumps to replace oil and other fossil fuel heating sources.

This project will help offset the recent and pending New England power producing retirements. Approximately 4600 megawatts of the regions nuclear, oil and coal generation has or will retire in the next decade, with an additional 5000 megawatts reduction possible during the same time period. We have to start planning and implementing clean energy changes or we will be in a devastating predicament.

I am just a retired person sitting on the sidelines watching technology change at a rapid pace and wondering how are we going to prepare for the future? The "not in my backyard" group has to look at what is in the best interest of the Northeast. We must change our ways to protect the planet for our children and that entails clean energy projects. I strongly urge you to support this project and as I said, follow the money... in the end do you want to support clean energy or more fossil fuel at increased costs.

I sit in meetings where Western Maine residents can't pay their bills and are losing their homes; residents have to decide if they will buy prescriptions, food, heating oil, pay their mortgage or utility bills; and children have food insecurities, schools have food pantries and our school district RSU73 has 60% of the students receiving free and reduced meals. This is happening in Maine, right under our noses.

While this project might not be perfect it is the best option in front of us and they have mitigated, changed methods, presented conservation and economic benefits and are willing to come to the table to discuss and explain their position. I believe they are good stewards of our natural resources, and are operating using best management practices and working in good faith to provide a clean energy option to the New England Grid.

Regards,

Judy Diaz

PAID FOR BY STOP THE CORRIDOR
P.O. BOX 931 | WESTBROOK, MAINE 04098

NO CMP CORRIDOR

STOP THE CORRIDOR

ACTION ALERT

IT'S NOT TOO LATE TO MAKE YOUR VOICE HEARD!

Contact your local elected officials TODAY and make sure they oppose the CMP corridor.

**********ECRWSS**R021
The Diaz Household
Or Current Resident
194 Macomber Hill Rd
Jay ME 04239-7005

SQ 524
TR 1

RECEIVED
APR 18 2019
LUPC - AUGUSTA

April 5, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

I am writing to support Central Maine Power Company's New England Clean Energy Connect Project. As a CMP employee I have learned a great deal about the benefits of the project to Maine, and I am grateful for the time, care and attention CMP has dedicated to our State's natural and cultural resources in planning the NECEC project.

While local impacts may be unavoidable, the CMP project has avoided some of the most sensitive and beautiful natural and recreational areas such as Moosehead Lake, Bigelow Preserve, Kennebago, the Rangeley Lake region, and others, preserving some of Maine's most special areas.

As a Maine resident I value the recreational opportunities found in the north woods, and I understand that private landowners make these available, and they will continue to be available when the project is built. I also know that this has been working forest for generations and that clear cuts and other forestry impacts are evident there.

I am proud that my company has taken so much time to develop a project that respects and accommodates the special nature of Western Maine while offering a tremendous clean energy solution to the whole region.

Regards,

Linda Ball

Address:

Linda Ball
82 Cross Hill Rd
Augusta ME

Further, I am not a proponent of "what's in it for Maine." Most of my family lives out of State. My goal is green energy and better climate impacts for everyone, not just Mainers!

April 5, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

I am writing to support Central Maine Power Company's New England Clean Energy Connect Project. As a CMP employee I have learned a great deal about the benefits of the project to Maine, and I am grateful for the time, care and attention CMP has dedicated to our State's natural and cultural resources in planning the NECEC project.

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I am proud that my company has taken so much time to develop a project that respects and accommodates the special nature of Western Maine while offering a tremendous clean energy solution to the whole region.

Regards,

Carol Bradley

Address:
82 Cross Hill Rd
Augusta ME

SO. MAINE P&DC 040

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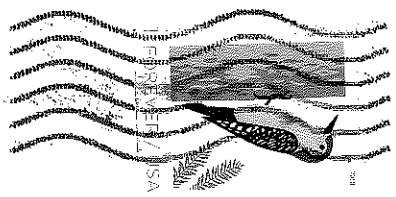

M. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta ME
04333

04333-

Dear Mr. Hinkel,

I am writing in support of the NECEC project. I live in Jefferson, Maine but also own property in Carrabassett Valley.

I'd like to provide you with a snowmobilers' perspective of what this project could mean for those of us who are part of that community. I've been snowmobiling for more than 40 years and have been involved in the JV Wing Snowmobile Club in Carrabassett Valley for many years. I snowmobile all over Western Maine and am familiar with the area of working forest where the NECEC line would be built.

The proposed transmission line corridor could be a missing link in the system of snowmobile trails in this area. It could potentially create a loop from the Eustis Trails, leading to Jackman and the West Forks, thereby opening up access from the Canadian border down to Jackman from Coburn Gore.

Snowmobile riders are always looking for new trails and areas to ride. This is particularly true up in Western Maine, where snowmobilers from all over the state and New England make that area a destination in the winter, and snowmobiling is a big part of the local tourism economy.

Having these new trails and access would mean more riders taking advantage of them and spending their money here.

I personally rode my snowmobile a few times towards Jackman and went to the top of Coburn Mountain to look at the views and to see for myself roughly where the power line would be and what effect it may have.

I frequently ride the trails around the Bigelow range and always enjoy the majestic mountains, and views. Which, by the way, does have an existing power line that runs parallel at base of the mountain range which we use for snowmobiling, hunting and many other outdoor activities.

I am also an avid skier and from the top of Sugarloaf I always am looking towards Canada and northeast towards Jackman and the Forks..... and on a clear day, Mt Kathadin. The power line is barely visible as I look over the mountain ranges.

The snowmobile community is appreciative of the private landowners, including CMP, who allow access to snowmobilers. They help make our Maine winters bearable – and even fun – and snowmobiling would not be what it is here in Maine without them.

I support this project and hope you consider this benefit of the NECEC during your review.

Thank you for your time.

Tim Robbins
Jefferson, ME

April 19, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

I would like to weigh in on the clean energy development proposal by Central Maine Power and Hydro Quebec.

I support it for lots of reasons, mostly because we need to invest in our future, we need these types of jobs in the construction industry, and we need cleaner electricity that does not pollute the air or the water. If we don't make sure our air and water are clean, or if we allow our air and water temperatures to rise without being checked, we will lose our precious natural resources. I'm all for taking steps to increase our electric supply and use hydropower as our main source of electric generation. I appreciate the fact that our lives are moving in the direction of needing more electricity for our offices, our computers, our homes, our cars, our heat. If we really move in this direction, then we need more clean electric generation and this project offers us that product.

Kindly,

Brett Doyon

196 River Rd.

Brunswick, ME 04011

Maine Drilling & Blasting

Maine Drilling and Blasting, Inc.
P.O. Box 1140 - 542 Brunswick Ave.
Gardiner, ME 04345

SO. MAINE
ME 040
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A Breed Apart

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LUPC - AUGUSTA

MR. BILL HINKEL
LAND USE PLANNING COMMISSION
22 STATE HOUSE STATION
AUGUSTA, ME 04333

04333-

April 12, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

New England Clean Energy Connect (NECEC) is a project that will offer Maine and its people many benefits. It will also provide lasting and very substantive benefits to the entire region of the country in that it will reduce carbon emissions into the atmosphere. This is a big deal for me and my family, and reason enough for the project to move forward.

That said, the other benefits are important – jobs, new investment in many Maine communities and that resulting new tax money those communities will get, and a series of financial benefits designed to promote efficient heating, electric cars, and subsidies for low-income families.

I'm standing firm in my support and appreciate the fact that our new Governor has also reviewed this project carefully and she too believes in it.

Projects like this do not come around very often. I think we should strike while the iron is hot, and ignore the huge amount of money that the opposition is spending to suggest that this project will harm our environment. Nothing could be further from the truth.

You have to wonder where the opposition is getting all that money! Must be coming from the Natural Gas companies, and they are the only ones who stand to lose anything if this cleaner power comes our way.

Thanks for listening,

Carl E Wallace
P.O Box 81
South, GARDINER, ME 04359

NECEC DEP

Testimony of Del Reed

April 4, 2019

My name is Del Reed. I live where I grew up in Freeman Twp, just 15 miles north of here on several hundred acres of working forest. My wife and I live in the Maine woods with our children and grandchildren. We share the same views that many have expressed about our scenic beauty and preserving wildlife habitat.

I'm a registered professional electrical engineer and have spent most of my career right here in western Maine. Some say I'm retired, I say I'm between jobs.

I have worked in the Forest Products Industry, been an Operations Manager for CMP and for the last 20 years I have worked as a Construction Manager building electrical sub-stations and transmission lines. I have worked as a CMP employee and as a consultant mostly in Maine but, also, in Mass, Ct & Maryland.

My transmission work has consisted of building new lines in new r/w, building new lines and re-building older lines in existing r/w. Most of this work was for CMP.

I can assure you that CMP has ALWAYS insisted on extreme care during all of this construction. In some cases, we have flown poles and wires by helicopter in sensitive areas to minimize environmental disturbances. Restoration has always been excellent, and in many cases we left the area much better than we found it.

I am very familiar with the Jackman, The Forks, Caratunk areas. During the Ice Storm of 98 I was the Operations Manager responsible for this region..

The suggestion that this project will lead to increased fragmentation of the forest and increased development is just plain wrong. The finished product may actually decrease fragmentation.

First, the portion of the new line is in a commercial forest. This area is commercially logged and logging roads created decades ago still exist. This isn't a wilderness area or a national park. This is a very large wood lot.. Also, the majority of the line is being built in CMP's existing corridors.

Secondly, this is a DC line which no users can tie into, unlike an AC line. It isn't like a highway or a railroad intended to attract public use. Instead, this is merely an express link from Canada to Lewiston that will not promote other development.

But most of all, this project is both reasonable and necessary. It is reasonable because New England is retiring nearly 10,000 megawatts of old coal, oil and nuclear plants in the future and will need to replace these with clean power. In fact, the Pilgrim nuclear plant will retire in about 6 weeks from now after more than 50 years of operation. That's 670 megawatts of baseload capacity that will be gone as of June 1st. In the near term, natural gas is almost sure to replace it. If hydro is not the replacement anytime soon ISO-NE will need to find other dispatchable sources, and they will certainly not be as clean as this project. Additionally, this proposed line has excess capacity for Maine ratepayers, so not IF it is needed but WHEN we need it, it will be available.

As a Mainer, I urge you to approve this project. It is very good for Maine.
Thank you

TO:
Maine Department of Environmental Protection
17 State House Station
28 Tyson Drive
Augusta, Maine 04333-0017

c/o DEP.... jim.r.beyer@maine.gov

RE: Public Comment Concerning NECEC

FROM:
Roger Merchant, ME LPF 727, Professional Photographer
1018 Pushaw Road, Glenburn, ME 04401

Date: April 23, 2019

Having listened to and participated with numerous conversations, hearings and cross-examinations about NECEC, I remain deeply concerned about the unaddressed social, economic and environmental impacts of this project. I wish to convey to DEP three areas of concern that I have about what is incomplete concerning CMP's proposal. I have respectfully included recommendations-suggestions for each.

#1. INCOMPLETE SCOPE OF PROJECT:

CMP has presented the scope of Segment 1 as a 150 ft. cleared corridor designed for minimal impacts, and mitigation to account for unavoidable environmental damages from their large fragmenting footprint. I do not believe this accurately characterizes the longer-range aspirations for the CMP-HQ-NECE corridor.

CMP's John Carroll stated on Channel 13, "Our real estate rights are 300 feet wide. You have to look ahead. We don't know what the future will call for. When you create a corridor you want to have the real estate for future projects."

CMP understands energy and knows New England's power future will call for more power. Given this energy reality, it's no stretch to anticipate that sooner than later, CMP-HQ will be back at the permitting table, asking for a 300 foot wide, multi-line-tower proposal on their right of way across Segment 1. From the beginning I have argued that a 150-foot corridor is only the first step, one that will incubate more power transmission when it expands into a very large 300 foot-wide footprint and impact. Once the first line is in, it's a done deal that more will follow.

The following photo is an example of a multi-line-tower power line in Maine, 300 feet wide, double the size of CMP's proposed 150 footprint. I argue that the scope of their proposal and its impacts should be accurately re-labeled NECEC 150/300.

Recommendation on Scope: I would encourage Maine DEP and other appropriate agencies to conduct fact finding conversations and independent analysis of the long-term power transmission plans of HQ-CMP, evaluating the degree of feasibility that NECEC will ultimately expand into a 300 foot, multi-line-tower power transmission project across Segment 1, as well as more widening further down the power lines.

Given the high level of public concern about NECEC, the rushed nature of the project, plus CMP declarations about *future project potential* for their 300-feet of real estate, this clearly widens the scope of NECEC to a 300-foot corridor, one that will greatly magnify and expand habitat and scenic impacts. In my view, the extent of impact documentation for this 150/300 project remains incomplete concerning both the current and future project, constituting grounds for DEP denying NECEC a permit.

#2. HABITAT FRAGMENTATION IMPACT'S ARE INCOMPLETE.

CMP's characterizes NECEC as having minimal impact on forests, habitats and wildlife, ignoring the fact that a 150/300-foot corridor constitutes a third then fourth layer of forest change and fragmentation on this landscape. Beyond common generalization, CMP data on existing forest and habitat conditions, as well as wildlife species-specific habitats along the proposed line, seems minimal at best.

As a conservation forester with boots-on-the-ground in Maine since 1965, I find it odd that CMP addresses only four wildlife species of concern: Roaring brook mayfly, salamanders, deer and Eastern brook trout.

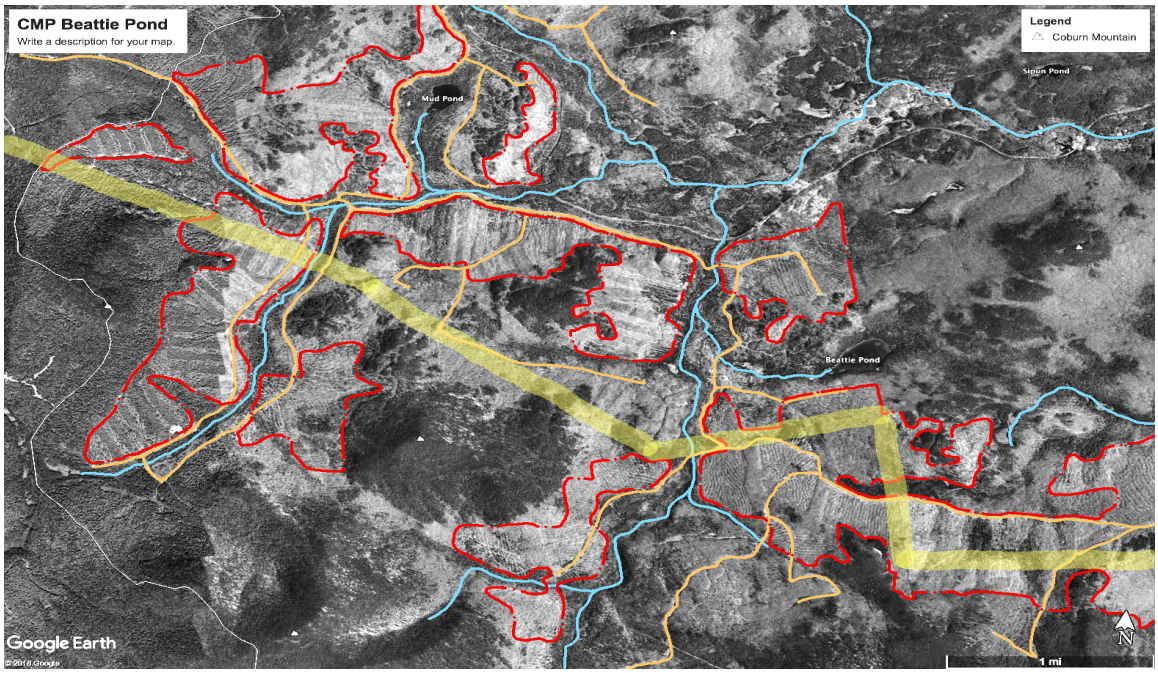
Indeed, these four are important species. But I ask, for a project of this scope is there not more to consider, assess and evaluate concerning the risks of disrupted forest habitats, and impacts on associated wildlife species as a result of NECEC 150/300?

Here are two examples that come to my forestry and wildlife lens concerning Segment 1 of NECEC 150/300.

American Marten occupy middle and older aged forests with continuous forest cover. This canopy structure supports their traveling cross-canopy to escape predators. More important and key to habitat health for the broader wildlife realm, is the fact that in wildlife circles, Marten are known as an umbrella - indicator - species for 40 other vertebrae species in Maine's woods. If habitat for Marten is doing well, then the Marten is doing well and so are 40 other vertebrate species.

Why is American Marten absent in CMP's documentation? If you will, does this not leave the broader base of wildlife unaddressed and at-risk? CMP has given this key indicator species ZERO attention. This is why I am bringing this back to Maine DEP's attention in my argument that DEP deny CMP a permit for NECEC.

A 150/300 foot-wide corridor will re-fragment an already fragmented landscape as illustrated in this photo of Beattie. It will also carve through areas of continuous, un-fragmented forest, habitat associated with American Marten. A 300-foot gap would be a significant barrier to Marten travel. For a project of this scope and magnitude, does this not deserve additional independent assessment and analysis?



Black = Conifers White/Gray = Deciduous Blue = First order streams Red = distinguishes fragmented patches of forest cover from areas of continuous forest cover Brown = permanent gravel logging roads Yellow = NECEC power line corridor

Forest Breeding Songbirds. In my career with UMaine Cooperative Extension, I provided information to woodland owners about forest topics, including wildlife. I recently reviewed the handbook, *Forestry for Maine Birds,* which illustrates forest habitat requirements for 20 species of breeding songbirds in Maine's woods. Many

songbirds are species of interest; some like the Canada warbler are species of concern.

Breeding songbird habitats and requirements are very complex. Some species are coniferous oriented, some deciduous, some both. In one season a single songbird species may occupy the ground, the understory and the overstory, all in the course of meeting the various needs of that species and its brood, out in the woods.

How will NECEC 150/300 impact breeding songbirds in the woods of Segment 1? That remains unknown. CMP's proposal contains ZERO information about this. No field assessment, no data gathering, no analysis to gauge songbird presence and vulnerability. One thing is certain; the 150/300 corridor will remove overstory and mid-story components of forest structure, impacting associated breeding songbird habitat and needs.

Recommendation on Habitat Impacts: I encourage Maine DEP and appropriate state agencies to engage in re-assessment conversations about expanding the limited scope of species to be assessed by CMP. I hope particular attention is given to an independent assessment of Pine Marten and habitat, as well as breeding songbirds, especially species most-at-risk like Canada warbler. Knowing the presence or the absence of these species, and the risks and impacts associated with habitat disruption and clearing, would provide a clearer picture of wildlife habitat impacts from NECEC. The incompleteness in CMP documents convinces me that NECEC should not be granted a permit by Maine DEP.

#3. SCENIC ASSESSMENT INCOMPLETE:

TJDA's visual assessment for CMP was independently reviewed for DEP and LUPC by consultant James Palmer who notes many points of incompleteness in TJDA's Visual Impact Assessment (VIA). Here are a few quotes on the insufficient visual data.

1. "Many photographs were taken, it does not appear that an attempt was made to identify and document representative and worst-case viewpoints for all the scenic resources... There is no clear process that guided the selection of Key Observation Points (KOP's) from the photo inventory... This is the process that would be followed in preparing a Visual Impact Assessment (VIA) for a shopping center.... It is unreasonable to expect less of NECEC simply because it is a bigger project – does it make sense to *lower the standards* for projects because they are bigger?" (Pg. 54)

2. "There is no explanation in the Visual Impact Assessment of how their evaluation is conducted... VIA normally includes a judgment about visual impact – either there will be no impact, or the impact will be minimal, moderate or strong... The only example found in the VIA of a specific scenic resource with more than moderate visual impact, was Rock Pond." (Pg.56)

Palmers report to DEP and LUPC leaves me with a sense of incompleteness about CMP's Visual Impact Assessment. From my fieldwork in forestry and photography

in the immediate region over the past 30 years, the impact of NECEC on scenic values in Segment 1 seems to have been minimized. When you consider a 150/300-foot corridor, this will significantly contribute to degradation of scenic values and viewsheds, negatively impacting the outdoor recreation and nature tourism that is closely connected to surrounding rural communities and businesses.

Some high value scenic resources are notably missing in CMP's report: Greenlaw Cliffs, Tumbledown Mtn., South Branch Moose River. From my cameras viewfinder, the landscape between Rock Pond-The Notch and over to the west side of the South Branch Moose River is well deserving of being designated a protected scenic landscape, one that can exist within a privately owned working forest, where public access to beautiful scenery is indeed granted, respected and a privilege.

Recommendation on Scenic Impacts: I hope Maine DEP engages with appropriate entities in review/re-assessment conversations about the strengths and weaknesses of CMP's Visual Impact Assessment, and contract for an independent assessment of the full range of visual impacts that will result from NECEC 150/300.

Key to gauging impacts on tourism would be for review agencies to commission an independent study of the attitudes and perceptions of resident and non-resident visitors towards the scenic impacts that NECEC 150/300 will have on the region.

The recommendations I have put forth in this document, could go a long ways towards assuring the proponents, the opposition, the public and institutions of governance, that due-diligence has been taken to independently assess NECEC's full range of costs and benefits. Thank you for considering my words of concern and recommendation to Maine DEP for the NECEC 150/300 Project.

From:	Ginny
To:	Beyer, Jim R; Hinkel, Bill
Subject:	CMP Transmission Corridor
Date:	Tuesday, April 16, 2019 4:18:46 PM

Dear Mr. Breyer and Mr. Hinkel,

I oppose the CMP corridor because we should be investing in sustainable energy that does not destroy the environment.

Sincerly,

Ginny Schneider
South Portland

From:	Jeffrey Stone
To:	Hinkel, Bill
Subject:	NECEC MDEP
Date:	Monday, April 15, 2019 6:29:09 PM

Mr. Hinkel

I am writing to encourage you to hold true to the laws contained in the clean waters act. The NECEC will effect hundreds of sensitive waterways, watersheds and ecosystems.

I implore you to porotect Maine's environment for We the Maine people. The damage which will be inevitable and irreversible.

Please protect Maine from this threat, keeping our waters and ecosystems strong and viable.

Respectfully yours,

Jeffrey Stone
22 Dyer Street
South Portland, ME 04106

Maine Land Use Planning Commission
Chairman Everett Worcester
18 Elkins Lane
22 State House Station
Augusta, Maine 04333-0022

John (Jack) Nicholas
208 Gayton Lane
Winthrop, Maine 04364

Date: April 13, 2019

Case: Proposed hydro power transmission corridor – New England Clean Energy Connect, NECEC.

Subject: The real forest land of the western Maine mountains.

Dear Chairman Worcester and members of the Maine Land Use Planning Commission (MLUPC):

Letters to the editor and testimony in support of Central Maine Power Company's (CMP) 53.8 miles of new transmission corridor have inaccurately described the forest land of the western Maine mountains.

I fly fish the remote ponds near and around the proposed corridor. One third of that forest land is not owned by the commercial forest industry and, thus, is not working forest. I was surprised to read in the April 12, 2019 Kennebec Journal that the Chairman of the Maine Public Utilities Commission stated erroneously that, "It's a working forest in that portion of Maine."

Ownership of the 1/3 of forest land not owned by the commercial forest industry is pristine and includes the Nature Conservancy, individuals and families and the people of Maine through public reserved land. Forest land around remote ponds also qualify as pristine.

These forest lands have also been described as having roadways going in many directions for snowmobiling and access to ponds. Snowmobiling and ATVing are forbidden on these logging roads. Access to remote ponds should be by four-wheel drive vehicle, with safe clearance, and six ply or ten ply tires.

A 150-foot-wide transmission corridor, with 100-foot-high towers, would not fit harmoniously in this remote and mountainous terrain, in which one third is pristine and not working forests.

Sincerely,

John (Jack) Nicholas
Contact:
Phone: 207-377-6352 or 207-462-4049
E-mail: jrnicholas@roadrunner.com

Hinkel, Bill

Subject: RE: CMP Corridor

From: Hans Nielsen <hans.nielsen@maine.edu>
Sent: Thursday, April 11, 2019 12:39:53 PM
To: Livesay, Nicholas
Subject: CMP Corridor

I am writing to ask you to use all your abilities and power to oppose the CMP corridor through Maine.

Despite the approval of our Governor and the Public Utilities Commission, I believe the environmental impact on our forests and wildlife would be too great a cost. The proposed monetary compensation pales in comparison to the destruction that would follow.

People cherish Maine because of its wild beauty, not because we have power lines. The corridor would forever scar our state and destroy that beauty that so many of us people hold dear.

Please let us not welcome in our Bicentennial by sacrificing our irreplaceable wildlife and forests to make a little bit of money.

Respectfully yours,
Hans Nielsen

From: Deke Sawyer
To: Hinkel, Bill; DEP, NECEC
Subject: NECEC
Date: Thursday, April 4, 2019 5:57:12 PM

I will turn 65 tomorrow. It seems like yesterday I was only 15 years old. 5o years. I mention this because I wonder what will Maine's western mountains look like in 50 years? This is the question we need to address! Will we pass on what the beautiful scenic views we see now to our children and grandchildren? It is hard to imagine that people want to fragment and scar this landscape for a few dollars. 50 years from now I will be "pushing up daisies" and so will most of the proponents of this corridor. What good will the money do then?

CMP is pushing this corridor for one reason. GREENBACKS! That is the only thing green about NECEC. If they were truly concerned with the environment there were a hundred alternatives that would work better but they would not produce as many greenbacks. The Vermont plan already has permits to go underground but that is expensive. No doubt about it every part of NECEC is designed with greenbacks in mind.

I am reminded of a stone chip in a windshield. CMP's purchase of these lands is a chip in the glass. At first it is not too annoying but we know that if we don't address it soon it will grow into a crack. The crack will be a 53 mile long clear-cut. Something no Forrester would ever be able to get permitted for. Next the crack runs full length across the windshield. Now it is annoying to look at and disturbs our ability to drive. NECEC initial DC powerline is that continuous crack. It will be annoying to look at and present safety concerns to the environment and completely destroy what was once a beautiful view. The final stage is spider webbing. This is what will happen in stage 2 of NECEC by tying in a another line to carry current from 50-70 wind turbines on every ridge along the 53 miles of new corridor. Spider webbing will annihilate every part of todays scenic beauty! For what? Greenbacks.

This is a historic decision of monumental proportion! NO one is creating vast parcels of natural beauty. No one can undo the devastation NECEC will cause! Haven't we destroyed enough of our working forests? When will we have enough urban sprawl? 50 years from now (it goes by fast) what will future generations see when they drive up 201 towards Jackman? Will they see a bunch of manmade steel, concrete and plastic or will they see what God created and no one else can duplicate? When CMP's big shots and todays money seekers are all pushing up daisies along with us. Will those who come behind us be impressed with our foresight or will we be another story of what used to be?

Please vote no to NECEC!

Rev. Darien (Deke) Sawyer
Jackman, Maine

Sent from Mail for Windows 10

Deke

My name is Tony Marple and I'm retired after a career in hospital administration and four years as MaineCare Director. We have a farm that includes 30 acres of wild blueberries in Whitefield, a town where a secondary NECEC power line would run through an existing corridor.

I totally agree with the Governor's NECEC support based on the fact that climate risk is the overarching issue.

Opposition to the power line has become a mean spirited ideology and people who speak out in favor of the project pay a price. But that's better than our granddaughters paying the price for our inaction. CMP is constantly accused of lying and Hydro Quebec, the biggest source of clean energy in eastern North America, is accused of greenwashing. Meanwhile, does anyone demonize the owners of fossil fuel power plants who are the biggest funders of the opposition and will lose $3 million a day if the project is approved? Right now, electricity production in the New England grid is 51% fossil fuels, 30% nuclear, 7% biomass and garbage, 8% existing hydro and 4% wind and solar. Hydro Quebec is asked to prove that the project will reduce greenhouse gas emissions, but who's asking the natural gas industry that question as they send us their fuel from fracked wells through leaky pipelines?

We need to replace the fossil fuel electricity component, cover the loss created by closing old nuclear power plants and at the same time gear up for the electrification of transportation and heating. The open minded Conservation Law Foundation led a productive negotiation with CMP, Governor Mills, the Public Advocate and others resulting in $15 million for electric vehicle charging, $15 million to expand the use of heat pumps and much more. Of course, some call that a bribe.

Concerns about the corridor's impact on northern forests are trivial compared to climate risk. The University of Maine predicts major damage to the boreal forest of spruce and fir, one of the most beautiful parts of any mountain hike in Maine. Warming also brings more tree killing southern insects and could devastate fresh water fish.

We are not going to meet the Governor's goal of reducing emissions 80% by 2050 with just out-of-sight wind and solar, though we need to

aggressively expand those sources. This single power line can deliver twice the amount of clean energy than what is now produced by New England wind and solar. Meeting the 80% goal won't happen without controversy. For example, any large-scale off-shore wind project will use an underwater cable, but the on-shore power line will stir up opposition.

This is just the first of many challenging decisions we will face as we take the essential steps to drastically reduce greenhouse gas emissions.

I urge the Department of Environmental Protection to issue a permit for this project.

Thank you.

Town of Bingham

13 Murray Street
P.O.Box 652
Bingham, ME 04920

Tel. (207) 672-5519
Fax (207) 672-3080
E-Mail: binghamselectmen@yahoo.com

Office of the Selectmen

5/8/2019

To Maine's Regulators

The Town of Bingham has benefitted from a wind project in our midst. It provides clean, renewable energy at a time when we must do something about curbing greenhouse gas emissions and reaching toward a future of emission-free energy and transportation, as difficult as that will be. It also enhances the recreational opportunity for many snowmobilers in our area. People come from a far and ride up to the wind farm where they are met with expansive, unbeatable views of Maine's landscape.

As a leader of the town, I personally support clean, renewable energy. I believe that the New England Clean Energy Connect will provide numerous benefits to Maine and our other New England neighbors, not the least of which is the greener energy and a cleaner future.

The benefits to the project's host communities, such as tax revenue and local economic development are important, as are the additional benefits outlined in the settlement agreement, which includes funds for increased broadband access, low-income rate relief, and access to heat pumps and electric charging stations for a growing electric vehicle fleet are also important to our future.

The project follows, for the most part, an existing transmission corridor, and we need transmission if we are going to develop new sources of renewable energy. The 53 miles of 'new corridor' appear to offer the logging industry, which occupies this region, a compatible use. The transmission corridor will, in fact, line up with multiple clear cuts, strip cuts, access roads, and will offer snowmobilers to the area another trail to enjoy.

I'm more worried about the environmental impacts of our region of the country if we don't further develop clean energy solutions. We have little time to waste.

I urge you to look favorably upon this project. Thank you for your consideration and approval.

Steve Steward

1st Selectman

Town of Bingham

From Margi Wister

4 Free St. #1

Camden ME
04843

Thanks - Recommend passing it on to others.

Summer/Fall 2011

NO NORTHERN PASS COALITION

Promoting & protecting clean, green, beautiful New Hampshire

NORTHERN PASS TRANSMISSION LINE PROJECT – BIGGEST LAND GRAB IN NH HISTORY

On November 16, 2010, Northern Pass Transmission LLC (NP) applied for a Presidential Permit to construct an electric transmission line across the United States border with Canada. This proposed 180-mile line, which is being funded entirely by Hydro Quebec, a wholly-owned corporation of the Province of Quebec, would run DC electricity from Quebec to Franklin, NH, where it would be converted into AC. From there it would run to Deerfield, NH, where it would hook into the New England regional grid. The Presidential Permit is first in a series of permits that must be approved in order for this transmission line to be built. For the first 40 miles of the route, new right of way (ROW) would have to be taken; and for the remainder of the route, 26 miles of the present ROW is identified as needing to be widened in order to accommodate the taller (approximately 135 ft. steel lattice) towers.

Since the moment the controversial project was announced, the opposition from property owners along the route has been vocal and heated. On the first 40 miles, where no ROW presently exists, the opposition came fast and furious. Many property owners in Coos County have fought back hard, refusing to agree to sell their land even while NP representatives have threatened to expropriate their property by eminent domain. Along the rest of the present ROW, there has been mounting opposition as well. The project will need 66 miles of ROWs either voluntarily or by eminent domain – a shocking figure. The proposed route goes right through some of the most scenic and awe-inspiring views of the White Mountains; crosses the White Mountain National Forest and the Appalachian Hiking Trail; disturbs the views in tourist centers such as Sugar Hill, Lincoln, and Holderness; passes through some of our most productive farmland; and in essence bisects the entire state, altering the character and beauty of New Hampshire forever.

New Hampshire has an opportunity to stop this project, but we must act now. First we must understand what is at stake and then we have to speak up and demand that our government represent the people of this state, not corporations that do not have our interests at heart.

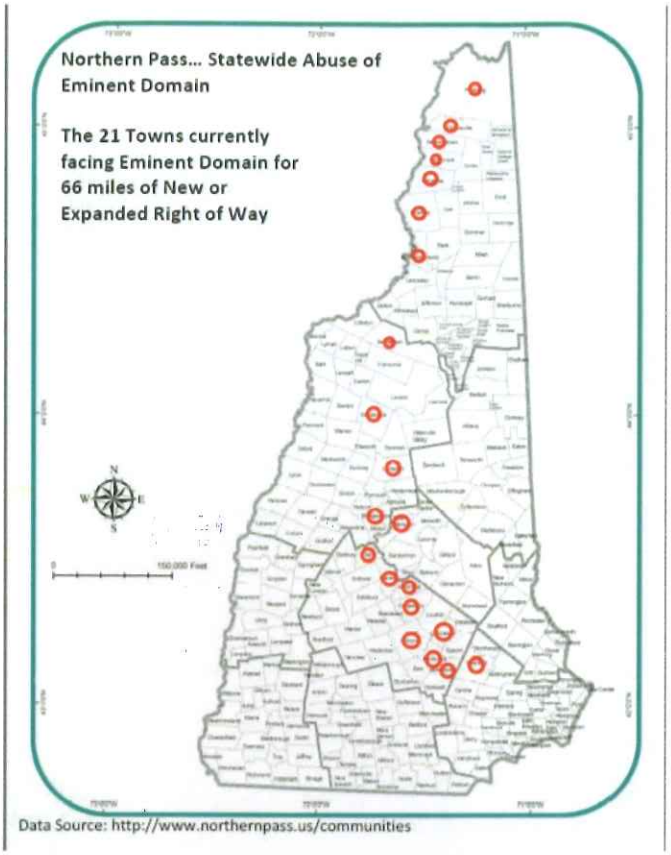
EMINENT DOMAIN AND HOUSE BILL 648

Promoters of Northern Pass have threatened landowners along the proposed route with eminent domain if they do not voluntarily forfeit their property for the transmission lines. We believe it is clear that NP will not qualify to use eminent domain because it is a private development project. Threatening the use of eminent domain against resistant property owners is a profoundly dishonest and unethical method of attempting to gain access to private property, not for public need but for corporate profit. That's a poster child violation of Article 12-a of NH's constitution, which prohibits eminent domain for private development projects.

The House of Representatives overwhelmingly passed HB 648 to protect citizens by updating current statutes to make them consistent with Article 12-a. HB 648 makes it clear that eminent domain can't be used for private transmission line projects that are not in response to any regulatory finding of need. HB 648 will be scheduled for a vote in the senate soon, and its passage is critical because if NP is granted the power of eminent domain, other privately funded, for-profit utility projects such as gas or water pipelines and other transmission lines would be eligible for the same privileges. There are several optional, for-profit utility projects awaiting the approval of NP to release their plans for future projects, which would necessitate the taking of private property.

Northern Pass promoters have tried to scare our lawmakers into voting against HB 648 with language such as "unintended consequences" if it passes. The real unintended consequences will occur if it doesn't pass – No property owner in the state will be safe from property taking by a utility company without the protection of strong eminent domain laws in New Hampshire.

In Northern Pass's sponsor's own words, ***"the lines aren't needed to keep the lights on"***. This is an optional project thought up by Hydro-Quebec and PSNH to make more money, an estimated $50 billion of sales revenues for Hydro-Quebec and a new income stream for the financial basket case known as PSNH.



Northern Pass was not requested by any regulator, was not designed under the regional transmission needs planning process, is not in the regional customer rate base, and is for the exclusive use of Hydro-Quebec. Although it masquerades as a public utility, it's the very definition of a private development project.

Walmart doesn't get eminent domain to build a new store. A wind farm developer doesn't get eminent domain to take land on a ridgeline. The proposed biomass plant in Berlin doesn't get eminent domain to assemble the land for its project. They all deal on a voluntary, consensual basis with property owners. If they can't buy the necessary land, then they can't do their project. That's how the private sector works in America.

And Northern Pass is no different. A private business project, including one in the energy sector, is not entitled to eminent domain. When PSNH and Hydro-Quebec baselessly and abusively threaten NH families with involuntary government seizures of their homes and land for the benefit of a private business project, the design details really don't matter.

Time to Fight Back, New Hampshire

Alert! NH is being invaded by an out of state power company and a foreign government! PSNH, now a fully owned component of Northeast Utilities of Connecticut, is traveling the State, trying to convince the citizens of NH that **Northern Pass (NP)**, a proposed power line project stretching all the way from the Canadian border to Deerfield, is good for NH. **Don't believe it! The only people who will benefit from this line will be the stock holders of Northeast Utilities and the government of Quebec.**

PSNH says:	Reality:
NP will create 1200 jobs	Temporary during construction, none promised to NH workers
NP will pay taxes	More than offset by declining property taxes
NH needs the power	NH exports excess power
NE needs the power	NE has 20% extra capacity
NP power is renewable	EPA & NH law say not so
NP power is cheaper	Maybe 97 cents a month
NP succeeds?	Destruction of NH's renewable power industry
NP says power reliable	Not during drought/extreme cold/ice storms
NP won't affect home sales	Homes near power lines unmarketable

- **NP will use eminent domain to seize private property over large segments of the line.**
- **PSNH is destroying the renewable industry in NH by not renewing supply contracts.**
- **Giant, 135-foot steel towers every 800 feet for 180 miles will ruin scenery, permanently.**
- **Once NP has a right of way you can expect more lines of towers. NH a power corridor!**
- **Ruined scenery equals loss of visitors, loss of jobs and ruined real estate markets.**

Towns all along the ROW voted overwhelmingly in this year's town meetings to oppose the Northern Pass Project. Various organizations have spoken out in opposition including The Society for the Protection of NH Forests, Nature Conservancy, The Conservation Law Foundation, The Appalachian Mountain Club, Ammonoosuc Conservation Trust, Conservation NH, and Sierra Club.

"It is time for Hydro-Quebec officials… and PSNH officials to fold their tent on this project and go home! AND, for PSNH to buy local electrical power!" - Ray Burton, Executive Counsel

"If the communities of New Hampshire don't want the project, I won't support it." - Governor John Lynch

"Let us keep New Hampshire so those who follow in our footsteps will enjoy it as much as we have." - J.C. Kenneth Poore, historian and farmer, 96 yrs old in 1982 in a letter to the NH Site Evaluation Committee opposing the Power Line proposed at the time.

"No other rights are safe where property is not safe." – Daniel Webster, NH native and Senator

"Live free or die." – Revolutionary War General John Stark, NH native

For more Information please visit:

LiveFreeOrFry.org
burynorthernpass.blogspot.com
nonorthernpassnh.blogspot.com
infonorthcountrypowerline@gmail.com

Please Support
The Power Line Education Fund, P.O. Box 4 41 Colebrook, NH 03576

CONTACT ALL NEW HAMPSHIRE SENATORS TODAY

TELL THEM WE NEED THEM TO PROTECT NEW HAMPSHIRE PROPERTY RIGHTS NOT A FOREIGN, FOR-PROFIT CORPORATION, WHICH HAS NO ALLEGIENCE TO NH

John Gallus
john.gallus@leg.state.nh.us
(603) 271-3076

Jeanie Forrester
jeanie.forrester@leg.state.nh.us
(603) 271-4151

Jeb Bradley
jeb.bradley@leg.state.nh.us
(603) 271-8472

James Forsythe
james.forsythe@leg.state.nh.us
(603) 271-3067

Matthew Houde
matthew.houde@leg.state.nh.us
(603) 271-8631

Fenton Groen
fenton.groen@leg.state.nh.us
(603) 271-2609

Andy Sanborn
andy.sanborn@leg.state.nh.us
(603) 271-3067

Bob Odell
bob.odell@leg.state.nh.us
(603) 271-4063

Raymond White
Raymond.white@leg.state.nh.us
(603) 271-2609

Molly Kelly
molly.kelly@leg.state.nh.us
(603) 271-3207

Peter Bragdon
peter.bragdon@leg.state.nh.us
(603) 271-2111

Jim Luther
john.luther@leg.nh.us
(603) 271-4151

Gary Lambert
gary.lambert@leg.state.nh.us
(603) 271-2609

Sharon Carson
sharon.carson@leg.state.nh.us
(603) 271-1403

Sylvia Larson
sylvia.larson@leg.state.nh.us
(603) 271-3207

David Boutin
dboutin1465@comcast.net
(603) 271-3092

John Barnes, Jr.
jack.barnes@leg.state.nh.us
(603) 271-4063

Tom DeBlois
tom.deblois@leg.state.nh.us
(603) 271-4151

Jim Rausch
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(603) 271-3091

Lou D'Allesandro
dalas@leg.state.nh.us
(603) 271-2117

Amanda Merrill
amanda.merrill@leg.state.nh.us
(603) 271-3207

Chuck Morse
chuck.morse@leg.state.nh.us
(603) 271-4980

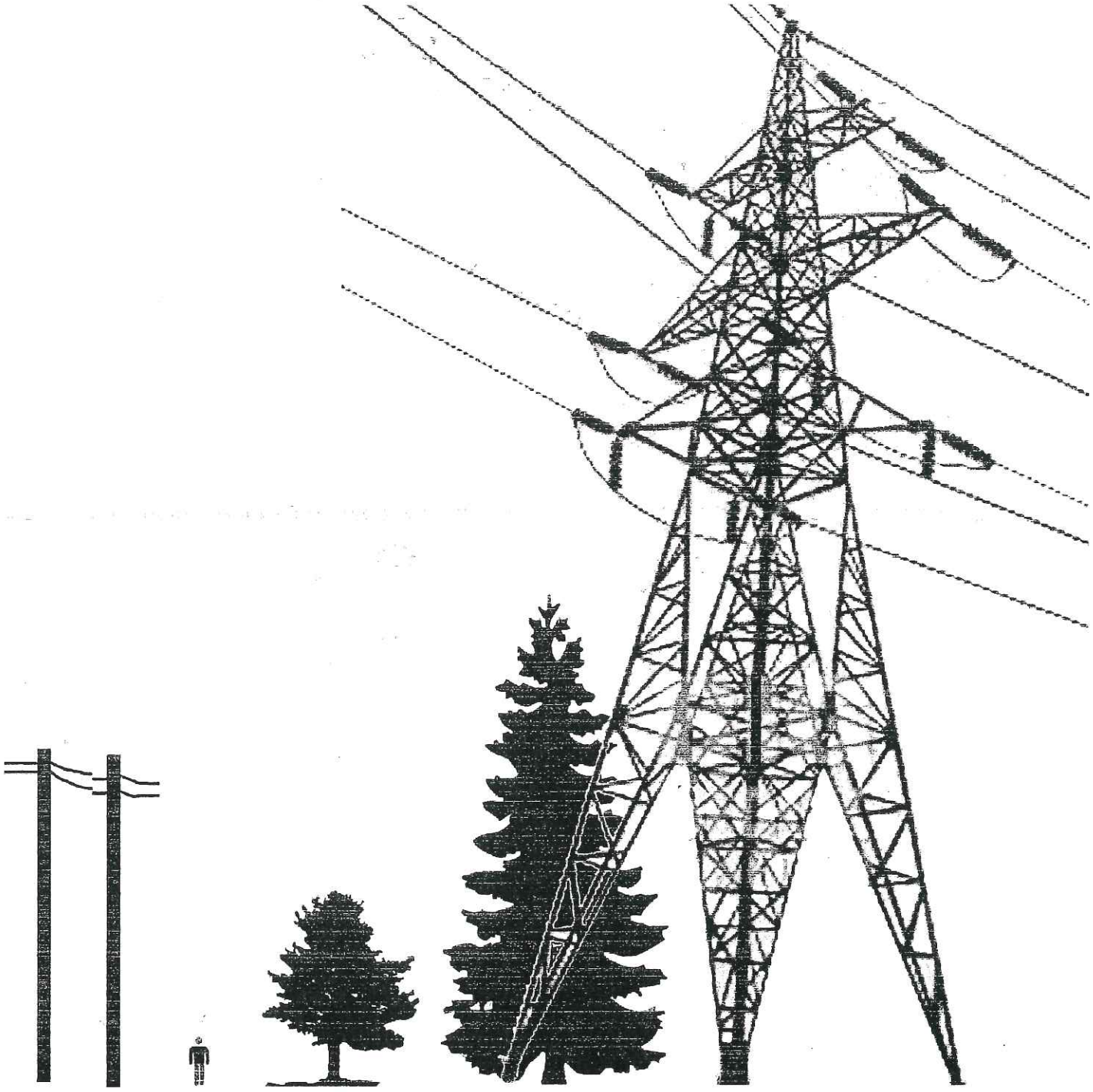
Russell Prescott
represcott@represcott.com
(603) 271-4063

Nancy Stiles
nancy.stiles@leg.state.nh.us
(603) 271-3093

Do you want this in your town?

Do you want this in New Hampshire?

It's coming unless we stop it!!



EXISTING MAN MAPLE PINE PROPOSED TOWER (ACTUAL SCALE)

CONTACT: **LIVE FREE OR FRY** FOR INFO

www.livefreeorfry.org

From: Caroline Thorne-Lyman
To: Hinkel, Bill
Subject: CMP Corridor
Date: Monday, May 13, 2019 12:14:36 PM

Dear Members of LUPC:
I am vehemently opposed to giving CMP a special exception permit to cross the resource protected subdistricts: under the Kennebec River; near Beattie Pond; and across the Appalachian Trail. The CMP corridor will destroy animal habitat, pollute the streams and rivers along the corridor and probably not have any significant effect on climate change. These areas are protected for a reason- the Natural Resources Protection Act clearly states that "The Legislature finds and declares that the State's rivers and streams, great ponds, fragile mountain areas, freshwater wetlands, and coastal sand dune systems are resources of state significance. These resources have great scenic beauty and unique characteristics, unsurpassed recreational, cultural, historical and environmental value of present and future benefit to the citizens of the State and that uses are causing the rapid degradation and, in some cases, the destruction of these critical resources, producing significant adverse economic and environmental impacts and threatening the health, safety and general welfare of the citizens of the State."

That's all that needs to be said. I read LUPC mission statement and one of your principle duties is to "prevent residential , recreational, commercial and industrial uses detrimental to the long-term health, use and value of these areas and to Maine's natural resource based economy." You have heard from people along the proposed corridor that the project will effect businesses that rely on the natural resources and will effect the long-term health and value of these areas. Your mission is also to "discourage the intermixing of incompatible industrial, commercial, residential and recreational activities." The corridor is obviously incompatible with rafting on the Kennebec, snowmobiling, fishing, hiking and the local wildlife's habitats.

I am a native Mainer, raised in Old Town and an avid outdoors person. Our wilderness is precious and not a place for a foreign company like CMP to use for its corporate investors to make lots of money. I saw the environmental destruction of these corridors when I was in Quebec this winter. They destroy huge swaths of pristine wilderness for miles. I do not believe based on what I've read that this project will significantly help with climate change. We are being used by CMP, Quebec hydro and Massachusetts for their own financial gains and selfish needs. CMP is currently being investigated for over charging Maine ratepayers (I am one) and is an unreliable corporation with whom to do business.

Deny CMP's permits in favor of what your mission is for the people of Maine. My children and grandchildren who live in Maine and future generations are depending on you to be environmental stewards of our land.

Caroline Thorne-Lyman
Freeport, ME 04032
ctlyman@comcast.net

From:	Margot Pelletier
To:	Hinkel, Bill
Subject:	CMP CORRIDOR
Date:	Monday, May 13, 2019 11:10:54 AM

To whom this may concern, please vote against the CMP corridor. Tourists and Mainers love this state because of its beauty and people. This corridor would ruin Maine's landscape and would make Maine's like me really outraged.

Margot Pelletier

Sent from my iPad

From: Carrie Warren
To: Hinkel, Bill
Subject: CMP Corridor
Date: Monday, May 13, 2019 1:28:14 PM

I am writing to express my opposition to CMP's proposed corridor through Coburn Mountain and the surrounding area. I feel that this corridor would definitely impact the scenic character of this beautiful area. Powerlines emit electromagnetic fields, which cause health issues to wildlife. In addition, they pose the threat of starting forest fires like those that recently ruined 150,000+ acres in California. The pesticides CMP will use to keep the growth of vegetation off the corridor will poison the wildlife. The environment will suffer when 145 miles of trees are cleared for these lines. Digging up the Kennebec River will greatly impact the fish and the wildlife that need the river to survive.

My husband and I are Mainers that live in the MidCoast region and have a summer seasonal business. In the winter we spend most weekends between the Forks and Jackman snowmobiling. We spend a lot of our money in that region between lodging, food, beverages, gas, apparel and snowmobile memberships, which I feel helps the small businesses we patronize in the region. The powerlines would negatively affect the economy of that area because if the powerline is constructed, we (and others) will go elsewhere to snowmobile because no one wants to spend the weekend riding powerlines. The beautiful view from Coburn Mountain would be gone, and the wildlife displaced (if not destroyed).

The beauty of our Maine woods is at stake, I urge you to disallow CMP to run these lines through our state, as the lines will destroy the beauty of the region, impact the fish and wildlife that make the area their home and provide no benefit to the Maine people.

Carrie Warren
Sent from my iPad

From: Jim Wright
To: Hinkel, Bill
Subject: NECEC line approval
Date: Tuesday, May 14, 2019 7:20:04 AM

Mr. Hinkel,

> *I have a lake house and property on Lake Moxie that abuts this proposed project and am in full support of the NECEC line! I see in no way at all in which this will adversely affect my quality of life there. I see many benefits to the NECEC line like cleaner energy, reducing energy costs for Mainers, adding tax base to local communities, good Maine jobs to build and maintain the line, availability of fiber for high speed internet to rural communities, hunting, fly fishing, hiking, snowmobile and ATV opportunities in the corridor. But most importantly its being built with in the best interest of current and future generations of Mainers. PLEASE APPROVE THIS BENNIFICIAL PROJECT!! THANK YOU!!*

Jim Wright
mastermaineguidejim@gmail.com

From: Sherwin Start
To: Hinkel, Bill
Subject: TRANSMISSION LINE CORRIDOR .
Date: Monday, May 13, 2019 11:53:07 PM

THIS TRANSMISSION LINE Is Just The beginning of one f the greatests “LAND RAPES” since the ALASKA PIPELINE ! IT has the Potential to destroy EVERY THING AROUND IT FOR MILES ! DURING ITS CONSTRUCTION IT WILL destroy 145 MILES of PRIMAL FOREST ,NUMEROUS STREAMS (STREAM THAT SOME TOWNS GET THEIR POTABLE WATER FROM) DOZENS OF WET LANDS and take valuable TIMBER PRODUCTION LANDS Out of production -FOR-EVER ! In addition it will take thousands of ACRES of land off the MUNICIPLE Tax Roles to boot ! MEANWHILE the people of MAINE Will not get not so much as 1 kilowatt of power from it !BUT the The rate PAYERS that pay CMP EVERY MONTH WILL have to pay to MAINTAIN It and pay for the side affects that that it causes ! I cannot understand how the GOVERNOR & THE P.U.C. can be “DUPED” in believing that this power transmission line will benefit the people of the STATE of MAINE !

SHERWIN A. START
Springvale ,Maine

Edward Mardosa
48 Macomber Hill Road
Jay, ME 04239

May 8, 2019

Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333-

RE NEW ENGLAND CLEAN ENERGY CONNECT

Dear Bill;

I am a resident of Jay, Maine. I support this project for many reasons. I like the fact that it's clean hydropower, carbon emissions will be reduced, its sited on the existing CMP corridor and uses their working forest to connect with HydroQuebec, its going under the Kennebec River and we will continue to be able to use enjoy additional acres of land in conservation. In additional we will receive economic and tax benefits from the project similar to the MPRP which they completed in 2015.

Regards,

Edward Mardosa

Lillian Searles-Burbank
211 Macomber Hill Road
Jay, Maine 04239

May 8, 2019

Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, Maine 04333

RE: New England Clean Energy Connect

Dear Bill;

I am a resident of Jay and I support the New England Clean Energy Connect project. I am in favor of clean renewable energy projects for our future. This project helps reduce Maine and New England's carbon emissions. It reduces generation-related greenhouse gases and will deliver clean reliable hydropower. I believe the benefits outweigh the environmental impacts associated with this project.

Yours truly,

Lillian Sears-Burbank

Lillian Searles-Burbank

From:	sshores
To:	Beyer, Jim R; Hinkel, Bill
Subject:	The NECEC Attempted ruination of our North Woods.
Date:	Wednesday, May 15, 2019 3:44:15 PM

Sirs,
Listen to the 72% and growing population of Maine people we do NOT want this CMP/Spanish permanent destruction of our woods for their greedy profits.
Note There are over 5000 SAY NO TO CMP now and we vote.
Thank you,
Vince Mecca

Sent from my Verizon, Samsung Galaxy smartphone

MASSACHUSETTS
HIGHTECHNOLOGYCOUNCIL

Dedicated to Growth... Committed to Action

May 14, 2019

Mr. Bill Hinkel
Permitting and Compliance Regional Supervisor
Maine Land Use Permitting Commission
22 State House Station
Augusta, ME 04333

Re: Mass. High Tech Council Comments in support of New England Clean Energy Connect (NECEC)

Dear Mr. Hinkel:

The Massachusetts High Technology Council (the "Council") supports the proposed New England Clean Energy Connect (NECEC) project because it offers Massachusetts electric ratepayers as well as electric customers throughout New England, a cost-effective, clean-energy solution that will help contain electricity costs, protect ratepayers and deliver annual savings in the wholesale electricity market.

The Council is an organization of CEOs and senior executives representing technology companies, professional services firms, and academic and research institutions dedicated to creating and sustaining conditions that support investment and job growth in Massachusetts. Our members are growth-oriented, knowledge-intensive employers and institutions that develop, deliver and depend on technology products, services and innovations to advance their organizational objectives.

When implemented, the NECEC will deliver significant reductions of carbon emissions and offers electric ratepayers a cost-effective, clean-energy solution by way of readily available hydropower from Canada that will provide significant reductions of carbon emissions at a tremendous value.

The NECEC project represents a key element of the Commonwealth's groundbreaking 2016 law, An Act Relative to Energy Diversity, which featured bipartisan cooperation between Governor Charlie Baker and legislative leaders to reduce energy costs, strengthen the state's clean energy economy and make progress towards Massachusetts' greenhouse gas reduction requirements, which are legally mandated under state's Global Warming Solutions Act of 2008.

The NECEC is expected to deliver annual wholesale electricity cost savings of $174 million for Massachusetts, remove 1.4 million metric tons of carbon emissions from the environment, deliver up to 1,200 megawatts (MW) of clean hydropower from Eastern Canada thereby ensuring a more reliable electricity grid along and reduce reliance on electricity generated with fossil fuel resources.

The Council is proud to join a broad coalition of stakeholders from Massachusetts and across New England that support NECEC including forward-looking business and environmental organizations. On behalf of the Council and its members, I thank you for your consideration and urge you to act favorably on the NECEC project.

Sincerely,

Christopher R. Anderson
President

Bill Hinkel, Permitting and Compliance Regional Supervisor May 16, 2019
Land Use Planning Commission
Department of Agriculture, Conservation and Forestry
22 State House Station
18 Elkins Lane
Augusta, Maine 04330

Re: Central Maine Power Company's Application for Site Location of Development Act Permit and Natural Resources Protection Act Permit for the New England Clean Energy Connect-Public Comment

Dear Mr. Hinkel,

This letter serves as public comment from the West Forks Plantation, an intervenor in the DEP, in reference to CMP's Site Application for the New England Clean Energy Project. I wish to submit these comments to the record.

In September 2018, residents and landowners in the West Forks Plantation voted to oppose NECEC. In the proceedings the town has been an in-active intervenor. As a newly elected assessor in the West Forks Plantation, I wish to submit our position. At this point in the application process, it is apparent that sheer numbers of inaccuracies, lack of clarity and misleading data in the Applicant's testimony, as well as mischaracterization of "clean," needs to be addressed.

The West Forks is in the epicenter of the proposed 145-mile corridor and the first organized community on the 53-miles of proposed new construction of the corridor. We consider the West Forks to be the 'doorstep to the North Woods,' where outdoor recreation and tourism is our lifeline. We have seen over 100,000 people a year recreate on our two class A Rivers - the Kennebec River Gorge and the Dead River - for whitewater boating, commercial and private rafting as well as canoeing, kayaking and fishing.

In the winter, the greater Forks area is also a major destination for snowmobiling, because of destinations that include Grand Falls, Coburn Mountain and a central trail grid leading out in all directions. This region of western Maine is considered one of the most scenic and well maintained anywhere in the state. We are also the central "Hub" of Old Canada Road National Scenic Byway where hundreds of thousands of tourists travel between Quebec, the Maine coast, and other southern locations.

This area attracts not only visitors, but also residents and camp owners who make this place their homes and second homes. Just to our north, the Boundary Mountains and the North Woods, are one of the last places on the east coast of the U.S. that have been safe from "hard commercial sprawl" and we want to keep it that way.

When CMP first proposed the NECEC corridor, their claim in their application was that the north woods would not be impacted by the 300-foot-wide corridor carrying 1,200 megawatts

of HVDC electricity. But hard copy data provided by Iberdrola shows that the DC lines were only on half of its width. CMP has thus far failed to be clear about what has been proposed on the second half of their 300-foot-wide corridor. Representatives of CMP, and Western Mountains and Rivers Corporation have stated on record in public meetings that CMP would build this corridor with or without the Hydro Quebec power lines. I also serve as the Vice Chairman of Old Canada Road (Group 1) and was witness to those comments during an OCR Scenic Byway meeting, in which CMP representatives were invited to speak, as well as other public meetings in the area as well.

CMP claims that the corridor was laid out to avoid adversely impacting sensitive environmental areas and would not pass over important ridgelines are incorrect. In fact, the corridor has 13 hard turns to the south, west, and east, between the northern base of Coburn Mountain and the Kennebec River Gorge, a distance of 12 miles. More than a decade ago Plum Creek, LURC, the DEP and the DOC negotiated setting aside this area for future wind development as part of a Plum Creek, Moosehead Lake Land Development Project. CMP was working quietly in the background on getting powerlines in and out of this area long ago.

The proposed corridor rises to an elevation of 2700 feet over the ridgeline of the north shoulder of Coburn Mountain. The corridor path turns to follow a gridline of future wind towers proposed on the southwest slopes of Johnson Mountain, then a turn to a proposed substation within a few hundred yards of OCR Scenic Byway. The blueprints for that project were prepared years ago. CMP's part in this is the delivery of electricity on the new corridor. This explains the other half of the 300-foot-wide corridor, along with proposed wind towers, in the Boundary Mountains on the U.S. side of the international border.

From the substation, the corridor passes over Cold Stream to the base of Cold Stream Mountain, where the first of three 97-foot temporary test turbine wind towers were built near the peaks of Cold Stream, Chase, and Williams Mtn. Those mountains as well as Misery Ridge, are part of a LUPC approved area for wind development. CMP, it seems, forgot to mention that. Beyond Cold Stream Mountain, the corridor takes another hard turn and travels directly through 6 miles (8000 acres) of the Cold Stream watershed that was purchased by Trout Unlimited and the State of Maine. The Cold Stream Watershed was put into permanent conservation to protect the single most important spawning areas of the Kennebec River. These matters are part of a growing list of CMP's misinformation and clever denials. When the proposed corridor finally reaches the Kennebec Gorge, still in the West Forks, there is no clarity on what types or how many lines are to cross over, or under the gorge, or whether this will resurface over and over in the future. There is little, if anything etched in stone about this entire Project.

We, in the West Forks, simply do not have enough information, nor the correct data, or even evidence of studies to know what two companies from foreign nations (Iberdrola of Spain and Hydro Quebec, owned by the Canadian government) are trying to basically push down our throats. Let's be clear, CMP/Iberdrola/Avangrid has been waiting for a crack in the armor in the Boundary Mountains, and the North Woods for decades.

The NECEC corridor, would have an unrecoverable, adverse environmental and economic impact in our town, upper Somerset County, and Northern Maine. The lifestyles of both residents and landowners in the West Forks as well as those who come to visit and enjoy outdoor recreation

will be heavily impacted. Those who travel our National Scenic Byway will see the web of scars for miles in what was one of our last mountain wilderness settings if the corridor is allowed.

Representatives from Iberdrola, CMP and Western Mountains and Rivers Corporation, are on record as stating in open public meetings and hearings, that they mitigated with the communities and rafting outfitters up along the Kennebec Gorge. That is blatantly incorrect. There is only one community that is located up in the Gorge and it is the West Forks Plantation. Neither our town's assessors, nor residents, outfitters, paddling clubs, any of our businesses, or camp owners, were contacted during the year and a half that CMP and WMRC were mitigating a Memorandum of Understanding. The West Forks would like to see the minutes to those meetings made public and requests that they be included in a data request from the Department to the applicant.

The statement of "CLEAN ENERGY" traveling on massive HVDC powerlines through our town is questionable and under considerable debate.

Over the last three and a half decades, Hydro Quebec has been reengineering lands, rivers, and lakes over an area the size of Colorado, for a mega hydroelectric project called the James Bay Project I, and James Bay Project II. These lands are in northern and eastern Quebec and were considered "barren" by Quebec Hydro and fertile for producing massive dams and hydroelectric power stations and delivery grids. One of the major problems Quebec Hydro deemed as of lesser consequence was that the entire area was already occupied by "Nations of the Cree" and other Inuit's that had been there long before North America had been discovered by Europeans. Also, one of the largest Caribou herds on the planet as well as a unique biodiversity of wildlife, both land and fisheries.

A *Sports Illustrated* article called Torrent of Death[1] described the events that happened after the release of water into the Caniapiscau River from the James Bay Project I. The release of 40,000 cubic feet per second of water in late September coincided with the great fall migration of caribou. These migrations are built into the DNA of caribou, so by instinct the caribou who had done this for many hundreds of generations simply went into the torrent. By the time the migration ended days later over 10,000 caribou that had been swept over 60-foot waterfalls, called Limestone Falls, were dead and many thousands more were broken and maimed. The carnage left so many dead carcasses in the river below that the waters were being polluted and the salmon, char, pike and whitefish in those waters were being poisoned. Also, the drinking water in Cree towns and Villages were polluted. Many of the carcasses had to be airlifted from the river and others had to be pulled out by heavy equipment. Where were the studies to prevent this from happening?

Migration habitats are not easy to change, and we don't know if at some level if this still occurs. Cree and Inuit Towns and Villages across Quebec are still being uprooted and displaced while mitigation is forced on them.

Entire habitats have been drowned by new reservoirs, some no more than flooded shallow mud flats sometimes laden with mercury and warming in the long Canadian days of summer. These historically warm waters are being dumped into the Hudson Bay and upper reaches of the Atlantic.

Where are the studies and data that our laws in Maine and the U.S. would require before accepting this "Clean Energy" as part of our electrical grid? HOW DO WE CALL THIS "CLEAN

[1] https://www.si.com/vault/1984/10/15/627645/the-torrent-of-death (last visited May 14, 2019)

ENERGY"? Now, CMP wants to exploit the boundary Mountains, the North Woods, The West Forks, and the rest of Maine with the same tactics and clever words.

There's blood on those lines coming down from Quebec Hydro that the West Forks and apparently the majority of Mainers want nothing to do with it.

The inconsistencies in CMP's testimony, as well as lack of details in data, lack of studies, and the sheer lack of information of how and why the enormous amounts of DC electricity that are only found one other place on the planet, should be allowed to be unchallenged without further investigation by the DEP, LUPC, the federal EPA, that include the effects on humans, animals, and habitat.

Sincerely,

Peter Dostie
Town Assessor
West Forks Plantation, Maine

Cory Verrill
Pittsfield, ME

May 16, 2019

Mr. Bill Hinkel
Permitting and Compliance Regional Supervisor
Maine Land Use Planning Commission
22 State House Station
18 Elkins Lane
Augusta, ME 04333
Bill.Hinkel@maine.gov

Reference: Public comments on work proposed by the Central Maine Power Company (NECEC)

Dear Mr. Bill Hinkel:

Please see the attached document entitled "NECEC GE Screenshots border to Wyman 051619 LUPC". In the course of my due diligence as a Geographic Information System/Engineering Coordinator, I have reviewed the data submitted by Central Maine Power that was posted on the MEDEP website (https://www.maine.gov/dep/gis/datamaps/.) Utilizing Google Earth, I created simple map images along the proposed route. The images I have attached clearly refute the assertion by those opposed to this project that the corridor would impact "pristine forest." The aerial photographs show that the route from the Quebec border in Beattie Township to Moxie Pond was thoughtfully conceived to minimize environmental impact. Land along this route is the very definition of working woodland and has been so for generations. The assertion that these lands are "pristine forest" imply that the owners of these woodlands are in fact doing an excellent job of managing the land. These woodlands consist of a network of gravel roads and skidder roads connecting harvest areas to log yards. The woodland owners have a long history of allowing public access to these areas while maintaining and enhancing the value of their land. The acreage proposed as mitigation by CMP to be conserved will not only increase the value of the Western Maine landscape but also increase opportunities for public access. After reviewing the material submitted by CMP, it is evident that the project team is going to great lengths to minimize environmental impact.

The benefits to Maine through direct and indirect employment in constructing these facilities, municipal tax benefits, broadband connectivity with our Canadian neighbors, and reducing

greenhouse emissions cannot be ignored. I understand that as older baseload plants in New England are retired, the ISO-NE grid is in desperate need of baseload energy sources. I believe this project will satisfy those needs by providing clean, reliable energy to the rapidly growing New England population without significant impact to the Western Maine woodlands.

Sincerely,

Cory Verrill

New England Clean Energy Connect Western Maine Route Images

Public comments by Cory Verrill, resident of Pittsfield, Maine

In reference to work proposed by the Central Maine Power Company (NECEC)

Presented to the Maine Land Use Planning Commission

May 16, 2019

INTENDED TO PRINT 11"x17"

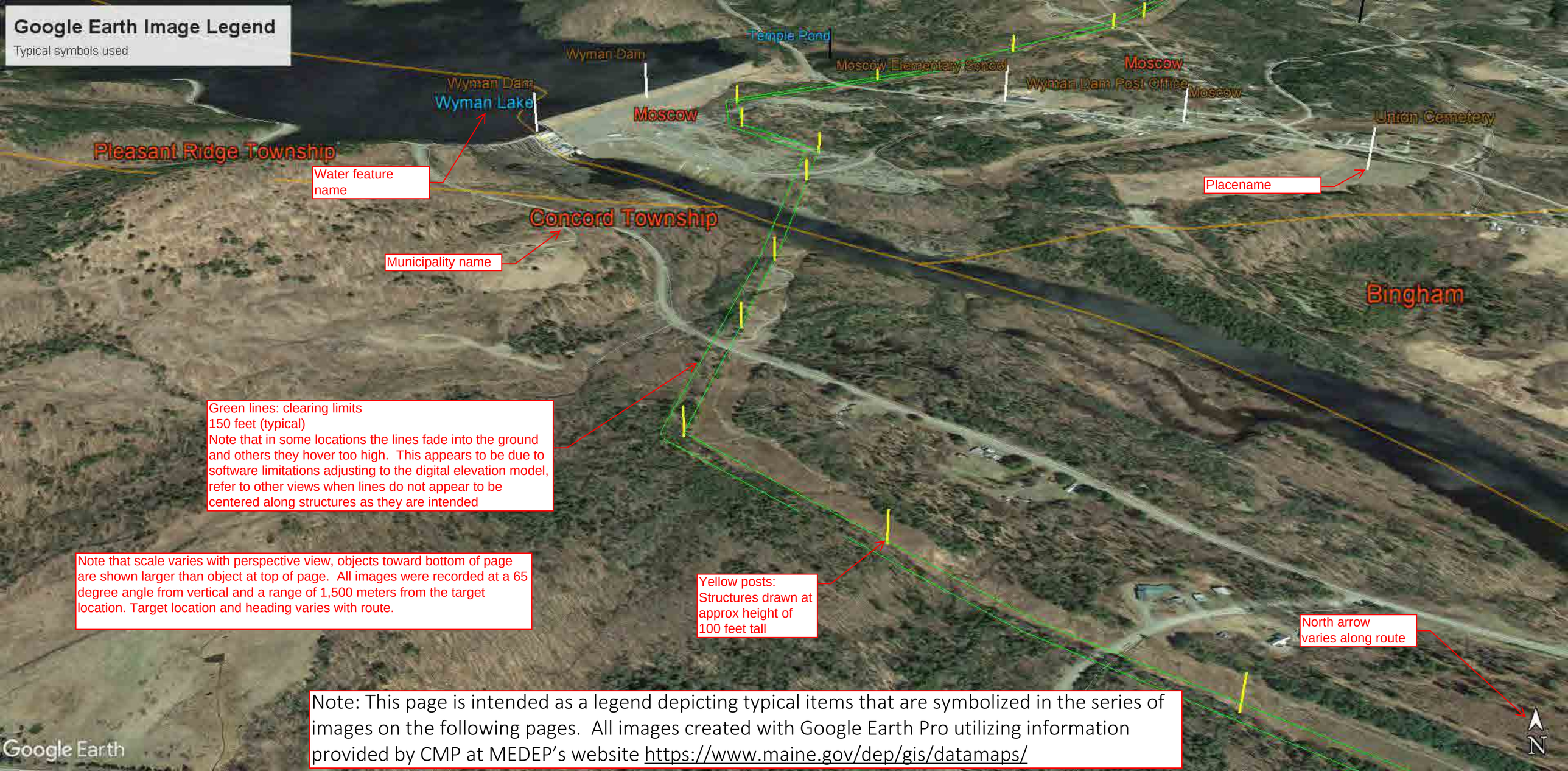
Google Earth Image Index

Red Numbers indicate locations corresponding to center of images in following pages

N

0 5 10 Miles

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User

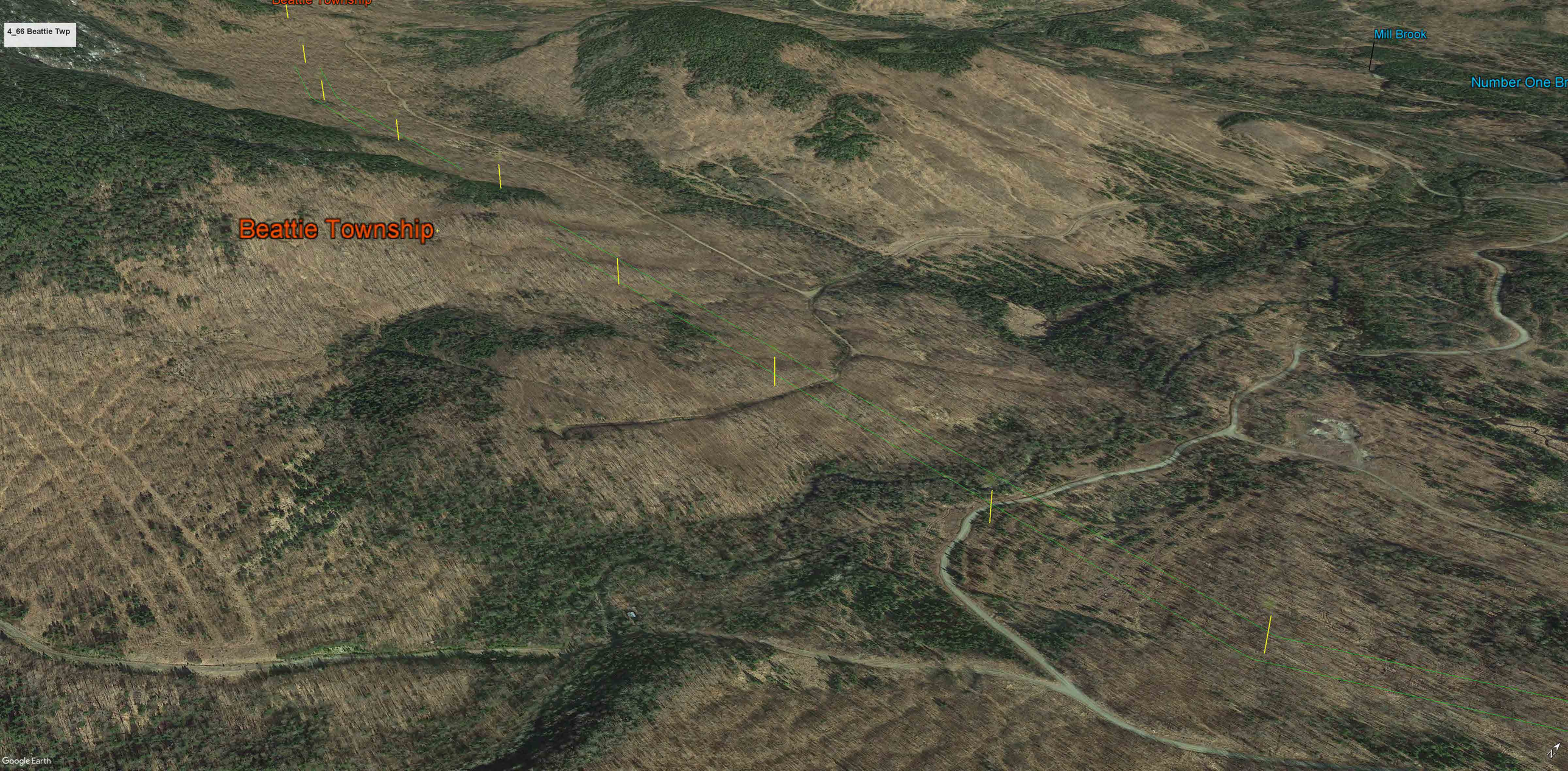


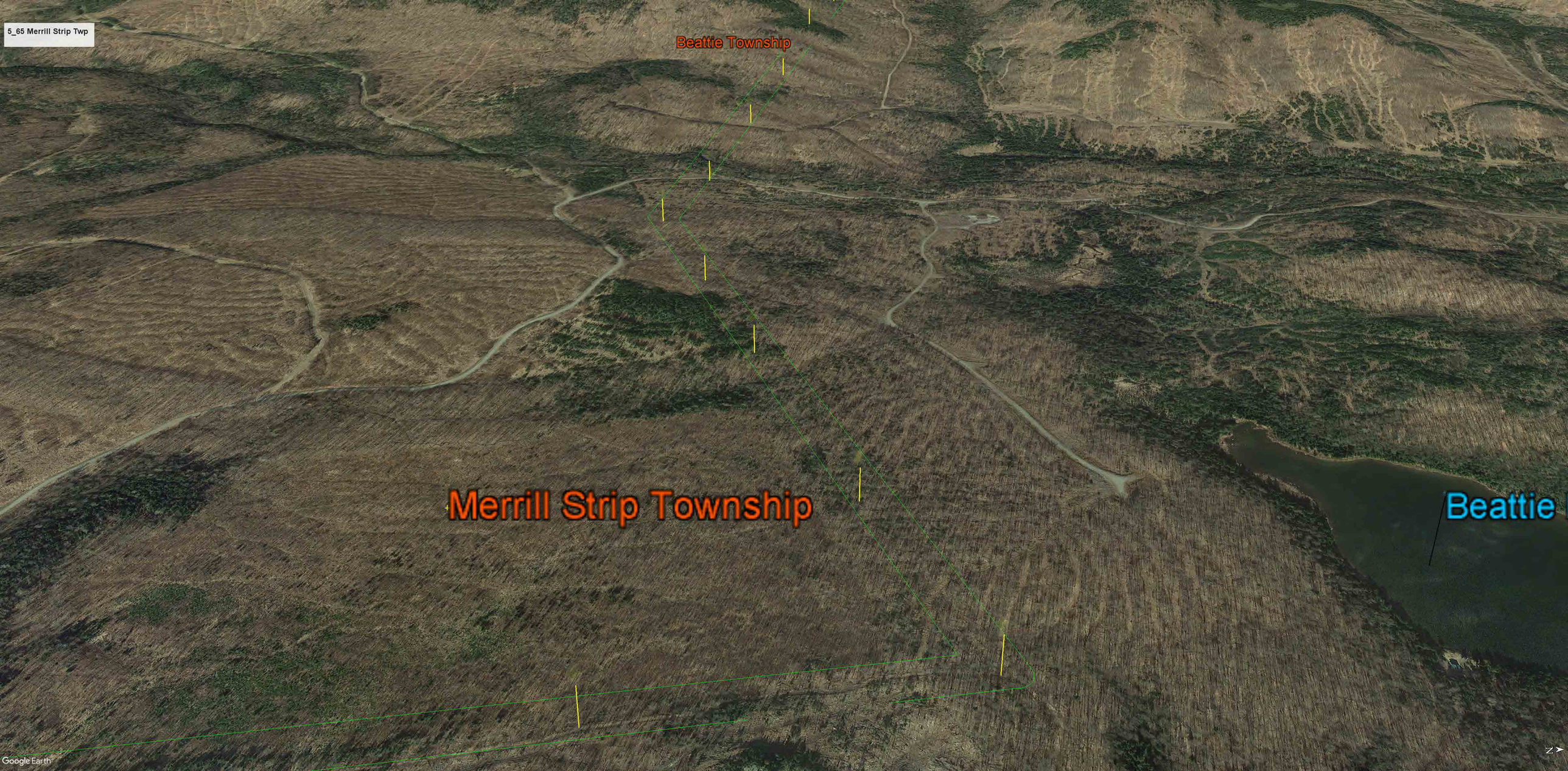
Note: This page is intended as a legend depicting typical items that are symbolized in the series of images on the following pages. All images created with Google Earth Pro utilizing information provided by CMP at MEDEP's website https://www.maine.gov/dep/gis/datamaps/

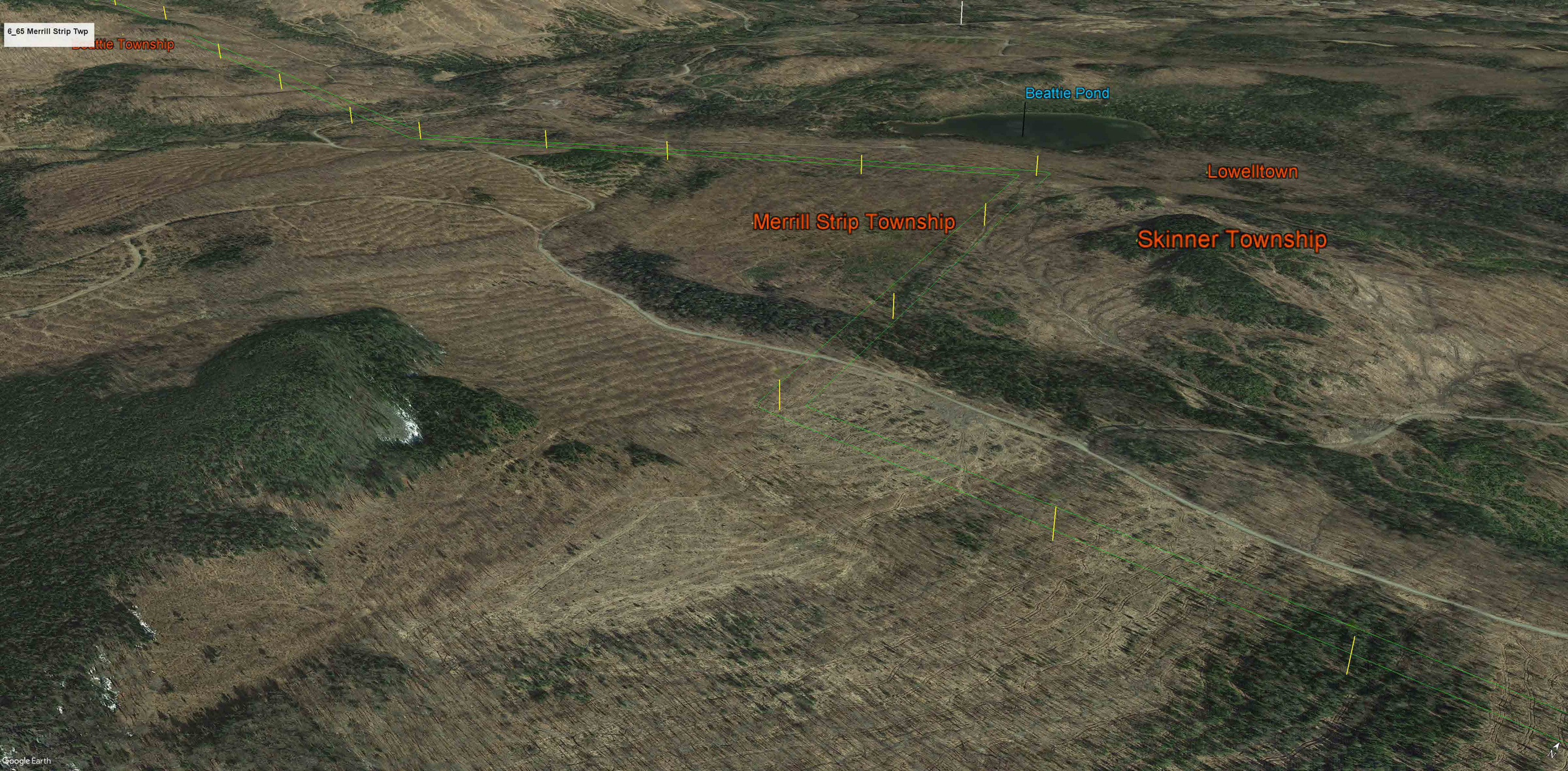

1_69 Beattie at Quebec
NECEC Corridor at Quebec border
Frontenac, Quebec
Google Earth


enac, Quebec
2_68 Beattie Twp
NECEC Corridor at Quebec border
West Branch Mill Brook
Google Earth


3_67 Beattie Twp
West Branch Mill Brook
Mud Pond
Beattie Township
Google Earth

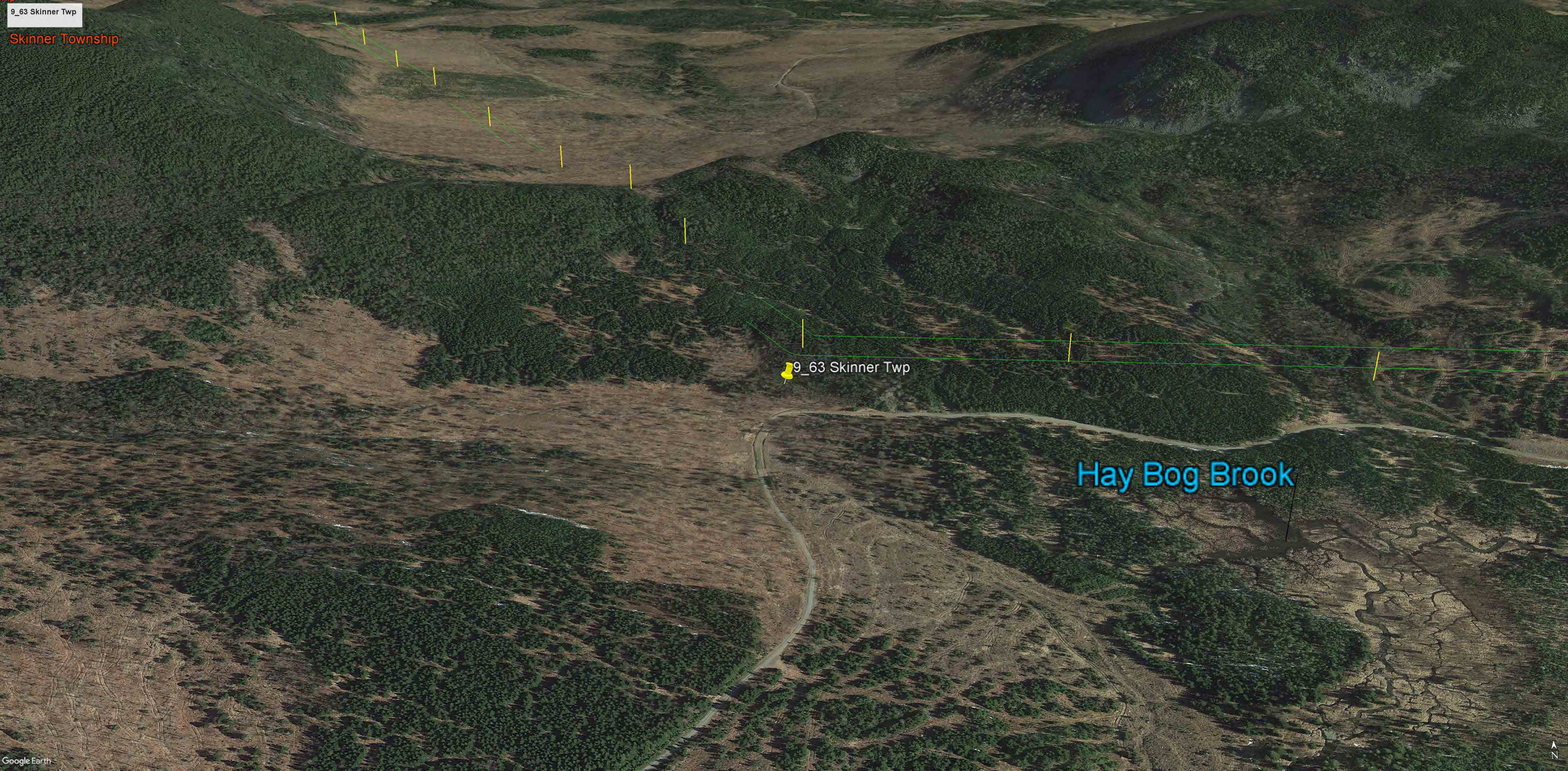

4_66 Beattie Twp
Beattie Township
Beattie Township
Mill Brook
Number One Br
Google Earth


5_65 Merrill Strip Twp
Beattie Township
Merrill Strip Township
Beattie
Google Earth

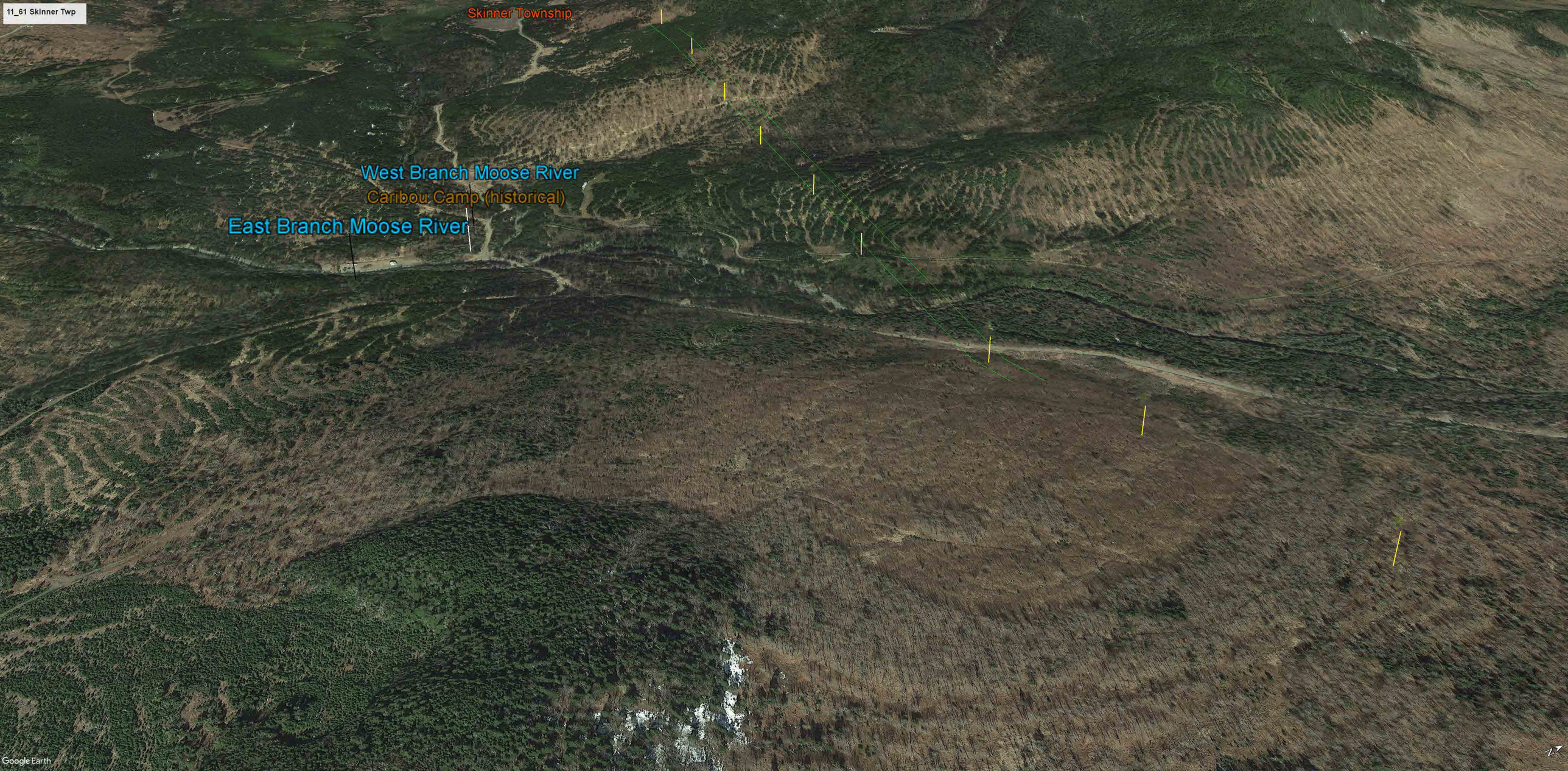

6_65 Merrill Strip Twp
Beattie Township
Beattie Pond
Lowelltown
Merrill Strip Township
Skinner Township
Google Earth


7_64 Skinner Twp
Beattie Pond
Merrill Strip Township
Skinner Township
Lowelltown
Skinner Township
Google Earth


8_63 Skinner Twp
Merrill Strip Township
Skinner Township
Skinner Township
Google Earth

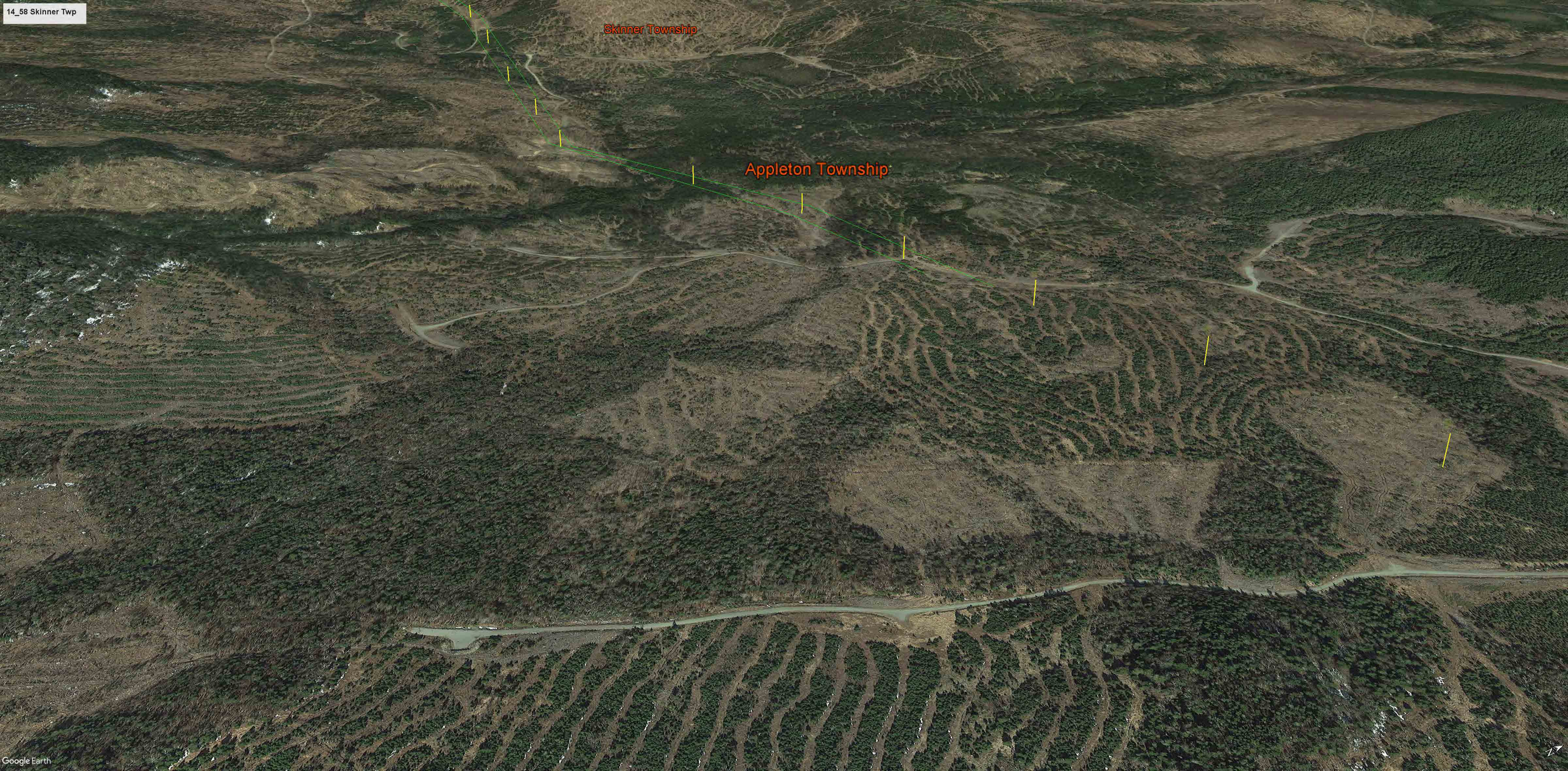

9_63 Skinner Twp
Skinner Township
9_63 Skinner Twp
Hay Bog Brook
Google Earth
N


10_62 Skinner Twp
Hay Bog Brook
Skinner Township
Google Earth
Google Earth


11_61 Skinner Twp
Skinner Township
West Branch Moose River
Caribou Camp (historical)
East Branch Moose River
Google Earth


12_60 Skinner Twp
West Branch Moose River
East Branch Moose River
Caribou Camp (historical)
Google Earth


13_59 Skinner Twp
Skinner Township
Google Earth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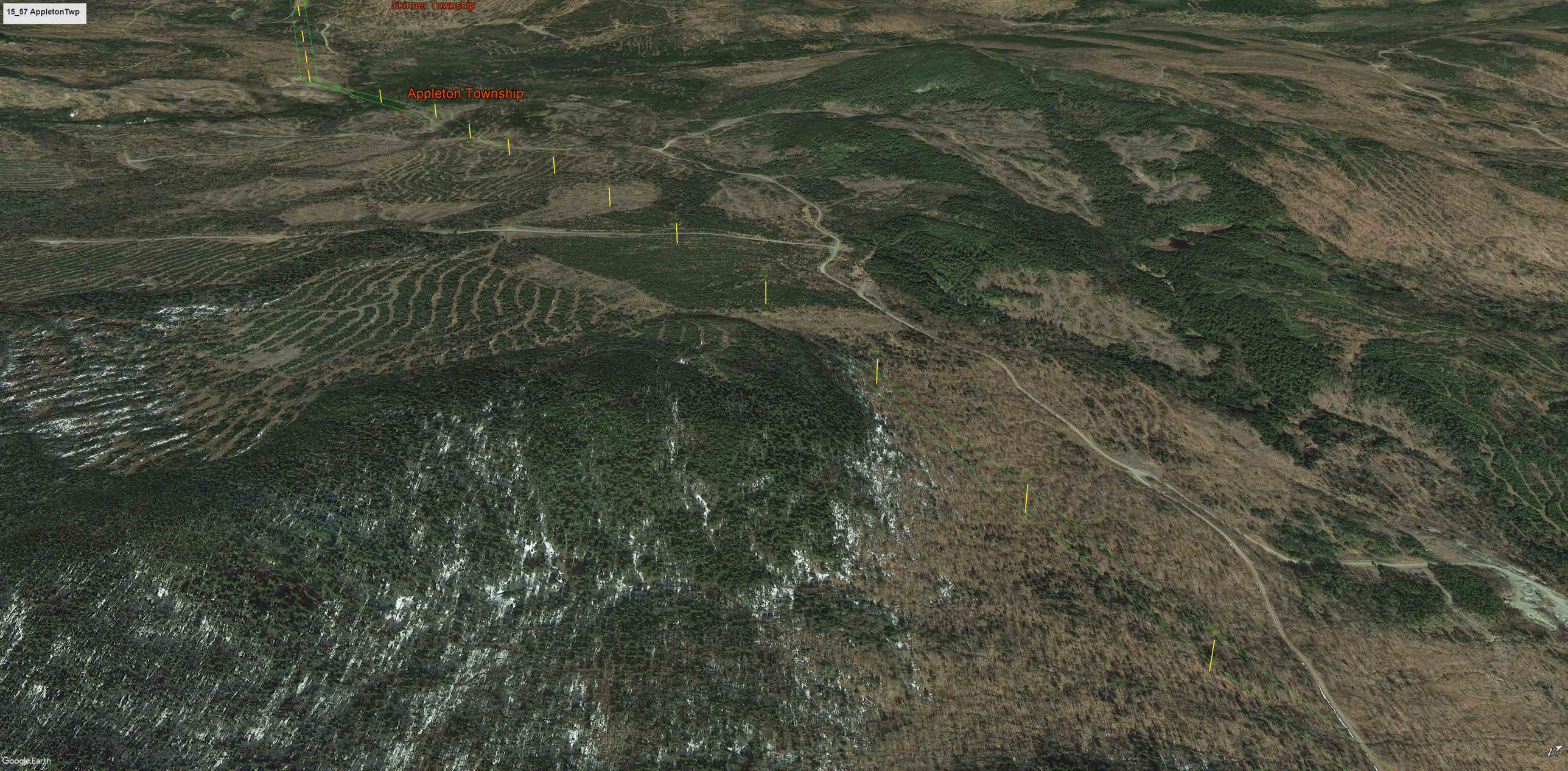
Skinner Township
Appleton Township
Google Earth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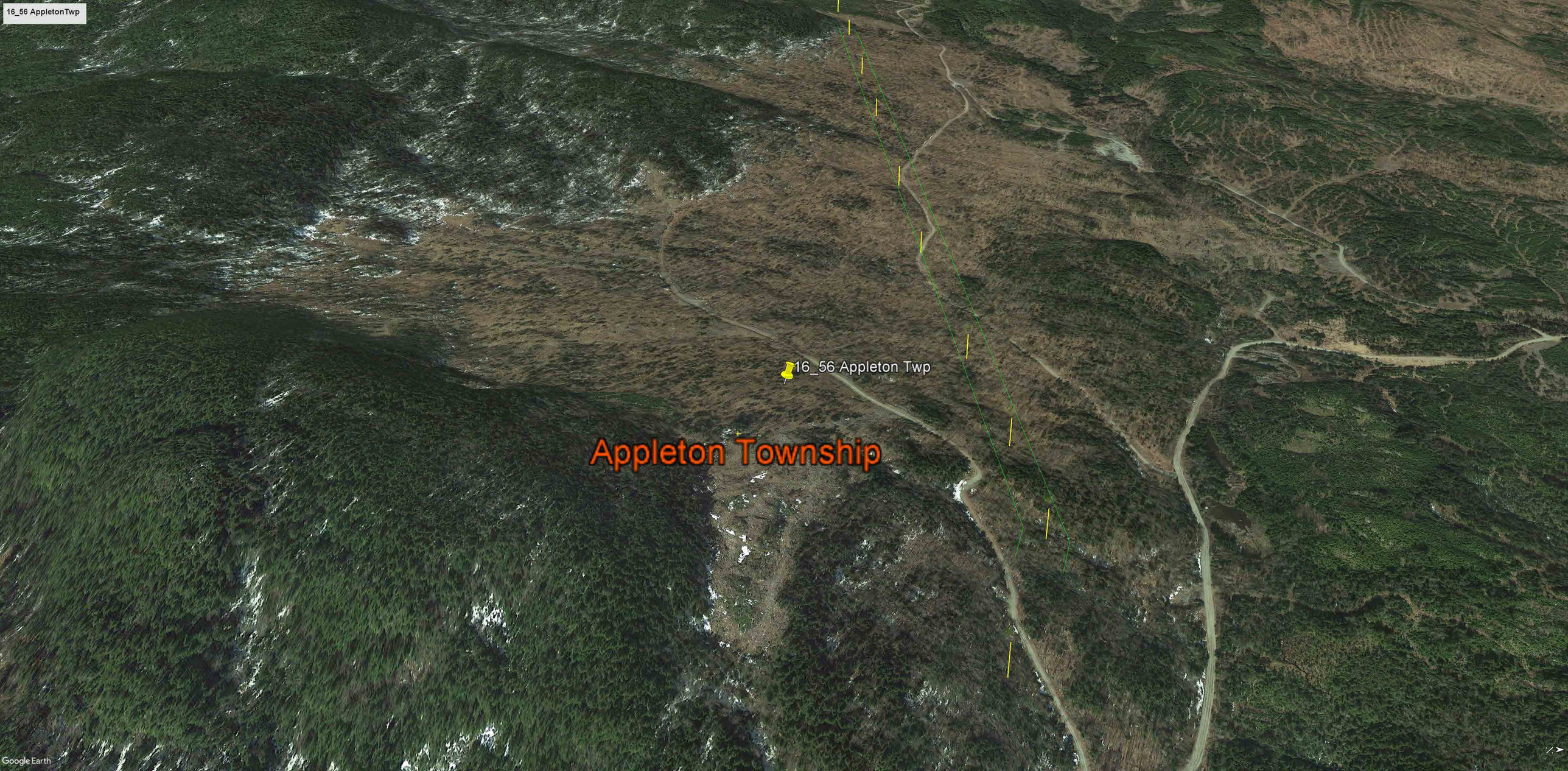
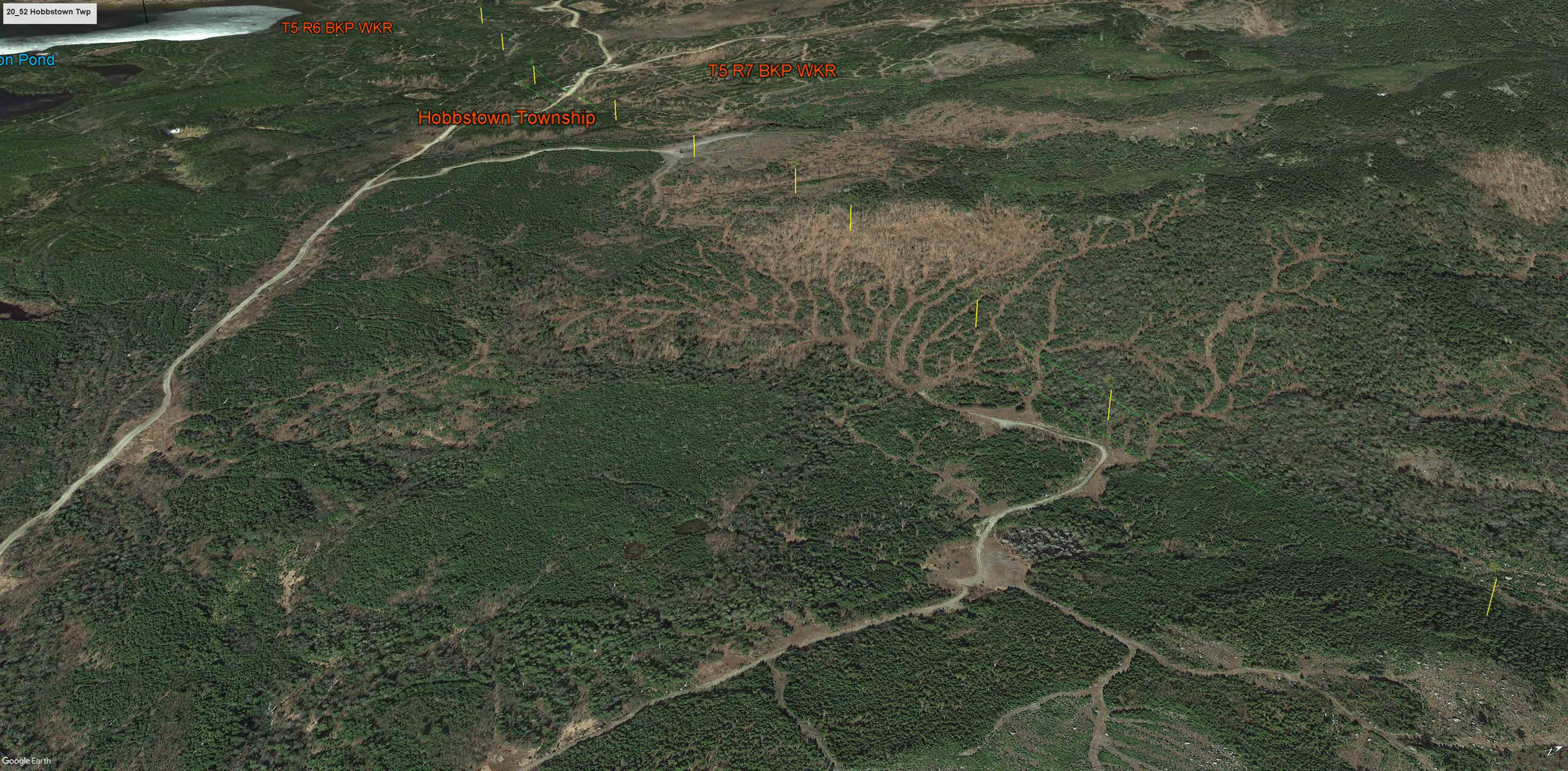
Skinner Township
Appleton Township
Google Earth

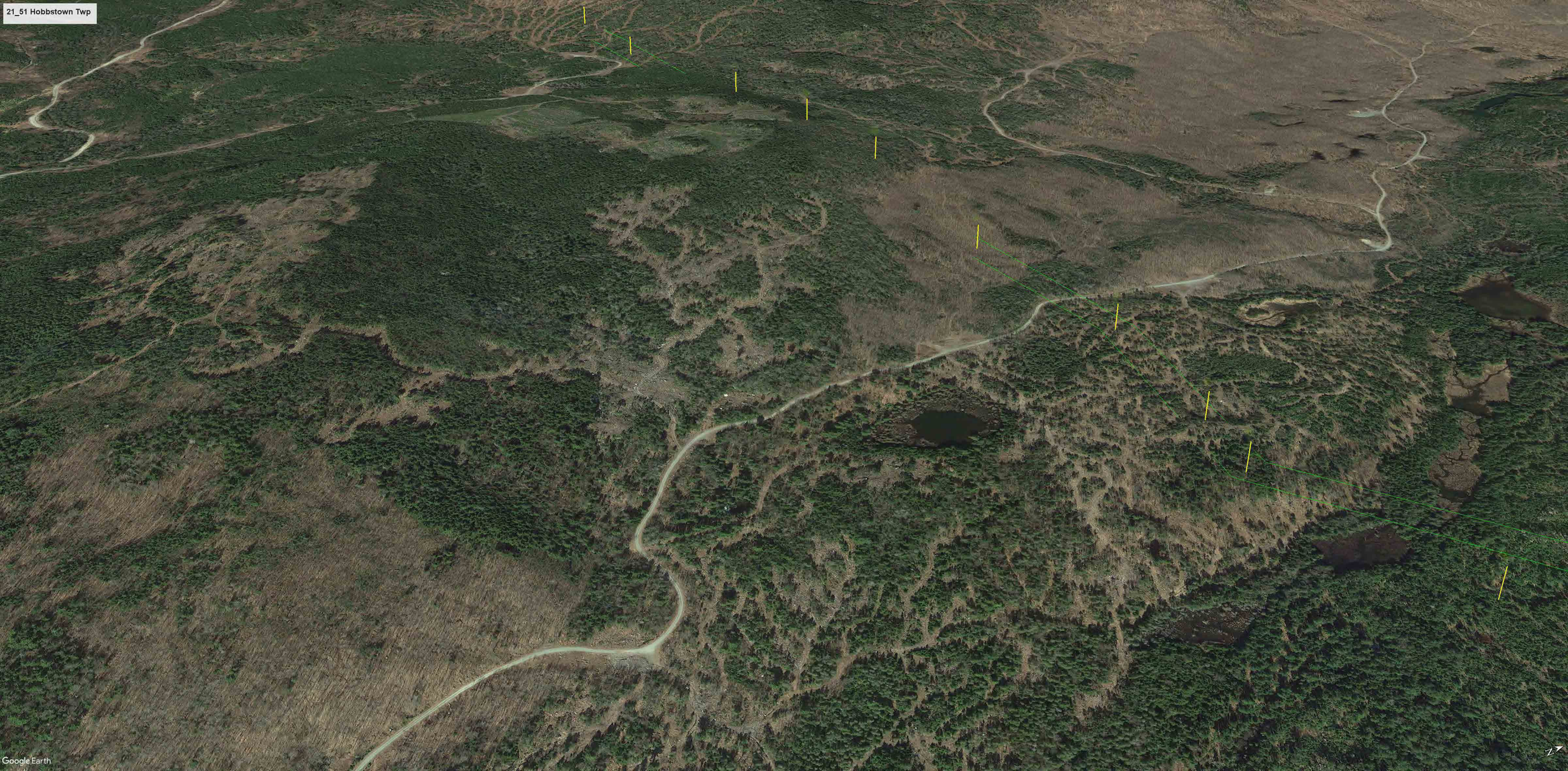

16_56 AppletonTwp
16_56 Appleton Twp
Appleton Township
Google Earth


17_55 AppletonTwp
Appleton Township
T5 R6 BKP WKR
Google Earth


18_54 AppletonTwp
Appleton Township
Google Earth


19_53 AppletonTwp
Appleton Township
Rock Pond
Appleton Township
T5 R6 BKP WKR
T5 R7 BKP WK
nd
Hobbstown Township
Google Earth


20_52 Hobbstown Twp
T5 R6 BKP WKR
on Pond
T5 R7 BKP WKR
Hobbstown Township
Google Earth


21_51 Hobbstown Twp
Google Earth


22_52 Hobbstown Twp
T5 R7 BKP W
Toby Pond
Hobbstown Township
Toby Pond
Google Earth


23_51 Hobbstown Twp
T5 R7 BKP WKR
Hobbstown Township
Toby Pond
Toby Pond
Google Earth


24_50 T5 R7 BKP WKR
Whipple Bog
Whipple Pond
Whipple Pond
T5 R7 BKP WKR
Google Earth


25_49 Bradstreet Twp
T5 R7 BKP WKR
Bradstreet Township (T4 R7)
Moore Pond
Egg Pond
Moore Pond
Egg Pond
Google Earth


26_48_Bradstreet Twp
Bradstreet Township (T4 R7)
Egg Pond
Moore Pond
Egg Pond
Moore Pond
Bitter Brook
Horse Brook
Three Streams
Fourmile Brook
Bradstreet Township (T4 R7)
Google Earth

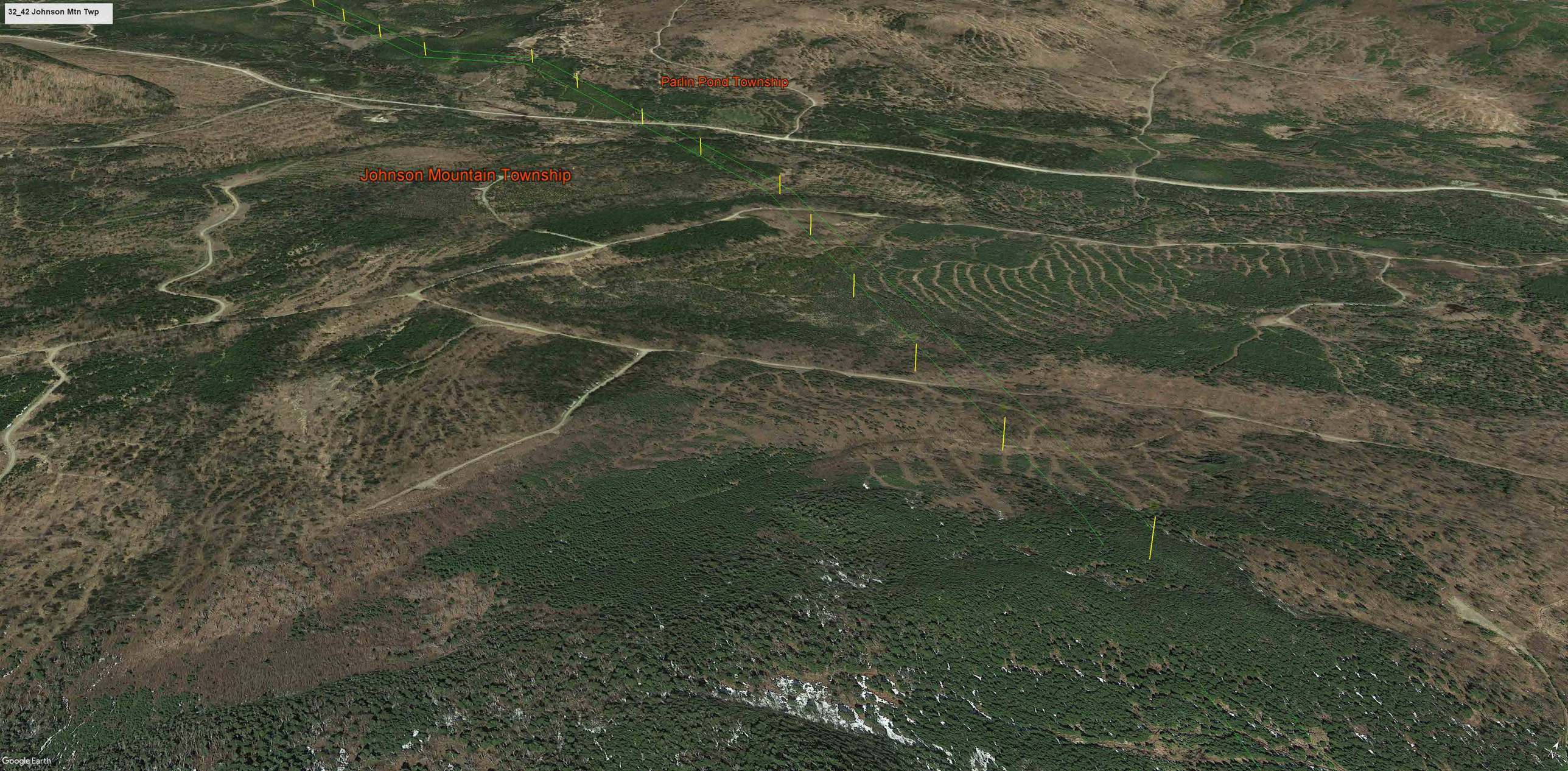

27_47 Bradstreet Twp
Bradstreet Township (T4 R7)
Google Earth


28_46 Bradstreet Twp
Bradstreet Township (T4 R7)
Google Earth


29_45 Bradstreet Twp
Bradstreet Township (T4 R7)
Google Earth

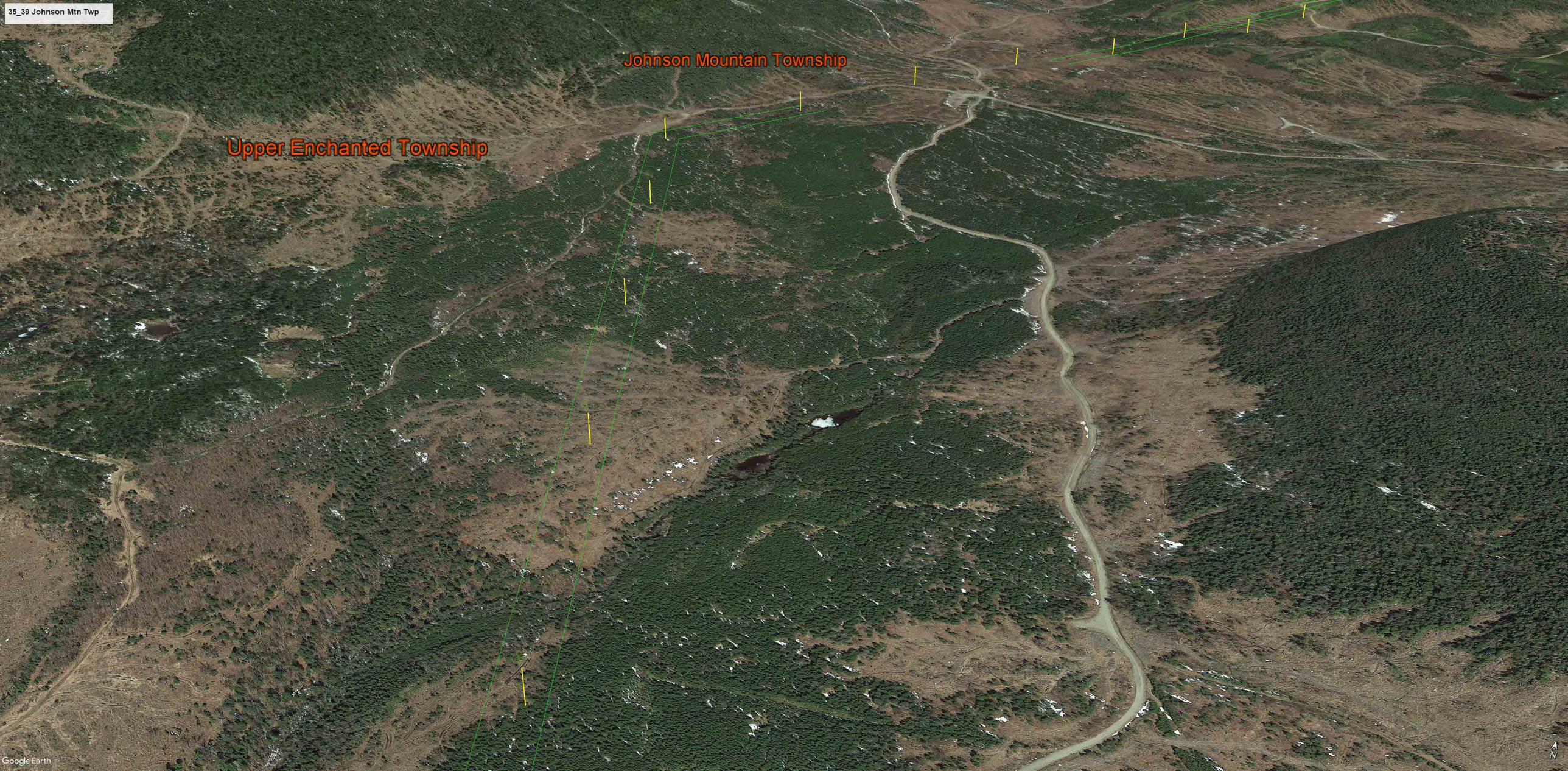

30_44 Bradstreet Twp
Bradstreet Township (T4 R7)
Bradstreet Township (T4 R7)
Google Earth

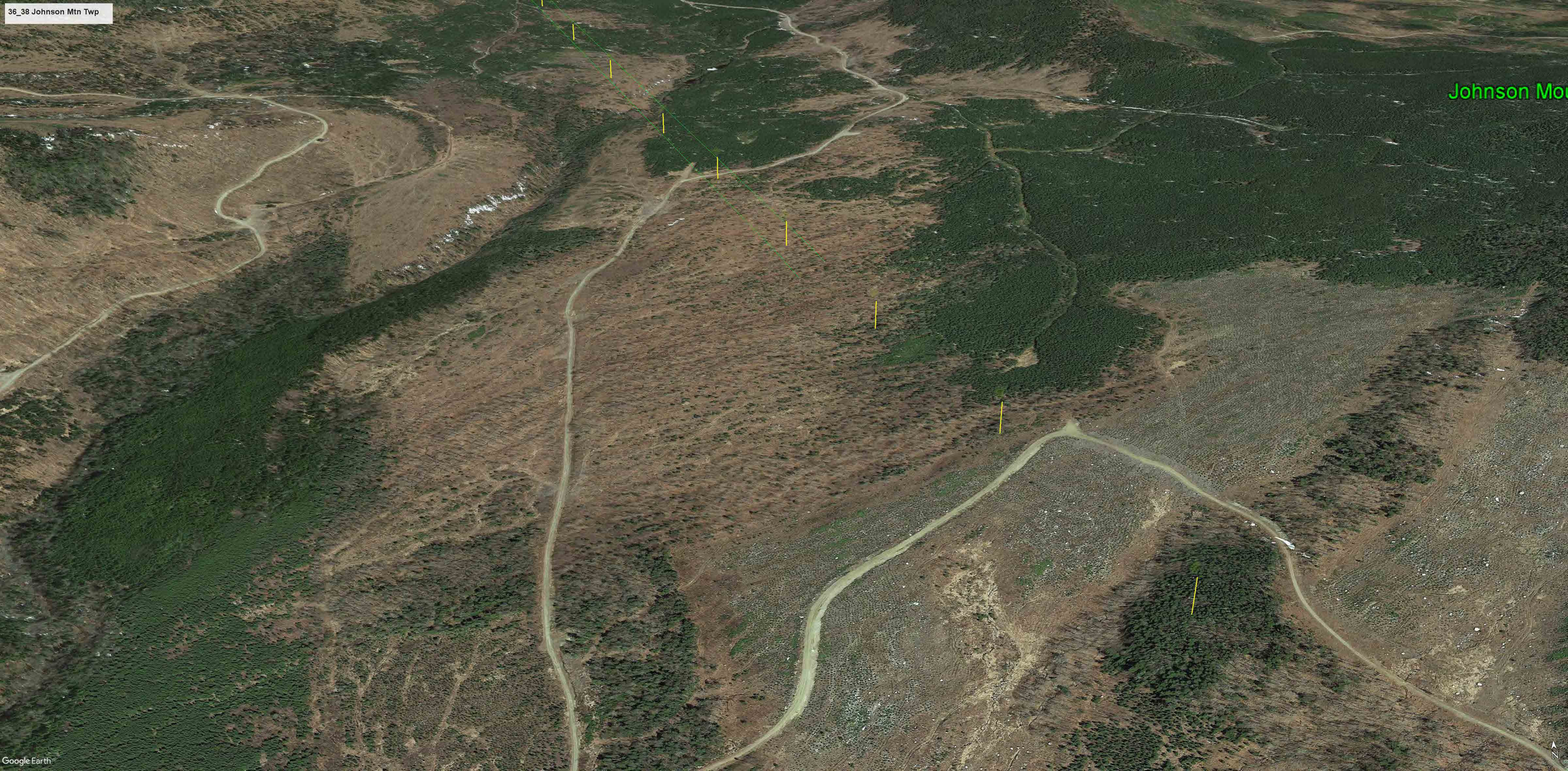

31_43 Johnson Mtn Twp
Bradstreet Township (T4 R7)
Parlin Pond Township
Johnson Mountain Township
Google Earth


32_42 Johnson Mtn Twp
Parlin Pond Township
Johnson Mountain Township
Google Earth

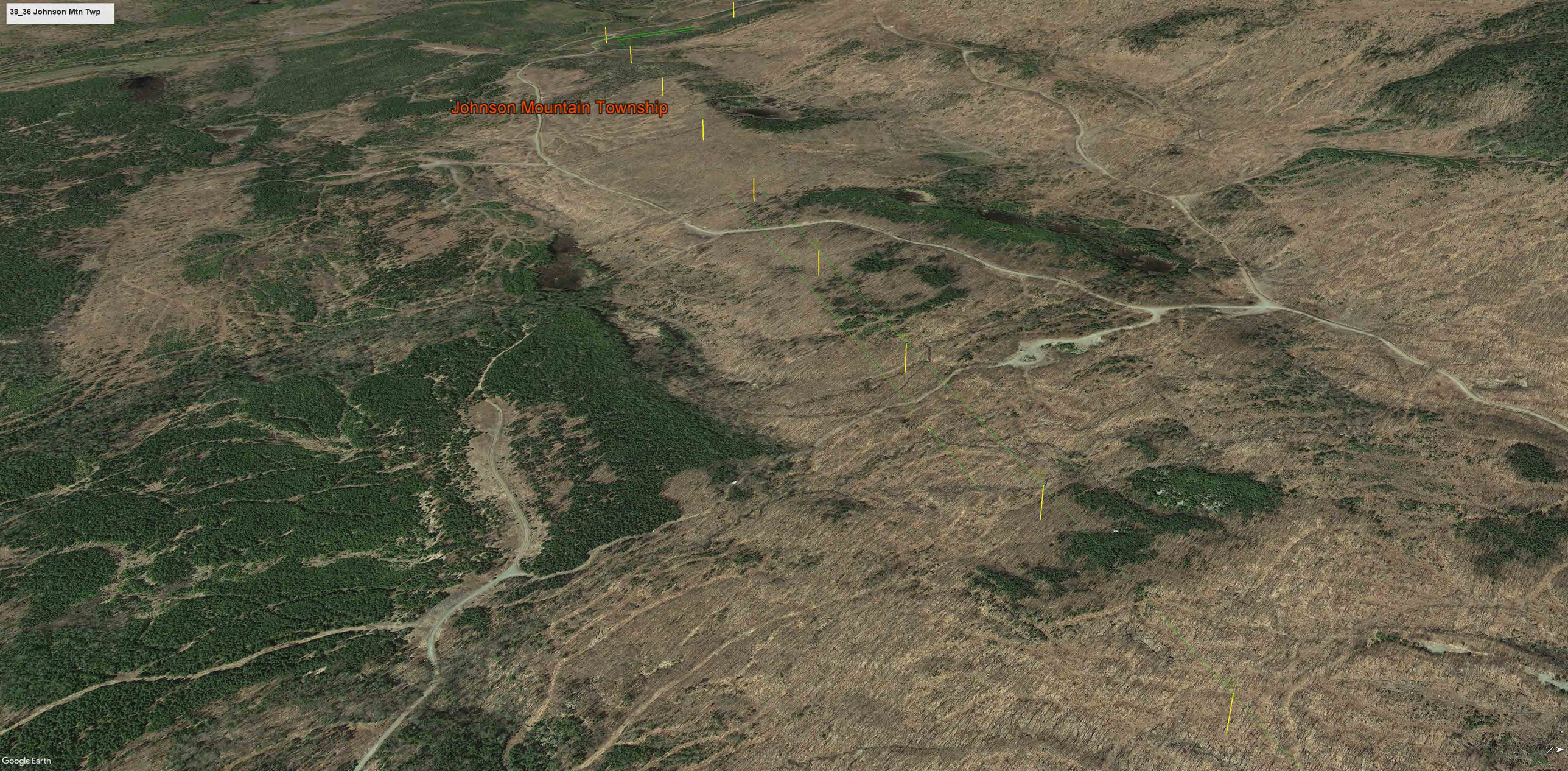

33_41 Johnson Mtn Twp
untain Ponds
Johnson Mountain Township
Parlin Pond Township
Johnson Mountain Township
Google Earth


34_40 Johnson Mtn Twp
Johnson Mountain Township
Google Earth


35_39 Johnson Mtn Twp
Johnson Mountain Township
Upper Enchanted Township
Google Earth
N

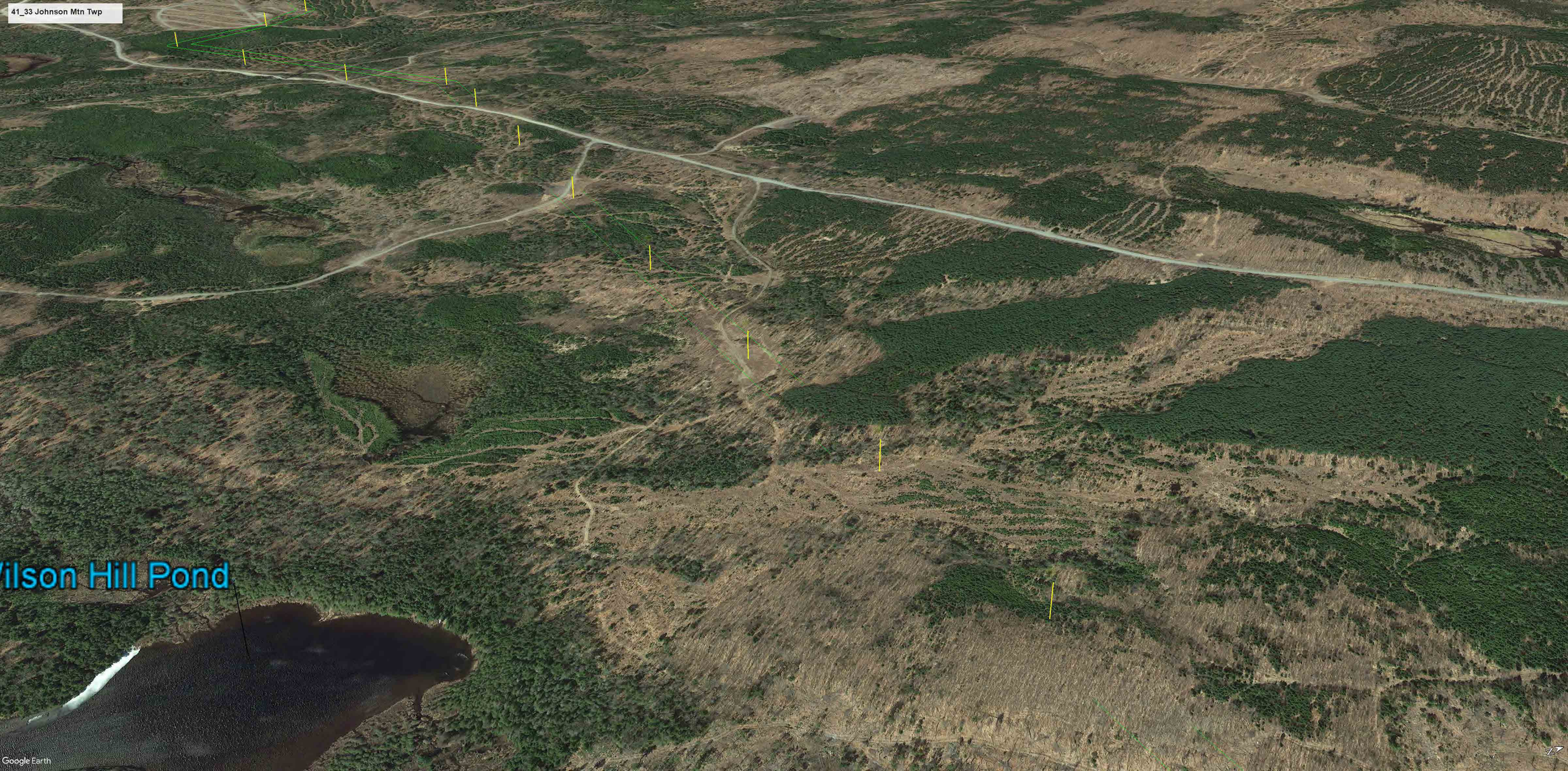

36_38 Johnson Mtn Twp
Johnson Mou
Google Earth

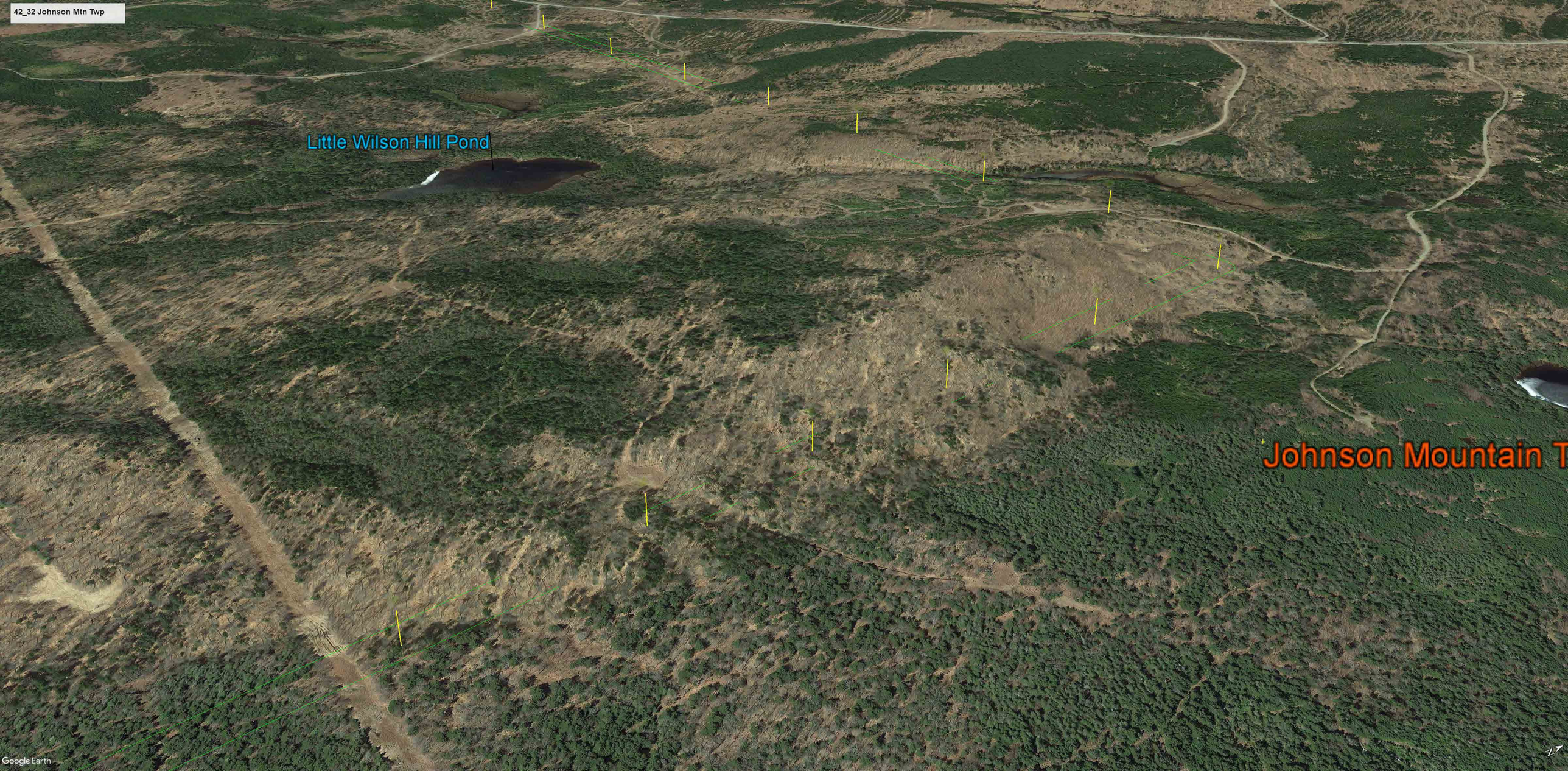

37_37 Johnson Mtn Twp
Johnson Mountain Township
Upper Enchanted Township
Johnson Mountain Township
Google Earth


38_36 Johnson Mtn Twp
Johnson Mountain Township
Google Earth


39_35 Johnson Mtn Twp at 201
Google Earth


40_34 Johnson Mtn Twp at 201 and Cap Rd
Johnson Mountain Township
Google Earth


41_33 Johnson Mtn Twp
ilson Hill Pond
Google Earth


42_32 Johnson Mtn Twp
Little Wilson Hill Pond
Johnson Mountain T
Google Earth


43_31 West Forks Plt
n Hill Pond
Johnson Mountain Township
West Forks Plantation
Google Earth


44_30 West Forks Plt
West Forks Plantation
West Forks Plantation
gan Stream
Google Earth


45_29 West Forks Plt
West Forks Plantation
Stream
Google Earth


46_28 West Forks Plt
West Forks Plantation
Google Earth


Image 47
West Forks Plantation
Moxie Gore (T1 R5)
Google Earth
N

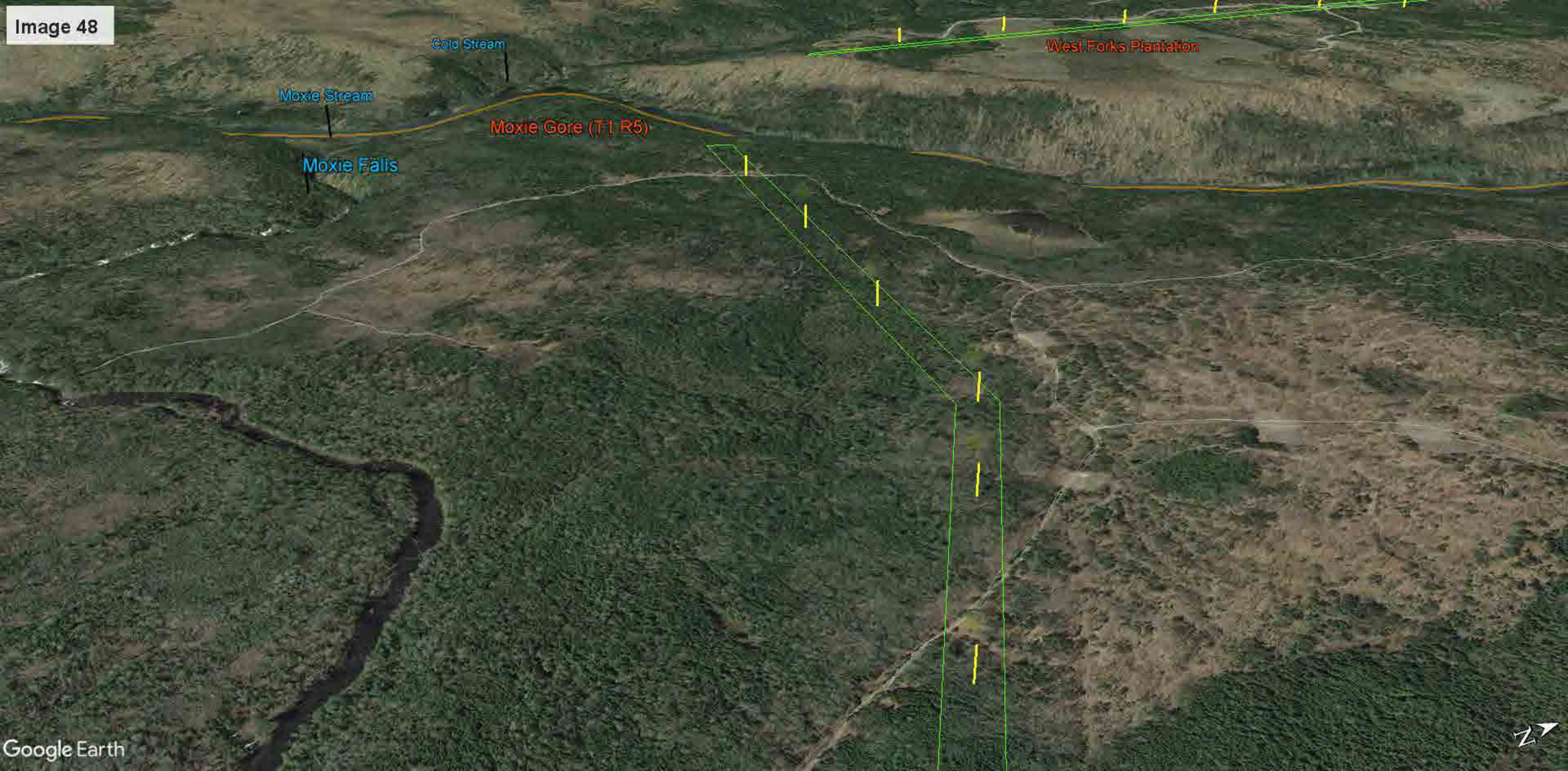


Image 48
Cold Stream
Moxie Stream
Moxie Gore (T1 R5)
Moxie Falls
West Forks Plantation
Google Earth

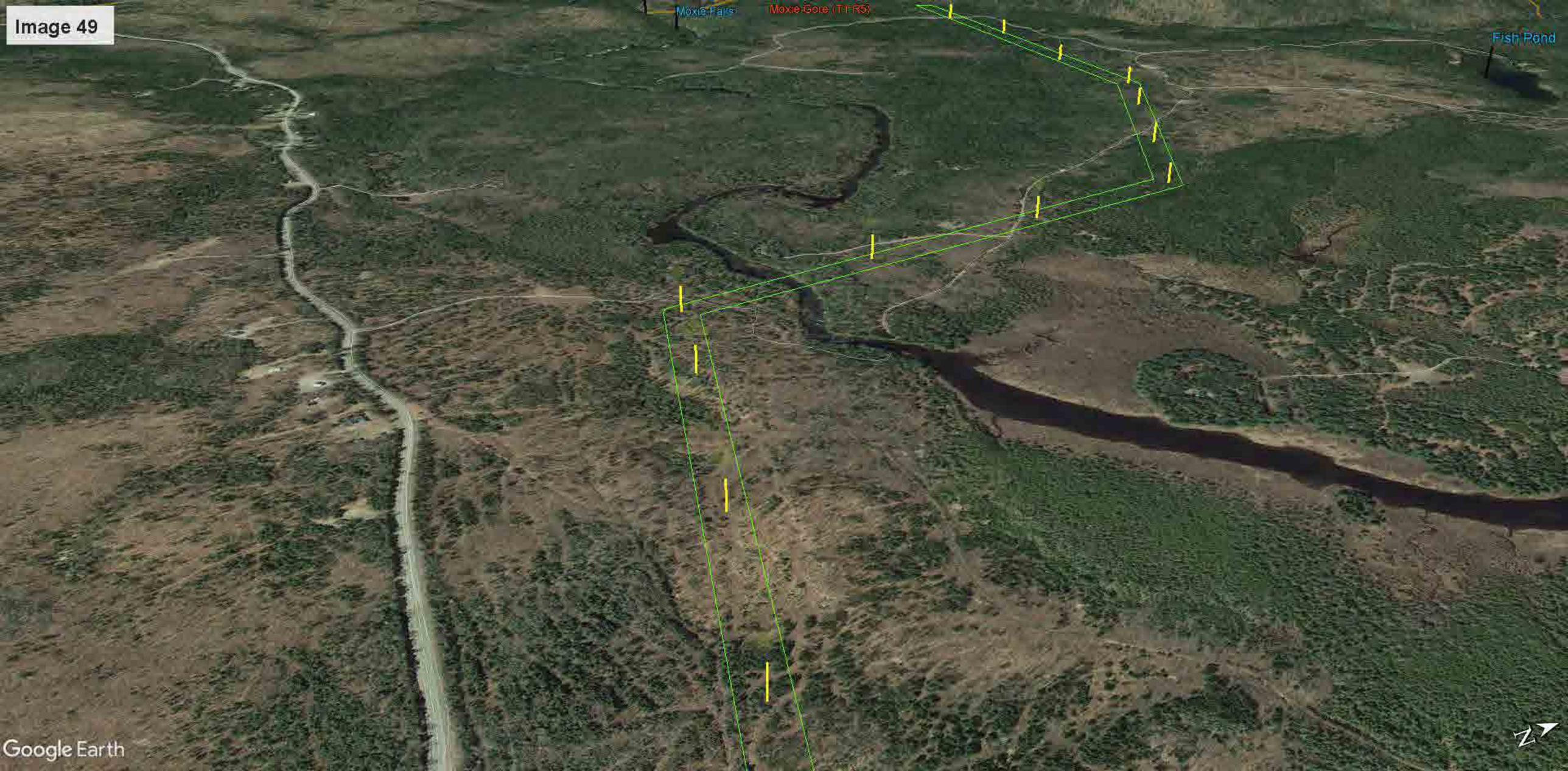


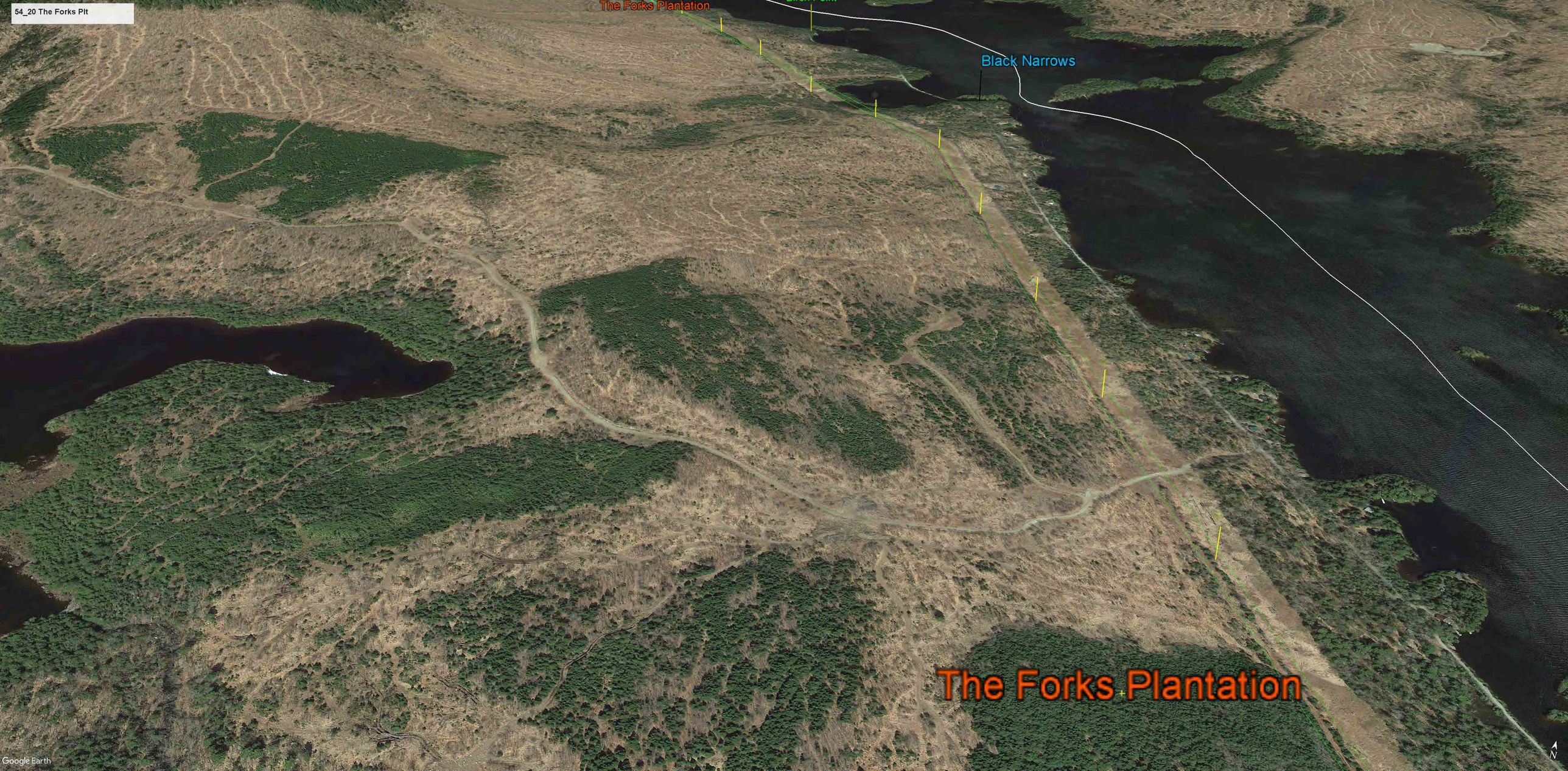
Image 49
Moxie Falls
Moxie Gore (T1 R5)
Fish Pond
Google Earth


50_24 Moxie Gore
Prescott Pond
Moxie Gore (T1 R5)
Lake Moxie
Google Earth


51_23 The Forks Plt
Moxie Gore (T1 R5)
Lake Moxie
The Forks Plantation
East Moxie Township
Moxie Pond Dam
Moxie Pond
Google Earth
N


52_22 The Forks Plt
The Forks Plantation
East Moxie Township
Caribou Narrows
The Forks Plantation
Google Earth


53_21 The Forks Plt
Burnt Jacket Island
The Forks Plantation
Birch Point
Black Narrow
Google Earth

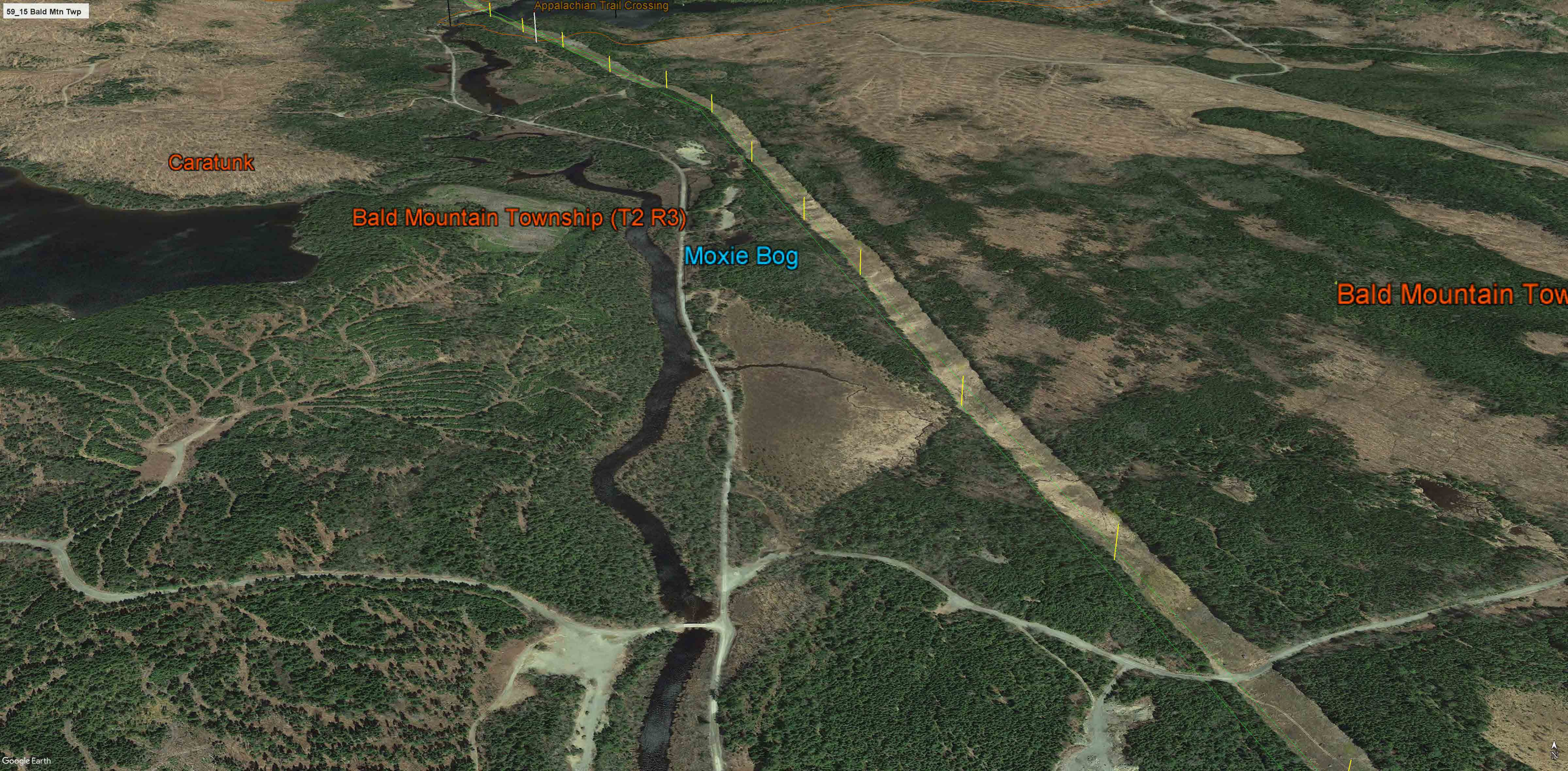

54_20 The Forks Plt
The Forks Plantation
Black Narrows
The Forks Plantation
Google Earth
N


55_19 The Forks Plt
Mosquito Pond
The Forks Plantation
East Moxie Township
Mosquito Stream
Troutdale
Google Earth


56_18 The Forks Plt
Troutdale
Mosquito Narrows
Mosquito Stream
Big Sandy Stream
The Forks Plantation
Caratunk
Bald Mountain Township (T2 R
Google Earth
N


57_17 Caratunk
The Forks Plantation
Caratunk
Pine Island
Bald Mountain Township (T2 R3)
Little Sandy Stream
Bald Mountain Townsh
Google Earth


58_16 Bald Mtn Twp
Bald Mountain Township (T2 R3)
Caratunk
Baker Stream
Joes Hole
Appalachian Trail Crossing
Google Earth


59_15 Bald Mtn Twp
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62 Bald Mtn Twp
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63 Moscow
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64 Moscow
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65 Moscow
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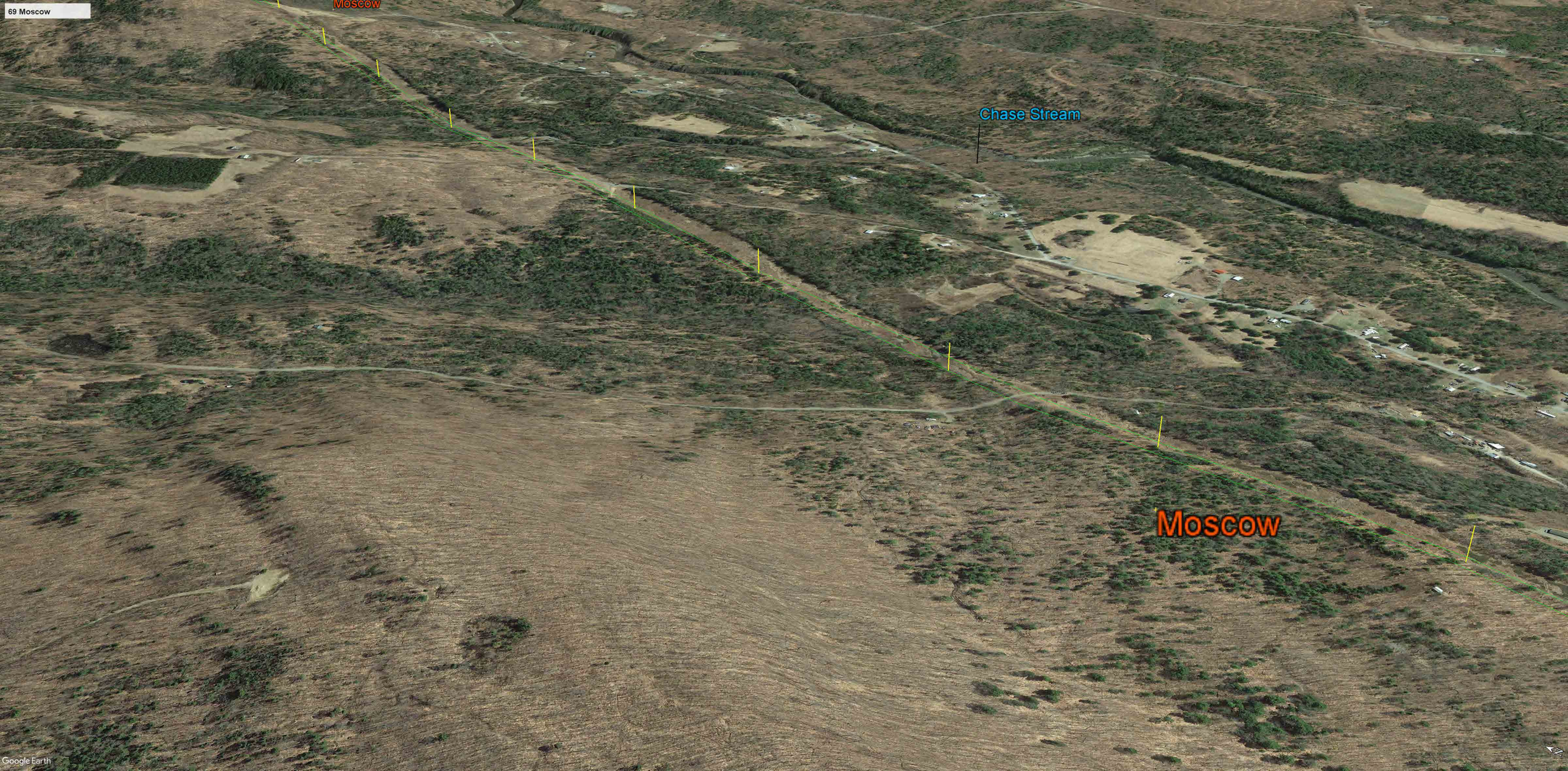
69 Moscow
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70 Moscow
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Mink Brook
Upper Kennebec Valley Junior-Ser
Moscow
Wyman Dam Post Office
Moscow
Moscow Elementary School
Temple Pond
Google Earth


71 Concord
Temple Pond
Wyman Dam
Wyman Dam
Wyman Lake
Moscow Elementary School
Moscow
Wyman Dam Post OfficeMoscow
Moscow
Union Cemetery
Pleasant Ridge Township
Concord Township
Bingham
Google Earth

From:	Mike Sova
To:	Hinkel, Bill
Cc:	kathy.garrard@powereng.com
Subject:	NECEC
Date:	Friday, May 17, 2019 6:17:24 AM

Bill,
I'm writing to you in support of the New England Clean Energy Connect project. It's a win all the way around for the people the environment and the economy of Maine. Please support this project.

Respectfully yours
Mike

Mike/IPhone

Mike/IPhone

From: deke sawyer
To: DEP@maine.gov; Hinkel, Bill
Subject: NECEC
Date: Sunday, May 19, 2019 12:57:31 PM
Importance: High

Every time I stop at the scenic outlook overlooking the beautiful vista of Aatean Pond and the surrounding mountains and valleys I am amazed! I am writing to ask the DEP and LUPC to protect this view for future generations. NECEC threatens to scar this view with the DC line and then completely fracture it with a secondary AC line, hundreds of poor performing wind turbines and accompanying service roads. There are many options to power Massachusetts that would be far less damaging to the environment. This entire project is about money. If CMP was genuinely concerned about the environment they would have selected some other way. Vermont stands ready with full permitting with an underground option. Massachusetts could use water, wind and solar for their own needs. Please don't let them destroy our western Maine views.

Thank you for your ability to change a project out of control.

Rev. Darien (Deke) Sawyer

necec
Your Partner in the Clean Energy Economy

To: Land Use Planning Commission, 22 State House Station, Augusta, ME 04333
From: Northeast Clean Energy Council
Date: May 17, 2019
Re: Northeast Clean Energy Council Support for NECEC Hydro / Transmission Project
Comments Sent Via Email: bill.hinkel@maine.gov

The Northeast Clean Energy Council (the "Council") is submitting this letter of support to the Maine Maine Land Use Planning Commission (LUPC), regarding the proposed New England Clean Energy Connect ("NECEC Hydro") project to bring clean energy from Canadian hydroelectric facilities through new electric transmission lines through Maine to customers in Massachusetts. This project is being paid for by Massachusetts ratepayers as the result of an award through a competitive proposal process prescribed in 2016 Massachusetts legislation, "An Act to Promote Energy Diversity." The Council was an active advocate supporting this legislation and the subsequent creation of an RFP process to help Massachusetts reach its goal for significant growth of clean energy supply while containing energy costs and lowering carbon emissions.

The Council is the lead voice for hundreds of clean energy companies across the Northeast (New England and New York). Our mission is to create a world-class clean energy hub in the Northeast delivering global impact with economic, energy and environmental solutions. The Council is the only organization in the Northeast that covers all of the clean energy market segments with many renewable and clean energy project developers and equipment, services and financial firms as active member companies. The Council works to create the policies and market mechanisms that enable business to compete to bring the most valuable clean energy initiatives to market in ways that combine clean energy growth with a transition to a clean economy.

Now that the NECEC Hydro project has been selected competitively and has been granted approval by the Maine Public Utility Commission, and Avangrid / CMP has also reached a siting settlement with environmental advocates and also committed to legislative progress on renewable portfolio standard and net metering, the Council believes all parties should look for approaches to resolve responsible siting and development issues related to the electric transmission lines that are needed to enable this project to proceed. We believe these stakeholders have had input which has improved aspects of the transmission siting along with a range of environmental preservation aspects in the project. The Council supports responsibly sited new transmission in Maine for bringing clean energy to major markets in southern New England, including and especially future opportunities to unlock in-region Class I renewables, and encourages the LUPC to review and approve this project.

Sincerely,

Peter Rothstein
President, Northeast Clean Energy Council

University of Massachusetts Lowell

OFFICE OF THE VICE CHANCELLOR FOR RESEARCH AND ECONOMIC DEVELOPMENT

University Crossing, Suite 400
220 Pawtucket Street
Lowell, MA 01854

Phone: 978-934-2226
Fax: 978-934-3000
E-mail: Julie_Chen@uml.edu

Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333
bill.hinkel@maine.gov

Dear Mr. Hinkel:

The University of Massachusetts Lowell (UMass Lowell) is pleased to provide comments in support of the proposed New England Clean Energy Connect (NECEC) project. As the public higher education research university in the Commonwealth of Massachusetts, UMass Lowell has a large and vibrant research and education program in energy and sustainability. The UMass Lowell Energy Innovation Institute (E2I) conducts research in cooperation with industry and government across multiple fields – e.g., wind, solar, hydro, storage, biofuels, nuclear, grid, and cyber. UMass Lowell has also supported talent development for over four decades with its nationally-recognized Energy Engineering program.

The NECEC project was selected in a Massachusetts process to bring more renewable energy to the state to provide a cost-effective, clean energy solution. We are all aware that challenges of sustainability and the future of the environment go beyond state borders. We see the overall commitment to increased renewable and clean energy as beneficial to the public in terms of reducing carbon emissions and helping to address global warming and other negative impacts on climate change. We have found NECEC to be a very good partner with respect to interest in advancing related education and R&D to expand future capabilities in clean energy. We are also aware that the NECEC plan purposely identified a transmission path that took advantage of as much existing developed corridors as possible.

The proposed $1 billion NECEC project offers electric ratepayers a cost-effective, clean-energy solution by way of readily available hydropower from Canada that will provide significant reductions of carbon emissions at a tremendous value. The NECEC project represents a key element of the Commonwealth's groundbreaking 2016 law, An Act Relative to Energy Diversity, which featured bipartisan cooperation between Governor Charlie Baker and legislative leaders to reduce energy costs, strengthen the state's clean energy economy and make progress towards Massachusetts' greenhouse gas reduction requirements, which are legally mandated under state's Global Warming Solutions Act of 2008.

The NECEC has earned widespread support in Massachusetts and throughout New England from major business organizations like AIM and Mass Business Roundtable and leading environmental organizations. We add our support to this effort.

Sincerely,

Julie Chen

Julie Chen
Vice Chancellor for Research and Economic Development

From: Sally Martin
To: Hinkel, Bill
Subject: LD640
Date: Sunday, May 19, 2019 10:08:32 PM

Please vote in support of the LD640 please view all options and listen to the people of Maine! Thank you Sally Martin

Sent from my iPad

PORTLAND
Regional Chamber
A Partnership of Community Chambers

May 17, 2019

Bill Hinkel, Permitting and Compliance Regional Supervisor
Maine Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

We write to you to express our support for permitting of the New England Clean Energy Connect.

The Portland Regional Chamber of Commerce comprises over 1,300 member businesses in South Portland, Cape Elizabeth, Falmouth, Cumberland, Scarborough, Portland, Westbrook and Gorham. One way we support the growth and success of our members is by promoting regional prosperity. Our shared prosperity depends on affordable, reliable and clean energy.

We support the Clean Energy Connect for many reasons, including the following.

Maine shares an electricity grid with the rest of New England. That's why the Maine Public Utilities Commission Examiner's Report concluded that, because of the low cost of this energy, "significant benefits will accrue to Maine electricity consumers through operation of the regional wholesale market." Those market benefits include up to $44 million a year in lower electricity costs to Maine consumers, which in-turn spur another $29 million a year in increased economic activity (including jobs), each year over a 20-year contract.

At a time when New England is seeing significant retirements among its electricity generation fleet, reliability and fuel security have become important concerns for both existing businesses and new investment. The Clean Energy Connect proposes a major influx of electricity into the grid; the 1,200 megawatt capacity of this single project is the equivalent of nearly all (93%) of Maine's annual residential load.

The source of this energy is renewable hydroelectricity from our neighbors in Québec. Existing scientific study demonstrates that greenhouse gas emissions from Québec hydropower are on par with both wind and solar. Further, according to documentation submitted to the PUC, Hydro-Québec has existing unused capacity enough to meet the demand of this contract. Right now, that clean energy on our northern border is going to waste. Bringing this energy into our market would displace 3 million metric tons of climate-changing CO2 every year for at least the 20-year life of the contract – that's the equivalent of removing 700,000 cars from our roads.

All of these benefits flow from a billion dollar investment in Maine infrastructure that costs Maine taxpayers and ratepayers nothing.

This project holds enormous promise for our environment and our economy. As Governor Mills said in her inaugural address, “Enough with studies, talk and debate. It is time to act!”

Thank you for giving our perspective consideration in your consideration of this vital project.

Sincerely,

Quincy Hentzel
Chief Executive Officer

From:	Hope Perkins
To:	Hinkel, Bill
Subject:	NECEC support
Date:	Friday, May 17, 2019 2:14:05 PM

Dear Mr. Hinkel,

I write to register our support for your permitting of the New England Clean Energy Connect.

ABC Maine is a statewide construction trade association representing merit shop construction and construction related firms throughout the state with a mission to develop a more skilled and safer workforce and advocate for the construction industry on matters of public policy believed I to have industry-wide impact.

In addition to the obvious positive climate impacts of this project, ABC Maine supports the NECEC because of its significant positive economic impacts in Maine. Those impacts are exhaustively detailed in the findings of the Public Utilities Commission and relate to lower energy prices for Maine consumers (and the increase business activity this spurs), greater energy reliability and security, as well as many hundreds of construction jobs.

We advocate your approval of this project because the applicant has demonstrated great care in siting:
- Avoiding sensitive recreational areas such as Moosehead Lake, Bigelow Preserve, Kennebago, the Rangeley Lake region;
- Avoiding impacts to vernal pools, waterways, wetlands and bird habitat;
- Voluntarily deciding to run the transmission line und the Kennebec River, to avoid visual impacts.

The applicant also proposes a generous compensation package for the impacts that could not be avoided:
- 3,000 acres of preservation land;
- Nearly $6 million for natural resource programs.

It's also important to note that the project area already bears the markings of significant commercial exploitation: clearcuts, strip cuts, logging roads, skid trails and log yards.

The climate and economic benefits of this project, as well as the concessions by the applicant, more than adequately justify the comparatively small tradeoffs.

We hope you will approve this vital project.

Hope Pollard
President & CEO
Associated Builders & Contractors of Maine
728 Main Street

Suite 4
Richmond, ME 04357
207.841.5217 - Cell
207.623.4500 - ABC Office

#ABCMeritshopproud

Associated Builders and Contractors, Inc.
Maine Chapter

May 14, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

Climate change is a really important issue that our state needs to focus on. The New England Clean Energy Connect Project promises to reduce our current carbon emissions by 3.6 million metric tons, which is the equivalent to taking 767 thousand cars off of Maine's roads. Please help Maine fight climate change and support this project.

Best,

11 Stonebrook Rd
Windham, Me. 04062

May 14, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

Please support the New England Clean Energy Connect Project. Maine needs the many benefits this project will bring to the state. Some of these benefits are thousands of jobs lasting more than 3 years! I support this project whole heartedly and ask for you to do the same.

Best,

Ryan W Paul

Ryan Paul
25 Maple Ridge Rd
Gorham, ME 04038

RECEIVED
MAY 17 2019
LUPC - AUGUSTA

May 14, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

I am writing in support of Central Maine Power's New England Energy Connect Project. I've done my research and have seen that the benefits far outweigh the negatives about this project. As a resident of Maine, and someone who cares about Maine's future, I'm asking you to please support this project!

Best,

Scott Murray
25 Honley St.
South Portland, ME 04106

May 14, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

The rivers that we have in Maine are important to me as I fish and kayak on the Kennebec River every year. When I first heard about the New England Clean Energy Connect Project, I was concerned about the preservation of this river specifically as the path seemed to cut right through, however I found out that CMP will bury the power line under the river! I love that this was taken into consideration on their part. Please join me in supporting the New England Clean Energy Connect Project!

Best,

130 Main St. South Portland

RECEIVED
MAY 17 2019
LUPC - AUGUSTA

May 14, 2019

Mr. Bill Hinkel
Land Use Planning Commission
22 State House Station
Augusta, ME 04333

Dear Mr. Hinkel,

CMP has done a commendable job in taking into consideration some of our favorite lakes and rivers and avoiding them or burying the line under the river in order to maintain our states wildlife integrity. I trust in the plan they've designed and as you to join me in supporting the New England Clean Energy Connect Project.

Best,

[signature]
52 Douglass St
Ptld, ME 04102

From: Heidi Vierthaler
To: Hinkel, Bill
Cc: Heidi Vierthaler
Subject: 4MrHinkel&LUPC:SayNoToNECEC4TheCree&ME!
Date: Monday, May 20, 2019 1:39:58 PM
Attachments: A-C-C-LUPC-4-29-2019.docx
A-C-JB-OR-F-1991-3-17-2019.docx

Dear Mr Hinkel,

(Please see the attachment for an easier format to read)

My name is Heidi J Vierthaler, I am a Social and Environmental Advocate, with a BA in Geography and Anthropology from the Class of 1994 at the University of Southern Maine.

I am writing to you today to urge you to stop the Central Maine Power CMP Hydro-Quebec New England Clean Energy Connect NECEC Transmission Line Corridor.

I am grateful for the opportunity to communicate with you today regarding this issue, and while I understand that the parameters within which you are working might be limited to what is happening here in Maine, I do hope that you will take a good look at the situation with the way that Hydro-Quebec has reneged on their promises to the Cree and Inuit, and their Ecosystem and try to take as much of their situation into consideration, when you and/or the Land Use Planning Commission makes in your decisions, especially regarding our ability to trust ANY agreement with Hydro-Quebec.

The following are some Talking Points from our Say No To NECEC Group in regards to the Testimony for the Army Corps of Engineers, and I want to reiterate them to you here that I fully support any of these ideas that might be relevant to the Land Use Planning Commission.

I request a public hearing, and you will see in my attachment that I express your concerns for NECEC's negative impacts on Maine's wetlands and waterways.
PLEASE INCLUDE THESE TALKING POINTS IN YOUR COMMENTS:
a. Public requests a public hearing focused to waterways and wetland impacts. DEP and LUPC did not focus on this for hearing topics.
b. ACOE wants to do an Environmental Analysis with NO hearings and only 30 days to respond when the DOE did an EIS and had hearings for the same project (Northern Pass) when it was proposed in NH! Request/Require the USACOE to release the draft Environmental Assessment (EA) and have the PUBLIC BE GIVEN OPPORTUNITY TO OFFER COMMENTS. If the ACOE finalizes the EA with a FONSI "finding of no significant impact" one has to take the ACOE to court to force them to conduct the Environmental Impact Statement (EIS). THAT's A VERY IMPORTANT PUBLIC COMMENT.
c. Approval agencies, like ACOE, cannot avoid looking at the environmental impacts and alternatives early on, because the project is already moving down the track or because of the expense to the applicant to have delay.
d. Alternatives that have not been evaluated sufficiently (i.e. buried line in new 53.5 mile segment; using rt. 201 as existing corridor; using Portland Pipeline, etc.)
e. Other substantive Environmental Quality issues that need to be considered:
- Fire hazard of high voltage lines generally and
specifically the VSC-HVDC lines on overhead
monopoles
- Fragmentation of the forest by this corridor
- Wetland and watercrossing impacts that are
avoidable by alternate route
- Climate impact due to greenhouse gases – See Energyzt NRCM/SierraClub/Maine Renewable Energy Association Report:
https://www.nrcm.org/wp-content/uploads/2018/10/ENERGYZTreportNECECImpacts.pdf
f. ACOE must adhere to the standards set forth by the National Environmental Policy Act!
g. Send any testimonies/information submitted at PUC that are relevant. He has DEP and LUPC files. If there is documentation to be submitted – it can be attached to a comment and then will be in the "record". The ACOE does not have any web-based system to see what has been submitted.
h. Public comment will be taken until the final decision is made, but from a process (and likely legal point of view) submitting comments right now through April 25th is IMPORTANT! https://www.facebook.com/events/1873471096091789/

The following paragraphs are what I have been sending recently to garner support to stop the NECEC and while I reiterate that I am well aware that this might be beyond the realm of your consideration of the scope of your inquiry and investigation in this examination; I beseech you to take these issues to heart in as much as you possibly can in your Land Use Planning Commission deliberation on this issue.

I'm reaching out to you today because Hydro-Quebec's current proposal here in Maine will impact the indigenous Cree people of James Bay …we will all be impacted by this devastating Hydro-Quebec deal with Massachusetts that wants to run a massive powerline corridor right through the pristine forests of our sacred lands here in Maine.

The point of prevention where we can stop this is here in Maine: We need to stop the New England Clean Energy Connect (NECEC) Transmission Line Corridor. The NECEC is the deceptive name given to the egregious deal between Central Maine Power (CMP) and Hydro-Quebec. It would deliver Hydro-Quebec's electricity to Massachusetts by carving a massive Transmission Line Corridor thru our precious Maine woods. (Imagine the NJ Turnpike with a center line of massive, high-voltage transformers going down the middle of your favorite get-away spot. Add a little Round-up to the under-growth, and it's not a pretty picture. The Cree can tell you all about the devastating results. Life will get worse for them, too, if Hydro-Quebec has this excuse to build more dams.).

Massachusetts has already signed a contract with Hydro-Quebec. In Maine, the relevant agencies are currently reviewing and assessing the project.

We sincerely hope that you'll join us in this grassroots movement to stop this NECEC monstrosity.

To introduce you to what we in Maine are being asked to relinquish in terms of our pristine Maine wilderness, please see this short (8:16 min) video What is The CMP Corridor Project? as part of the From Away series from Barrel Up Productions.
https://youtu.be/ql0cSpGGUws
If you have another 5:29 minutes, this video tells just how special our pristine Maine Woods is:
https://vimeo.com/253324517

On the other hand, the Cree and Inuit have been suffering from Cultural Genocide and Ecological Ethnic Cleansing since the mid 1970's because Hydro-Quebec's Mega Dams have flooded their sacred lands, causing mercury poisoning in their fish and up through their entire food chain. This has obliterated their sustinance existence and their spiritually oriented, indigenous way of life, forcing them to become dependent upon an incompatible Western Consumer-Oriented Economy. Furthermore we need to urgently learn from the Cree that Hydro-Quebec can not be trusted.

To see what we are up against here in Maine:
• Maine Governor Janet Mills has already agreed to sign on to the NECEC Power Corridor, even though the investigation and assessments are not complete.
• Peter Mills, brother of Maine Governor Janet Mills, is one of the Founding Directors of the Western Mountains and Rivers Corporation (WM&RC), which was founded in August 2017, as a bogus non-profit front group to support Central Maine Power and the NECEC. If you look at their Memorandum of Understanding…
The entire Memorandum of Understanding (MOU) in pdf form…
http://mediad.publicbroadcasting.net/p/mpbn/files/201806/memorandum_of_understanding__may_30_2c_2018_final___p1522306x9f873_.pdf
you'll see the entire deal that CMP has with them.
• The major New England newspapers, The Portland Press Herald, Ellsworth American, the Bangor Daily News, and the Boston Globe, have all proudly endorsed the NECEC. You can see on the second of the NECEC websites below:
- https://www.goodformaine.org/
- https://www.necleanenergyconnect.org/
Please be sure to watch the videos on each of these sites (the one on the first website can be seen if you click on the white arrow in the blue circle in the bottom right corner of the page).
Their endorsement calls into question their ability to deliver unbiased news coverage … not only on this subject.
• The slick Pro-NECEC TV ad campaign is extremely sophisticated and deceitful - much like the tobacco industry tactics. Here's their twisted, sinister TV ad, accusing our anti-NECEC grassroots organization of being funded by Dark Money from the Fossil Fuel Industries:
https://youtu.be/poO8yWPMU7E

This is from a post just days ago on our Say No To NECEC Facebook Group*: "ALERT! CMP just bought $500,000 worth of television advertising to push their corridor project on Mainers who don't want it. But we are fighting back and we need your help. Visit https://PayPal.me/SayNOtoNECEC and help us fight this Spanish company who is trying to buy you.

The Pro-NECEC ads say that the opposition is funded by "Dark Money" from Fossil Fuel Companies, when in truth the Say NO to NECEC is a registered non-profit organization made up of citizens; as a grassroots effort to oppose the CMP Corridor. Our group, along with many others like NRCM, has joined forces and were invited by Stop the Corridor to collaborate as part of an opposition coalition".

Please see our ads here:
https://youtu.be/aTrRHWSOhhs
https://youtu.be/3XuRSTFvWOo

To help you learn more about the situation, I am attaching:

• My White Paper Report: Say No to the NECEC for The Cree and ME: We need to Learn from the Cree's Tragic History with Hydro-Quebec, before it's too late!

• See our new website: https://www.notonecec.com/

I hope that we can count on you for your support to stop this destructive plan of the New England Clean Energy Connect NECEC Transmission Line Corridor.

If I can be of any further assistance to you, because my numbers are unlisted and confidential, I can be reached at the numbers that I will leave with the Land Use Planning Commission Clerk.

Thank you for your time and consideration.

All of my best to you and yours.

Heidi J Vierthaler
Resident in Southern Maine, close to Brunswick.

To **Land Use Planning Commission (LUPC)**

Email Bill Hinkel directly - Bill.Hinkel@maine.gov

My name is Heidi J Vierthaler, I am a Social and Environmental Advocate, with a BA in Geography and Anthropology from the Class of 1994 at the University of Southern Maine.

I am writing to you today to urge you to stop the Central Maine Power CMP Hydro-Quebec New England Clean Energy Connect NECEC Transmission Line Corridor.

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specifically the VSC-HVDC lines on overhead

monopoles

- Fragmentation of the forest by this corridor

- Wetland and watercrossing impacts that are

avoidable by alternate route

- Climate impact due to greenhouse gases – See Energyzt NRCM/SierraClub/Maine Renewable Energy Association Report: https://www.nrcm.org/wp-content/uploads/2018/10/ENERGYZTreportNECECImpacts.pdf

f. ACOE must adhere to the standards set forth by the National Environmental Policy Act!

g. Send any testimonies/information submitted at PUC that are relevant. He has DEP and LUPC files. If there is documentation to be submitted – it can be attached to a comment and then will be in the "record". The ACOE does not have any web-based system to see what has been submitted.

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On the other hand, the Cree and Inuit have been suffering from Cultural Genocide and Ecological Ethnic Cleansing since the mid 1970's because Hydro-Quebec's Mega Dams have flooded their sacred lands, causing mercury poisoning in their fish and up through their entire food chain. This has obliterated their sustinance existence and their spiritually oriented, indigenous way of life, forcing them to become dependent upon an incompatible Western Consumer-Oriented Economy. Furthermore we need to urgently learn from the Cree that Hydro-Quebec can not be trusted.

To see what we are up against here in Maine:

- **Maine Governor Janet Mills has already agreed to sign on to the NECEC** Power Corridor, even though the investigation and assessments are not complete.
- **Peter Mills, brother of Maine Governor Janet Mills, is one of the Founding Directors of the Western Mountains and Rivers Corporation (WM&RC),** which was founded in August 2017, as a bogus non-profit front group to support Central Maine Power and the NECEC. If you look at their Memorandum of Understanding…

  The entire Memorandum of Understanding (MOU) in pdf form… http://mediad.publicbroadcasting.net/p/mpbn/files/201806/memorandum_of_understanding__may_30_2c_2018_final__p1522306x9f873_.pdf

  you'll see the entire deal that CMP has with them.
- **The major New England newspapers**, The Portland Press Herald, Ellsworth American, the Bangor Daily News, and the Boston Globe, **have all proudly endorsed the NECEC.** You can see on the second of the NECEC websites below:
  - https://www.goodformaine.org/
  - https://www.necleanenergyconnect.org/

  Please be sure to watch the videos on each of these sites (*the one on the first website can be seen if you click on the white arrow in the blue circle in the bottom right corner of the page*).
  Their endorsement calls into question their ability to deliver unbiased news coverage … not only on this subject.
- **The slick Pro-NECEC TV ad campaign** is extremely sophisticated and deceitful - much like the tobacco industry tactics. Here's their twisted, sinister TV ad, accusing our anti-NECEC grassroots organization of being funded by Dark Money from the Fossil Fuel Industries:

https://youtu.be/poO8yWPMU7E

This is from a post just days ago on our *Say No To NECEC* Facebook Group*: "ALERT! CMP just bought $500,000 worth of television advertising to push their corridor project on Mainers who don't want it. But we are fighting back and we need your help. Visit https://PayPal.me/SayNOtoNECEC and help us fight this Spanish company who is trying to buy you.

The Pro-NECEC ads say that the opposition is funded by "Dark Money" from Fossil Fuel Companies, when in truth the *Say NO to NECEC* is a registered non-profit organization made up of citizens; as a grassroots effort to oppose the CMP Corridor. Our group, along with many others like NRCM, has joined forces and were invited by Stop the Corridor to collaborate as part of an opposition coalition".

Please see our ads here:
https://youtu.be/aTrRHWSOhhs
https://youtu.be/3XuRSTFvWOo

To help you learn more about the situation, I am attaching:

- My White Paper Report: ***Say No to the NECEC for The Cree and ME:*** *We need to Learn from the Cree's Tragic History with Hydro-Quebec, before it's too late*!
- See our new website: https://www.notonecec.com/

I hope that we can count on you for your support to stop this destructive plan of the New England Clean Energy Connect NECEC Transmission Line Corridor. If I can be of any further assistance to you, because my numbers are unlisted and confidential, I can be reached at the numbers that I will leave with the Land Use Planning Commission Clerk.

Thank you for your time and consideration.

All of my best to you and yours.

Heidi J Vierthaler

Resident in Southern Maine, close to Brunswick.

White Paper Report:

Stop The NECEC for

The Cree and ME!

I would like to get a before and after map and Photographs to add here.

HeidiJV@hotmail.com

White Paper Report:
Stop The NECEC for The Cree and ME!
Table of Contents:

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Find Books, Films, and other Muti-Media: re the Cree and James Bay:
Hydro-Quebec's devastation, and those affected by the NECEC Corridor, including:
For the Cree way of life:

8. ***Eeyouch of Eeyou itschee*** Cree page, on the Grand Council of The Cree site,
9. **Grand Council of the Cree Youth / Climate Change Response**

For the area in Maine that would be affected by the NECEC Corridor:

Maine Public Special Series: "Power Struggle In The Maine Woods":

Some Final Thoughts:

Call for a Peaceful Clean Green Energy Economy!
Advocate

Send our leaders and utilities the message that we do not want this HQ CMP: NECEC Governor Mills and urge her to help stop the NECEC corridor, and for the development of a state energy plan emphasizing Efficiency and Conservation!
Also contact Governor Janet Mills here:
Central Maine Power CMP / Hydro-Quebec:
CMP does not make it easy to copy and paste t

1. **SUBMIT YOUR PUBLIC COMMENT**
   a. **Army Corps of Engineers (ACOE) *until April 25th*:**
   b. **Maine Department of Environmental Protection (DEP) *until May 27th:***
   c. **Land Use Planning Commission (LUPC) *until May 27th:***
   d. **Massachusetts Department of Public Utilities (DPU):**

Help us STOP the Hydro-Quebec (HQ) and CMP: NECEC!
Call for a Peaceful Clean Green Energy Economy!

2. **WRITE TO STATE LEADERS ASK THEM HOW THEY WILL VOTE ON LD271/640/1363/1383/1436: 28**
   Find your Senator: and Representatives
3. **WRITE A LETTER TO THE EDITOR**
   a. **Bangor Daily News: (250 words or 600-700 words for OpEd)**
   b. **Portland Press Herald: (300 word limit)**
   c. **Kennebec Journal and Morning Sentinel: (300 word limit)**
   d. **Lewiston Sun Journal: (250 word limit)**
   e. Send it to your local weekly newspaper!

DONATE TO HELP FUND OUR LEGAL EFFORT https://PayPal.me/SayNOtoNECEC

Join our Say NO to NECEC Facebook group

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The Issue: The State of Maine is considering, with the Governor's declaration of support, a project between Maine Central Power (CMP) and Hydro-Quebec (HQ): The New England Clean Energy Connect (NECEC) Transmission Line Corridor. The project according to the Stop The Corridor website: "New England Clean Energy Connect (NECEC) is Central Maine Power's proposed 145-mile long corridor of thousands of high-voltage megatowers cut through the Maine woods. CMP's corridor would be as wide as the New Jersey Turnpike, and the towers each as large as the Eastland Hotel in Portland. This corridor would be cut through pristine Maine wilderness in order to bring electricity from Canada to Massachusetts, with no stops in between."
"It will cross the Kennebec River Gorge, three points on "the Appalachian Trail, 263 wetlands, 115 streams, 12 inland waterfowl and wading bird habitat areas - as well as brook trout streams and deer wintering yards."

Large numbers of Mainers and organizations are vehemently against this NECEC Corridor for these numerous environmental, health, economic, and cultural reasons. The most important for many is the loss of their homes and their rural way of life.

While we all are naturally concerned about what we stand to lose here in Maine, I'm troubled that we're not also considering our neighbors to the North, the Cree and Inuit in the James Bay Ecosystem where the Hydro-Quebec Mega Dams have already devastated the Cree and Inuit Nations, their people, and their way of life. We have much that we can learn from them. They have even more to lose if we proceed with the Central Maine Power CMP Hydro-Quebec New England Clean Energy Connect NECEC Transmission Line Corridor. They are the canaries in the coalmine for us. We need to listen to them. And our decision the on Corridor will determine how much more of these Nations will go under water. Their fate, as well as our own, is in our hands.

Let me tell you why making this deal is bad for Maine. The way that Hydro-Quebec has committed Cultural Genocide and Ecological Ethnic Cleansing, not to mention the company's history of lies, misrepresentations, and failures to honor their agreements with the Cree, points to a problematic situation, in that we can't trust any agreement that they might make with us.. I am thus asking Governor Mills and any others, to set aside any personal and family involvement and interests, to reject the NECEC Corridor.

A quick personal note: to let you know: that I first heard about the situation with Hydro-Quebec and the Cree, when Will Nicholls spoke in 1991. It changed my life. He was a Spokesperson for the Grand Council of the Cree, I was a Human Ecology student at the Friend's World College Program at Long Island University (LIU), Southampton, (NY), and a member of the Student Environmental Action Coalition. Afterward I attended the Ban The Dam Jam for James Bay Benefit Concert Series, at the Beacon Theatre, and kickoff events: the March down Broadway from Union Square to the Press Conference at New York City Hall. The picture that Will painted was shocking, the impact that the Hydro-Quebec Mega-dams has had on his people has been devastating. The impression deep in my heart, continues to be profound. See my Photo Albums

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of my introduction to this important endeavor here:
https://m.facebook.com/story.php?story_fbid=10156711435467605&id=690312604

To Begin with – Where is James Bay:
It is located in Northern Quebec Canada. It can be seen on the map as being a pocket in the Southeast corner of Hudson Bay way above America's Great Lakes. It has been the home for The Cree and Inuit Native Americans for more than five thousand years.

The Interested Parties are:

- **The Cree and Inuit Nations:** The ancient Indigenous Peoples that have been living for over five to six thousand years peacefully as an integral part of the James Bay Ecosystem, which they consider as Sacred and their "Garden," ensuring that not one species would become extinct during their thousands of years of inhabiting the area, without fighting more than two wars that were imposed upon them. These people have suffered immeasurably at the hands of Hydro-Quebec.
- **Hydro-Quebec:** An energy production company, owned and operated by the Government of Quebec, Canada.
- **Central Maine Power (CMP):** a subsidiary of Avangrid Networks Inc., traded on the New York Stock Exchange with it's majority owner Spanish energy giant: Iberdrola USA Inc., is Maine's largest electricity transmission and distribution utility, established in 1899, which serves more than 600,000 electricity customers in central and southern Maine. The NECEC would be spun off to a separate Avangrid subsidiary, NECEC Transmission LLC.
- **Western Mountains and Rivers Corporation:** a fundraising Company for CMP

•**Maine's People and pristine wilderness in the NECEC Corridor:** the people who live in the rural, sparsely-populated, mostly privately- owned land, who are protecting their virgin forests, and fishing and hunting areas, etc..
•**The Maine State Decision Makers** (see the last pages of this for contact information):

- **Public Utilities Commission (PUC),**
- **Public Advocate,**
- **Legislative Government,**
- **Department of Environmental Protection (DEP)**
- **Land Use Planning Commission (LUPC)**
- **Army Corps of Engineers**

What is Hydro-Quebec's James Bay Project:
It is a massive Hydro-electric power producing project that has flooded vast tracts of land. The building of Phase I of the project was announced by Quebec's Premier Robert Bourassa as the cornerstone of his province's economic future in 1971.
Phase I LaGrande (Completed):
Is in the Northern area of James Bay, which diverted the Eastmain, Opinaca, and Caniapiscau Rivers, into the LaGrande River. Phase I has already flooded 10,000 square kilometers.
Phase II Great Whale (shelved for now due to concerns and efforts by the Cree and New England supporters.**):**
This is located much further North, would flood an additional 5,000 square kilometers, along the Great Whale River; that area in itself equaling the size of Connecticut and would directly adversely affect an ecosystem the size of France. We need to ensure that this never happens!
Phase III (Partially Completed: (Phase III has seen the Rupert River Diversion completed):
This is in the Southern region, and would comprise the Nottaway, Broadback, and [Hydro-Quebec has already built the:] Rupert [Cree name: Waskaganish] Complex. Hydro-Quebec has

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exceeded the agreed upon parameters of the dam. Dikes and water levels and other technical components agreed upon by all parties have been not honored.

An Introduction to Dams and Why they Aren't A Good Energy Solution for Maine:

In order to understand the significance of the rest of my materials, it is important to understand a little about how Hydro Electricity works, how Hydro-Quebec has implemented it in the James Bay Ecosystem, why it is not a good source of energy, and why we should be looking to support more sustainable renewable energy sources.

To be clear one of the main reasons why so many people are supporting this New England Clean Energy Connect NECEC Transmission Line Corridor is because they say that the energy is clean and that the NECEC will be offsetting carbon emissions to make it an advantageous energy and a good deal for Maine. I want to be clear that the energy flowing through the NECEC is coming from Hydro-Quebec Mega Dams which are anything but clean, if anything the way that Hydro-Quebec has implemented it's plans, sadly makes it's energy one of the dirtiest forms of energy on the planet! I say this because not only is the energy produced not helping to offset the Greenhouse gasses, it is also causing, massive land destruction in its construction, and Cultural Genocide and Ecological Ethnic Cleansing of the Cree. What follows is a series of articles and videos that outline these points.

This is a simple introductory video, and tells the pro's and con's of different types of Dams, the most important being the fact that Hydro Dams have the possibility of being breached, and they are not free of Greenhouse gasses:
https://www.youtube.com/watch?v=q8HmRLCgDAI

This is a simple graphic video explanation of the generation of Hydro-electricity
https://www.youtube.com/watch?v=ABv631t1OKI
In essence the video description says that: "The most common type of hydroelectric power plant uses a dam on a river to store water in a reservoir. Water released from the reservoir flows through a Penstock to the turbine and spin it. A turbine converts the kinetic energy of falling water into mechanical energy, which in turn activates a generator to produce electricity. Then a generator converts the mechanical energy from the turbine into electrical energy.

This is probably the best short video that describes how the Hydro-Quebec Mega Dams were built into the Cree landscape, when they moved the entire village of Fort George on an island to the mainland where it became the Community of Chisasibi. It is heartwrenching to see just how much disrespect to the land and it describes the social services that were established, but to little avail as will be discussed further.
https://youtu.be/GmGCifYrfzI

An Intro. to Dams and Why they Aren't A Good Energy Solution for Maine (continued**):**

James Bay Cree Hydro this video is about mercury poisoning (5:15 min), it has footage of a devastating mercury poisoning outbreak in Japan, it discusses the problems that it has caused, especially in providing a social services response to this problem, and shows just how negligent the Canadian and Quebec Government have been in responding to the Mercury poisoning in their own Provinces. please read to extended info in the below YouTube description https://www.youtube.com/watch?v=HwD3GyUmPK0

Finally Will sent me the following article "*Megadams Not Clean or Green, Says Expert Forty years of research show hydro dams create environmental damage, says David Schindler*,"
Professor emeritus at the University of Alberta and internationally renowned for his expertise on lakes and rivers, who has been outspoken against the Alberta tar sands, says: "the greenhouse gas production from hydro is expected to be about the same as from burning natural gas."
https://thetyee.ca/News/2018/01/24/Megadams-Not-Clean-Green/

While I am not an expert energy Scientist, we all need to establish a true Peaceful Clean Green Energy Economy one in which all are able to earn a living wage. We need to be investing in new renewable energy resources. While I am not sure of the proposed types of energy sources in this video, except for the solar gathering windows, and human generation. This video (13 minutes) gives 10 new energy alternatives and look in the YouTube description below for a list with links.
https://www.youtube.com/watch?v=uStFvcz9Or4

How the NECEC further threatens the Cree and their Sacred Way of Life:

To understand the link between what we are doing here in Maine in our decision to allow the Spanish based Central Maine Power CMP Hydro-Quebec NECEC Transmission Line Corridor, we need to know about the basis of the Cree People and their Culture. So let me introduce you to the people who I am honored to be able to call my friends. After meeting Cree Spokespeople Will Nicholls, Matthew Mukash, and their Grand Council of the Cree Chief Matthew Coon Come at the Ban The Dam Jam for James Bay, in New York, I invested much of my academic career in the process of earning my BA in Geography and Anthropology from the University of Southern Maine in 1994, to the Cree, and the survival of their Culture. After the Ban The Dam Jam, I found Boyce Richardson's book *Strangers Devour The Land*, and the journey into the Cree way of life within was all encompassing. Let me share some of the wisdom that I learned from this incredible page turner.

I also have to say that especially after the fire in the Catholic Church Cathedral of Notre Dame, and arsons in the Churches in the South, as well as the bombings in the Mosques

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in the Middle East, that what is happening with the Cree is eerily similar to the situation in which the Cree find themselves.

How the NECEC further threatens the Cree and their Sacred Way of Life:

In the process of defending their home, *Eeyou Itschee* [As my Cree friend Margaret Sam-Cromarty calls: Eee-you, (People), of *Itschee* (Land)], the Cree who grew up in the bush and knew little of Western Society found themselves in the big city, and in court. They really were strangers in a strange land. "The older men regarded the building with dignified incomprehension, for they had never seen such huge enclosed spaces before, and they waited patiently to be told what to do, whether to go into the strange room which moves up and down and which was causing the much trouble at their hotel, or whether to go on the other side of the lobby and try to mount that moving staircase as many other people were doing and to be carried upstairs in the strange manner of the white manner of the white man, without having to bother to walk a step." (18)

The story told by the Indian and Inuit witnesses, and their manner of telling it, made a considerable impression on at least a section of the Canadian public in the next two months. Their experience of the sophisticated world of the white man was limited; their experience of Court procedure was nil. But their experience of the forests of the north was vast; and their knowledge of the animals, fish, and plants with which they lived in symbiotic relationship was immense. They spoke of what they knew and nothing else. For many thousands of years their ancestors had been organized in groups of families, no more. So there was no great scope in their daily lives for to see, which would have been too easily found out. It seemed to come naturally to them to speak simply and truthfully, and this perhaps more than anything else was what impressed both the judge and those people who sat in the court watching the drama unfold. (33)

Every concept of the meaning of life held by these people arose from their relationship with the animals, from their life as subsistence hunters in the bush, and most of the concepts being put to them by the lawyers were either difficult for them to comprehend or quite meaningless." (40)

Elder William Matoush "opened up and began to talk about of the respect which the Indians had for the animals, their responsibility to respect the animals they killed…They had to keep the dogs away from the bones of otter and beaver, from the head of the moose and rabbits. Sometimes they would tie a little cloth on part of the skeleton and put some tobacco in it: "in return he knows what you are doing to him. If you show respect to him, you will get something from him. But you if you allow a dog to get a hold of those bones, then you will have a hard time to kill that animal in the future, because he makes himself scarce."
In Court: O'Riley asked: "is there any religious content in respect to animals?"
Anthropologist Adrian Tanner said: "All killing of animals has a strong religious significance, governed by religious beliefs and values. Usually whenever a beaver is brought in, it will be drawn by a ceremonial string. When eating, particular parts of the animal are put into the fire for the spirits, the bones are carefully preserved so the dogs

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will not eat them; particular bones are put into a tree, others are put into a platform or thrown back onto the lake. The Caribou antlers are erected on a tree facing east, and

How the NECEC further threatens the Cree and their Sacred Way of Life:

decorated with streamers for religious reasons. That was the major part of my study."
O'Reilly: "In a nutshell what is the significance?
Tanner: "The animals are seen as persons, or as being controlled by spiritual persons and the hunter is engaged in a religious occupation when he hunts and is exercising spiritual powers by hunting. The older a man gets the more animals he kills the greater he achieves this spiritual power. (88)

"As for the damming of the rivers that was proposed, that sure as hell would not help the hunters. The money from the development would go to other people's pockets. But there were many things the white man could learn from the Indians if he wished. "The white man is going to come and flood the land. That's teaching Indians how to flood land and build dams. But the Indians can teach the white man about nature. We have lived with nature. We were born with it, we have got to look after it, not to destroy it, it's. It's like our mother. To us it's like putting something in the bank when we do not kill all the beaver we could. We leave the beaver to allow them to multiply.

If they are going to flood the land, they are taking all our savings away" (89)

Phiiip Petawabano, who Richardson described as "a smaller man with white hair. It was one of those ironies to which I had never become accustomed that this extremely private and spiritual old hunter had a son, Buckley, who was a television star with a considerable following among the young girls of West Germany." (96)…

Tells what he knows: "I am an old man. I caught a last glimpse of what it was like before the coming of the white man. My father raised me, and when I was still young, seventeen, he died and I was on my own." …He described what it was like to survive in the bush, saying: "life was good and hard. I don't think too many people are still living here now who saw those times when life was very hard.

Here is what I think about the bush. The Wilderness is just like a store where you can get all of what you need. Everything I needed to survive on came from the land. Of course, I could never part with my land. If somebody lost his land it, it would be just like shooting him. All the animals on this land, the moose, the deer, the beaver, the links, the fish, all these animals have gone down in the past few years. I hope this doesn't go too far, for this is the only way we know to survive, this store that is put before us to feed our children from. All this that I've been talking about will be gone soon when it's flooded. When I first heard about this James Bay proposal, I wondered about it for a very long time. It almost came to the point where I could not really relate to what the other society has done. I don't know what will happen to our land. I couldn't really tell you." (97)

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Especially after all of my endeavors producing the Maine Earthday Alert for James Bay – North America's Own Amazon, in my Junior year of College, I certainly hope that we here in the State of Maine can tell him that we did the best to preserve the part of his land that has not yet been touched by the hands of the Hydro-Quebec Colonizers.

How Hydro-Quebec Mega Dams have Devastated the James Bay Ecosystem:

The beautiful sustinance way of life for the Cree and Inuit has been destroyed by Hydro-Quebec Mega Dams and their resulting reservoirs called power pools, which has devastated their sacred, sustainable way of life, and exacerbating Climate Change.

- **Ecological Devastation:**
  - Methyl Mercury Poisoning: since the building of Phase I began in 1973, the power pools have caused Methyl-Mercury poisoning through the process where the naturally occurring Mercury in the soil and land is fed upon by the bacteria in the water. It is turned into a highly toxic form of Methyl Mercury, when the fish eat this bacteria, the Methyl Mercury levels are raised exponentially so that they are off of the charts of what is considered safe by the World Health Organization. This has resulted in Mercury poisoning in not just the fish but up the food chain, into people.
  - Greenhouse Gasses: Also the power pools produce greenhouse gasses that will contribute to global warming via the destruction of the environmental ozone of our Earth.
  - Deforestation: is one side effect of the creation of the power pools, etc..
  - Loss of Wildlife: one example, 10,000 Caribou that were in the middle of their seasonal migration pattern, were met by a flood of on-coming water released by the personnel of the dams that the Caribou were not expecting, and were killed.
- **Health Effects and Epidemics:**
  - Mercury Poisoning: Two-thirds of all of the children, and adults, in one Cree Village have methyl-mercury poisoning, which has had adverse affects on their neurobiological systems.
  - Gastroenteritis: Because Government housing in Waskagansish didn't have proper plumbing and running water many Cree succumbed to a major outbreak and sadly many died. This is inexcusable, it was 1980¡
  - Food Insecurity: Fish, their major food sources are inedible.
  - Suicide: Many Cree feel that they are caught between two worlds in which they really don't belong. The CommUnity lived in by those who once lived a sustenance existence, and the so-called new lifestyle, which is not home. It thus breaks my heart that a Culture that probably didn't have a word for suicide, has people who have fallen into this abyss of despair, and taken their own lives.
- **Sacred Burial and Ceremonial Sites:**
  - Many Sacred Sites: were recklessly bulldozed and flooded underwater.
- **Economic Disaster:**
  - Forced Transition from Sustinance to Consumer Oriented Economy:

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from living in harmony with the land, when their primary food source the fish, is now toxic and inedible, they have become dependent on the Western Consumer Oriented Economy, one to which most have had a difficult, if not impossible, time adapting.

Learning from the Cree: Why We and our Legislators Should Reject the NECEC Corridor!

- In case you aren't aware, Hydro-Quebec, on top of all of the Environmental damage their dams have caused, it has not been as economically responsible in their deals etc.. Here is one major example, from an Oral Report that I gave in 1991:

  "Quebec is currently 27 billion dollars in debt due to Phase I of the project and wants to base it's economy on aluminum, which necessitates the need to build aluminum smelting plants that will consume most of the electricity that the proposed Phase II plants will produce. I want to make the point here; that not only is aluminum speculated as causing early Alzheimer's disease, but the production is equally as bad. The first of these aluminum plants has been built along the banks of the Saint Lawrence Seaway. Along the shore near this plant two Beluga Whales were found dead; an autopsy was performed on them and due to the discoveries made during the study, these Whales had to be incinerated as toxic waste. To finance this whole ecological monstrosity Hydro-Quebec wants New York State to buy 27,000 megawatts of energy for 19.5 billion dollars. The contracts lasting twenty years, have been signed already by the Governor of New York, The New York Power Authority, Consolidated Edison, The Long Island Power Authority, and the Long Island Lighting Company. These contracts had a clause in them that would allow for their cancellation without penalty by November 30, 1991, [but an extension: (due to the efforts of The Cree and The Inuit who encouraged the citizens of New York to take action to save James Bay), has been given to allow the state of New York to decide on their role in the fate of James Bay, until November 30, 1992]; but the sooner these contracts are canceled the better." This seems like convoluted planning.

  More importantly "New York does not need this energy, because a research firm The Goodman Group based in Boston has assessed that New York can sustain itself through energy conservation and the eventual adoption of alternative sources of energy. Additionally, energy efficiency expenditures create jobs at a rate of 3 to 5 times as many as a similar expenditure for out of state power, and keep those jobs in New York. Therefore in order to assist not only the ecosystem of James Bay, but also the economic future of New York, real action must be made to help in the process of Hydro-Quebec contract cancellation."

  1992 - Update: Hydro-Quebec is notorious for constantly begging for more money to do further Ecological damage. In the spring of 1992 New York State cancelled their contracts with Hydro-Quebec. However after having studied the history of the project in Boyce Richardson's book: Strangers Devour the Land, I know that Hydro-Quebec will always be back with a vengeance. In Christmas of `92, a US imposed governmentally mandated environmental assessment was

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underway. According to a Cree displaced by Phase I, Hydro-Quebec managed to manipulate the results of the assessment and proceeded as usual with Phase II, [they did]. They also targeted Detroit, and were back in 1993 and 1997.

Please Listen to the Cree in Sharing their Experiences and Wisdom with us:

- It is important to consider that the Cree and Inuit want to stop the further harmful development of their sacred land, but have been facing an opposition that sees James Bay as a desolate wasteland to conquer sometimes with reckless abandon and claims that legal land rights are in the favor of Hydro-Quebec. It is out of their sense of responsibility to their precious land, and utter outrage that The Cree consider this fight to be their third war.

- **This is from my Friend Will Nicholls**, Former Grand Council of The Cree Spokesperson, who now runs a Cree Publication *The Nation* in Montreal (see the Montreal Gazette article celebrating the 25th Anniversary of the glossy Publication: https://montrealgazette.com/news/local-news/alive-and-thriving-cree-newsmagazine-the-nation-celebrates-25-years), and who was featured in part 4 (35 minutes in) of the film by the Grand Council of The Cree *The Eeyouch of Eeyou Itschee*:

  "*You might check out The Nation's website is nationnews.ca. All of our issues are online and are free to download. You can find the last few years in the Recent Issues section and the older ones are in the archive. They are searchable. You might want to look at the Paix des braves and New Relationship stories."*

  *More importantly: "Hydro-Quebec has never given the Cree any royalties and has never made good on their promises of 360 permanent jobs for Crees. As I said the changes in salinity have affected eelgrass which geese and other migratory birds depend upon. Also the changing water levels of the dams (because of differing power demands) create dead zones that affect the wellness of the environment as these are the most productive areas for Cree and animals are around the waterways. Mercury is still a problem even though Hydro-Quebec has hired Crees to cut down trees. There are still a lot of boggy areas that help to create and introduce the methyl mercury into the environment. Caribou * herds in the eastern James Bay area are all threatened. While the Cree have made deals a majority have been made under duress. The increased purchase of power from Hydro-Quebec will be used to create more dams and diversions as it will be seen as something that is needed.*

  A concern that Maine and New England should consider is that such a large part of their power is through a dedicated transmission line. It is vulnerable to a terrorist attack. Not one by the Cree but looking at export levels to the US is

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something to consider. Putting so many eggs in one basket may be problematic given the current world situation."

Will"

* Caribou are endangered see: https://defenders.org/woodland-caribou/basic-facts

Please Listen to the Cree in Sharing their Experiences and Wisdom with us (continued):

- **My Cree Poet Friend Margaret Sam-Cromarty**, is a hero I met while she was giving Testimony at the Massachusetts Congressional Energy Committee Hearing at their State House and at a Tufts University Environmental Conference, in the Boston area in the winter of 1992. She and her Daughter Jane Sam Cromarty sent the following correspondence that they wanted me to share with you. Jane Sam Cromarty is a community member of the Cree Nation of Chisasibi, Quebec. After thirty years with the Cree Board of Health and Social Services of James Bay, Jane is now leaving her position within the agency having managed under Health and Social Services, and she is quickly becoming a Budding Climate Action Advocate. Please see Margaret Sam-Cromarty's poetry here: https://zocalopoets.com/category/poets-poetas/margaret-sam-cromarty/

  March 21, 2019

  "*After many years of being dormant the issue of Hydro-Quebec is back again. The signing of the founding fathers of the James Bay and Northern Quebec Agreement (JBNQA) in 1972 did give the Crees some control over their vast lands. Today it is Our Reserves members possess the right to live on reserve lands.*

  Of course, Hydro Quebec with never tell that northern Quebec had suffered a severe drought in the past years. The giant reservoirs along the Chisasibi river (in french) La Grande vaporize into thin air every hot summer and in winter it crystalizes into ice because of the brutal cold winter weathers. Their giant dams did do a lot of damage to the Cree and Inuit way of life, but the huge investment of southern Quebecers came first. Now there is such a thing called environmental crimes and who is held responsible pays.

  We in Chisasibi must prove our capabilities without any outside help or control. We in Chisasibi must govern our own community. Our personal health both mental and physical is our most valued asset and deserves to be carefully guarded. Make no mistake this billion tons of kilowatt energy goes past our doorsteps, our reserve.

  The giant gates have to be open to make electricity, electric currents flow past our reserve it kills everything in its path. Anyone who infringes without our permission and use our reserve for gain is prejudice.

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Hydro Quebec cannot make power (water power) without getting rid of water from their reservoirs this water goes pass our reserve Chisasibi who say it's clean power for years the people of Chisasibi had suffered. There is always the fear of the Mega dams to break at any time."

By [© 2019] Margaret Sam-Cromarty

Please Listen to the Cree in Sharing their Experiences and Wisdom with us (continued):

This is from Jane Sam Cromarty, these were inspired by our first phone call on March 24, 2019. It is also helpful to understand that according to scholar Luis Eguren, "Hydrogen is created by electrolysis, the running of an electrical current through water."

Wednesday, April 17, 2019

Climate Change

The warming temperatures due to climate change in the north has had devastating impacts on the entire James Bay Ecosystem. One of the most extreme effects is that the dry weather conditions have created forest fires. The Eastmain community lived through such a tragic fire event. It was evacuated because the fire spread so fast, that the people were caught unaware of the impending danger. These dry conditions were created when there is hardly any rain.

The former village that the people called Fort George Island, is now the new reserve of Chisasibi relocated in 1980 about 5 kilometers to the mainland near the river of Chisasibi, this is where the new town was built. It has a population of 5,000 both Crees and other non-Native Worker Minorities. During this relocation of the village the Cree's of Fort George were told that the island was too small for the growing population therefore a new community needed to be built on the mainland. When this move took place, the dam's upriver at LG-2, LG-3, LG-4 and Brisay would create more water to be released down river to create electricity for the south. Since LG-1 dam was built in the early 1990's the body of water has increased along with the Rupert's River diversion of water to LG-1 dam.

It's important to understand that when the water goes through the turbines in the dams, the water picks up an electrical charge. Since the release of the fast flowing water into the river near the reserve of Chisasibi, it created massive erosion on Fort George Island making the sandbars, and beaches that were part of the landscape of the former community along the river, disappear. These sandbars and beaches, which show the destruction of the river were part of the landscape of the former village of Fort George Island.

Today it's just water flowing all around the island creating erosions as there are hardly any trees along the north side of Fort George to uphold the banks from eroding into the river. We live right on the tree line of the boreal forest of northern Quebec. We know the fast flowing water creates an electrical current we see it with our own eyes, the water flows fast, any water that flows fast creates an electrical current the electricity is not seen by the eye, it's more like static electricity, the proof is in the solid objects that are near the water. As one community member pointed out how the electrical current creates electricity through observation of a solid square cement block in the water in which this cement block became round thus proving that the fast flow of the water

creates an electrical current. In many ways this shows how the climate has affected the river. We experience long winters that affects the high water levels that are constantly high when we go to the LG-1 dam reservoir. Also when we go to the LG-1 dam reservoir the water is always at highest level indicators on the turbines where the water flows into the turbines. Also there is always debris of logs jammed along the shore on the side of the reservoir during early spring thaw.

Please Listen to the Cree in Sharing their Experiences and Wisdom with us (continued):

Jane Sam Cromarty (continued):

Because of Climate Change the river hardly freezes creating mist that hovers over the river giving it a crystal glow. It looks like a magical winter wonderland scene where all of the trees and the town looks like its covered in crystals sparkling like diamonds. The fog like mist hangs heavy in the early mornings on very cold winter days. These seemingly beautiful sceneries can be deceptive, a danger lies beneath. This constant cold mist creates moisture that seeps into the ground spreading underneath reaching far into the ground that it makes an electric current underneath the solid surface of the Earth. In the Wikipedia the meaning of GROUND (electricity) in electrical engineering, ground or earth is the reference point in an electrical circuit from which voltages are measured, a common return path of electric current, or a direct physical connection to the Earth. Electrical circuits may be connected to ground(earth) for several reasons. This is the point in which my mother is trying to convey of the electric current from the LG-1 dam that is creating this electric current from the river that affects the climate and changes to the weather and land.

It will affect your land, in Maine. What will happen if the transmission lines go up in your country side? It will take away the natural way of life that has sustained Maine for generations. What has affected our Land on the East Coast of Northern James Bay will affect the Land in Maine the same way. You can just go and stand under the High Transmission Lines and hear the crackling of the electricity coursing through the wires. One elder said that the blueberries growing under the power lines are very huge. You know that there's nothing that covers those electrical lines, this will affect you in a same way. Those power lines how many electrical electrons are passing its something you know you can hear it the electricity going through and anything under that powerline they will grow huge and flow out in the air as the wind carries it over many miles. You know where as in Mexico power there is nothing that covers those electrical wires and in the electricity flowing out into the land it emits those electrons and to the unseen eye the electrical radiation is always a threat to the well being of any creature whether it is the land, forest, and all living creatures that live in this planet. Maine will be affected in this similar way as the Cree's of James Bay. All of this didn't exist before the dams.

As can be seen in the damming of the Chisasibi river, in the damming of the Rupert's river we call Waskaganish, a Cree community, one of five coastal communities in James Bay. We feel the impacts and the local people know what has happened and overlook the problem of climate change and how it affected us in the Rupert's river diversion the causes of these massive erosions as more water comes in, it will seep under the ground and further more it does not show until it collapses, just like on Fort George Island it seeps under the ground, this electric current generated by the water, and we are going

to hear those booms again. This is what creates this phenomena when the land is too cold, it can get to be -30 Celsius without the wind-chill but with the wind-chill it can be below minus -40 to minus -50 Celsius, the moisture from the water expands and when it expands too quickly, it makes a big boom sound when the ground is too cold like an earthquake. The waste or excess is what we call the electricity that is not used, it is invisible to see, but it is there in the air generated by the overflow of the electric current

Please Listen to the Cree in Sharing their Experiences and Wisdom with us (continued):

Jane Sam Cromarty (continued):

that is coming from the dams upriver because it cannot go anywhere but towards the land. This is the waste in which this electric current needs to go somewhere. It is not going to an electric transmission line it is just the electricity that is there which is going towards the community creating these vapors in the atmosphere affecting the community . The LaGrange River, which flows through Chisasibi is one of the few tidal Rivers in Quebec, and Hydro Quebec with the construction of the LG-1 dam has damaged the tidal river creating very low tides and dry muddy shorelines.

In our struggle to preserve our way of life we know there is damage done to the environment and you know because it passes through our reserve. As Hydro Quebec continues to sell this electricity to destroy another peaceful and beautiful land in another far away place, it will be destroyed forever. We are proof of that destruction, we live it daily, we have been through many traumas by many strangers who come to devour our most scared inherited right: the land. The 1972 agreement continues to affect us after forty-seven years of Hydro-Quebec's action to sell electricity at any cost.

Cultural Impacts:
The loss of land is one of the major catastrophes, the shrinking hunting traplines of the trappers, the continued disruption of wildlife of migrating birds and the damage to the shorelines where birds breed and feed their young. This change affects the water ecosystem and changes in landscape and familiar land spots of the migratory birds breeding areas. The impacts of poaching due to lack of wild game the and there is a decline of caribou and moose. These cultural impacts affect the way of a hunter hunts to survive from the land.

This change in the life of the hunters, has had major changes in our lifestyle. We have changed to main stream in that we live more like town people. Where once our people spent time in the bush year round, now I normally go into the bush only seasonally. Influences of abuses: Sexual, Alcohol, Drugs, Child and Elder Abuse, lack of Housing and Homelessness are on the increase.

Ecological Impacts:
One of the most devastating situations is the disruption of the ecosystem which has affected the migration of Geese in their feeding sanctuaries disappearing due to the weather, salt water flow into river bringing more salt water from the bay towards the inland of the river. This is affecting Cree hunters who now hunt South in Quebecois farmers fields.

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Please Listen to the Cree in Sharing their Experiences and Wisdom with us (continued):

Jane Sam Cromarty (continued):

Jane sent to me some excerpts from their fact sheet **Contaminants in the environment, which shows that the Cree are examining the effects of** mercury, lead or other contaminants, providing this information to the provincial database, and informing people about how to prevent these contaminants from building up in their bodies. To this end they provide the following information on:

Eating fish safely (**http://www.creehealth.org/eating-fish**)**:**

- High-mercury fish are usually:
  - Fish from reservoirs or directly downstream from hydroelectric power plants
  - Predatory fish - ones that eat other fish
  - Large fish – more than 1 ½ feet (50 cm).

- lead ammunition - impacts on health (**http://www.creehealth.org/leadfree**)

Indoor air quality (see also: Fact Sheet) ever since the Cree were forced from their traditional sustinance way of life when the dams caused the mercury poisoning in their food: indoor air quality, including mold, radon, which can cause cancer (read more about radon), and carbon monoxide, have become a major concern for Public Health in the Cree CommUnity. Jane told me that these problems are made worse by the fact that the housing stock in their CommUnities are poorly constructed, drafty, and allows these indoor air issues to become major problems in their homes.

I have to ask: that with all of the booming that is occurring, might that cause an earthquake and a breach in the dams? Also what might we not know, if there might be fracking going on in the area, what might those implications be? Also is there any Emergency Management preparation for any kind of emergency for a dam breach and is there a way that Hydro-Quebec could be forced to pay for this? What would Maine's responsibility be if such a disaster were to occur?

Margaret Sam-Cromarty brought home to Jane Sam Cromarty a Climate Change article on page 34 from the Cree Hunters and Trappers Magazine from the November 25 Part 1 in this the link to the Magazine:
http://www.chtisb.ca/publications-en/the-cree-hunter-and-trapper-magazine

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"There are powerlines all over the James Bay area it is a familiar sight to see these rocket-like shaped towers standing out on the land in rows and rows of powerline towers looming as if to blast off into space dotting the countryside."

– Jane Sam Cromarty

Please Listen to the Cree in Sharing their Experiences and Wisdom with us (continued):

Some final observations from Will Nicholls: He really wants us to know that what happens in James Bay also affects us here in Maine.

"*Impacts upon the James Bay and Hudson Bay aquatic ecosystem will in turn affect the Atlantic Ocean, less nutrients and changing temperatures, etc. Effects on migratory birds such as geese and ducks to name a few. Greenhouse gases.*

He further emphasizes that any *"Study should include the Greenhouse gas emissions created by the dams in Quebec where the power originates. Exporting pollution will affect Maine. Changes in the ecosystem in James Bay and Hudson Bay will reach Maine."*

In relation to Jane Sam Cromarty's submission, Will said that: *"climate change can be attributed to Hydro-Quebec (HQ) dams- methane gases released and the reflection of the water from the dams increases heat for the area. Also forest fires are allowed to continue without fighting them in Eeyou Istchee unless they endanger communities of resource extraction sites- ie mines, forestry camps, HQ camps. Increased water flow is eroding areas after the dams because now instead of three rivers and all the creeks they are centered on the La Grande river [where Chisasibi is located]. Erosion is also added too as around the dams there are huge areas that are dead zones- trees and other plants hold back the effects of erosion by water- now it is mud flats that change drastically with increased or decreased electrical demands both in Quebec and the US. The increased water flow from the La Grande complex was and is expected to erode the island where the original community was situated. This increase in water flow from the dams ensures that the river does not freeze over in certain areas. It also means a thinner ice which allows it to break up earlier then in the past.*

The electrical radiation from power lines has been known to cause cancer and other problems to people living near them. Another concern is what type of defoliants are being used to keep the vegetation down. Until the Nation exposed it Hydro-Quebec was using Agent Purple, a cousin of Agent Orange to do this from the La Grande complex from Radission to Chibougamau. We saw animals with damaged livers and other problems. So this must be examined by Maine to see what type of environmental problems could arise from whatever method they will adopt.

Tidal rivers are ones that run into the sea, ocean or huge bays such as James Bay or Hudson Bay. Connected to the ocean and subject to the gravitational effects of the moon.

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The effects in Waskaganish are evident- the spawning of the white fish has been affected. I used to get some smoked fish from them but they say with the Rupert's river and Eastmain river diversion it is not the same. There are not as many fish as in the past. The beaches and such disappearing are an effect of this as well as the eel grass disappearing, which is a major food source for geese nesting in Eeyou Istchee. Something Ducks Unlimited should be made aware of as two of the major migration route destinations for geese and ducks is in Eeyou Istchee. Expect to see less of the waterfowl population in the future."

Please Listen to the Cree in Sharing their Experiences and Wisdom with us (continued):

Some final observations from Will Nicholls (Continued):

I think that the following paragraph is taken from the following academic website https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/95GB02202 :
"The James Bay Reservoirs (Canada) In indigenous hunting and trapping societies such as the James Bay Cree in Northern Québec, increased government transfers and financial compensations obtained within the scope of the James Bay hydropower projects have led to the development of modern well-equipped communities. The creation of new public services within these communities has led in turn to numerous relatively well paid clerical jobs for local residents. Consequently, a few social scientists have evoked the possibility that the social differentiation brought about by the emergence of indigenous white-collar elite in such communities could eventually threaten the status of traditional master trappers or tallymen.
Sources: Berkes and Cuciurean (1987), Proulx (1992) and Simard, et al. (1996)"

Finally, again I want to reiterate the importance of the article that Will sent to me:
"*Megadams Not Clean or Green, Says Expert* Forty years of research show hydro dams create environmental damage, says David Schindler,"
professor emeritus at the University of Alberta and internationally renowned for his expertise on lakes and rivers, who has been outspoken against the Alberta tar sands, says: "the greenhouse gas production from hydro is expected to be about the same as from burning natural gas."
https://thetyee.ca/News/2018/01/24/Megadams-Not-Clean-Green/

I also highly recommend watching the film: *Heavy Metal: A Mining Disaster In Northern Quebec,* about Will Nicholls' Friend Chris Covel, a long time Maine Resident who has worked so hard to remediate a Cree CommUnity from the destructive health effects from Mining, only to have his considerable academic scientific research credentials called into question and cast aside by the Quebec and Grand Council of the Cree Authorities. Do we really want to do business with such entities?
https://youtu.be/gHs3akggnis

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Learning from the Cree: Why We and our Legislators Should Reject the NECEC Corridor!

Cultural Genocide and Ecological Ethnic Cleansing, why we should reject the NECEC:

- While the energy produced by Hydro-Quebec's dams is deceptively being billed as "clean", the method of production is devastating the James Bay Ecosystem.
- "the greenhouse gas production from hydro is expected to be about the same as from burning natural gas." David Shindler
- (And we still have greenhouse gasses.)
- The NECEC Corridor is heralding the further demise of the Cree and Inuit and their sacred way of life.

The Definition of Genocide:

The Convention on the Prevention and Punishment of the Crime of Genocide(CPPCG) was adopted by the UN General Assembly on 9 December 1948 and came into effect on 12 January 1951 (Resolution 260 (III)). Article 2:
"Any of the following acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group, as such: killing members of the group; causing serious bodily or mental harm to members of the group; deliberately inflicting on the group conditions of life, calculated to bring about its physical destruction in whole or in part; imposing measures intended to prevent births within the group; [and] forcibly transferring children of the group to another group. (Article 2 CPPCG)"
1987: From Isidor Wallimann and Michael N. Dobkowski:
"Genocide is the deliberate, organized destruction, in whole or in large part, of racial or ethnic groups by a government or its agents. It can involve not only mass murder, but also forced deportation (ethnic cleansing), systematic rape, and economic and biological subjugation. (*Genocide and the Modern Age: Etiology and Case Studies of Mass Death*. Syracuse, NY: Syracuse University Press, 2000. Reissue of an early work.)[21]"

- **How The Cree and Inuit have suffered from such a tragedy:**
  - Hydro-Quebec, especially since they learned about the devastation of their Mega Dams from Phase I, deliberately inflicted on the Cree and Inuit, conditions of life, calculated to bring about its physical destruction in whole or in part;

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- With the establishment of the Residential Schools, Hydro-Quebec imposed **measures intended to prevent births within the group**; [and] forcibly transferring children of the group to another group. (Article 2 CPPCG)"
- With the forced deliberate deportation to make way for the dams, the Cree and Inuit were subject to ethnic cleansing. [1987]

Learning from the Cree: Why We and our Legislators Should Reject the NECEC Corridor!

•Nevertheless, this Hydro-Quebec scheme to sell it's costly electricity to Massachusetts means that Hydro-Quebec will want to build more dams. More dams will bring further destruction to the James Bay Ecosystem, further harm and demise to its indigenous inhabitants, our Cree and Inuit neighbors, and create an increase in Global Warming.

•Every time a new dam is built, water levels rise and new "power pools" are created, discharging more greenhouse gasses into the air. The Cree and Inuit lose even more of their land, they lose more of their homes, their food sources are further compromised, and more of their sacred and ceremonial sites get submerged.

•Hydro-Quebec would use the NECEC Corridor to justify building more dams in the James Bay area, further threatening the Cree People and their sacred home, thus exacerbating the existing cultural genocide and ethnic cleansing.

- **Important Questions we need to consider before making a decision on the NCECE:**
  - While the energy produced by the dams is "clean", the method of production is extremely destructive.
  - How can we trust Hydro-Quebec? – they've repeatedly reneged on their agreements with the Cree and Inuit Nations. Thus if Hydro-Quebec and Quebec, and Canada, have not honored their treaties and agreements with not just the Cree in Quebec, but also with those dealing with the tar sands extraction zones in Alberta; how can we, the PUC, Janet Mills, and the other Interested Parties here in Maine trust that Hydro-Quebec will honor the agreements that they have made with Maine's CMP, PUC and Janet Mills, when they haven't even Honored those that they have already made with their own Citizens?
  - It is thus clear that HQ has Committed Cultural Genocide and Ecological Ethnic Cleansing.
  - Knowing the consequences, and consciously choosing to build the NECEC and any new dams anyway, constitutes cultural genocide and Ecological ethnic cleansing of the Cree and Inuit people.

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- Is the State of Maine going to consciously choose to participate in a project that results in cultural genocide, ecological ethnic cleansing, and an increase in global warming?

- Maine would be losing acres of pristine beauty and gaining a huge scar of ugliness, but for what?

- VT rejected a similar proposal from Hydro-Quebec,
  The NECEC Corridor is Hydro-Quebec's scheme for financing their costly Mega-dam system, at the expense of the Cree and Inuit and their sacred way of life.

For Additional Reasons Why Our Legislators Should Reject the NECEC Corridor:

Learn More:

From Maine / Environmental Organizations, and sign their petitions too!

1. See this from the Stop The Corridor site:
   https://www.corridorno.com/just_the_facts / contact@corridorno.com
2. Also see the Natural Resources Council of Maine site for up to date information on this project, and to sign their petition:
   https://www.nrcm.org/projects/climate/proposed-cmp-transmission-line-bad-deal-maine/
   207 – 622 – 3101 Toll Free: 1 – 800 – 287 – 2345
3. See Patagonia's Action: https://www.pressherald.com/2018/06/06/patagonia-takes-aim-at-cmp-transmission-project/

Find Books, Films, and other Muti-Media: re the Cree and James Bay: Hydro-Quebec's devastation, and those affected by the NECEC Corridor, including:

For the Cree way of life:

1. ***Flooding Jobs Garden***, part of the series *As Long As The Rivers Flow*, from Journalist Boyce Richardson: a sequel 15 years after the JBNQA https://youtu.be/DfsD6rrVv6I
   Concerns to consider: The Cree feel helpless, as we in Maine do with CMP and Hydro-Quebec weaseling their way into our woods, over the demise that has happened to their sacred land due to the Hydro-Quebec Mega Dams and all of their Transmission Lines. We in Maine are also in a David vs Goliath situation with Hydro-Quebec strong-arming their way into convincing Central Maine Power CMP, etc., that it is in their best interests to go along with their New England Clean Energy Connect NECEC Transmission Line Corridor, and we fortunately are in a slightly different situation in that we here in Maine have not yet had our fate sealed by Hydro-Quebec, and that we must endeavor together to stop the same fate that has befallen the Cree from Hydro-Quebec, from befalling us here in Maine.

   Since the Cree experienced so much clear-cutting after the Hydro-Quebec Mega Dams along with all of the other infrastructure including Transmission Lines, etc., could that be the next plan for the Western Mountains and Rivers Corporation,

once the NECEC Transmission Line Corridor has been put in? Do we really want to risk our pristine forests here in Maine with this NECEC Transmission Line?

The Government of Quebec and Hydro-Quebec look down on the Cree Indigenous Wisdom as not being scientific enough, much in the same way that Central Maine Power CMP and those who want to build this CMP Hydro-Quebec NECEC Transmission Line Corridor look down on those most attuned to the wilderness who want to save it here in Maine. Do we really want to accept similar treatment to us here in Maine, and also accept a similar fate happening to us here in Maine?

For Additional Reasons Why Our Legislators Should Reject the NECEC Corridor:

Learn More:

Find Books, Films, and other Muti-Media: re the Cree and James Bay: Hydro-Quebec's devastation, and those affected by the NECEC Corridor, including:

For the Cree way of Life (Continued):

2. ***One More River,*** by Rezolution Films:
   https://youtu.be/gUlZejaruII
   This film gives a compelling reason why we should not trust anything that Hydro-Quebec tells us. Filmmakers Neil Diamond and Tracey Deer travel deep into James Bay to follow Cree Filmmaker Earnest Webb, in an emotional behind the scenes process up to the signing of the *Paix des Braves Agreement* of 2002, and how the Native Cree Tallymen hunters raced to stop it's implementation in which Hydro-Quebec Mega Dams would divert the Rupert River, and how the Grand Council of the Cree Government were swayed to sign onto to it. It also features Cree Advocate Roger Orr, and my Cree Friends Matthew Mukash and Larry House who truly stood up for their People and Ecosystem. Do we really want to make the same mistakes that the Cree made in signing onto something with Hydro-Quebec?

3. ***Down The Mighty River***: ***The Deal That Split The Cree*** (unfortunately I can only provide the site to the trailer): http://rezolutionpictures.com/portfolio_page/down-the-mighty-river/
   A sequel to *One More River*, a six part Television documentary series, which follows Earnest Webb in the summer of 2009, as he checks in on "The Legacy Paddlers" a group of canoe paddlers who are the last to travel the length of the Rupert River before it was diverted. It is a chilling look at how the culture has been devastated due to the horrific transition from a sustinance existence to being dependent upon a Western Consumer Oriented Economy, incl. drug addiction, depression, and suicide.

4. ***Heavy Metal, A Mining Disaster In Northern Quebec,***
   https://youtu.be/gHs3akgqnis
   This is about Will Nicholls' Friend Chris Covel, a long time Maine Resident who has worked so hard to remediate a Cree CommUnity from the destructive health

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effects from Mining, only to have his considerable academic scientific research credentials called into question and cast aside by the Quebec, and Grand Council of the Cree Authorities. Do we really want to do business with such entities?

5. **Boyce Richardson's Films**: intimate Journeys with the James Bay Tallyman before the Hydro-Quebec Mega Dams besieged their CommUnities ***Job's Garden*:** https://youtu.be/AgHvzm9R0HE
6. **Boyce Richardson's *Cree Hunters of Mistassini:*** https://youtu.be/hhSxzBPAYXA

For Additional Reasons Why Our Legislators Should Reject the NECEC Corridor:

Learn More:

Find Books, Films, and other Muti-Media: re the Cree and James Bay: Hydro-Quebec's devastation, and those affected by the NECEC Corridor, including:

For the Cree way of Life (Continued):

7. **See the Rezolution Pictures website for their Cree Documentaries, especially the "*Dab Iiyyuu*"** series (Series 3 here: https://www.youtube.com/playlist?list=PLXssjYeUyJVFhE6TmYzllXcVsqw10TkzU and clips here: https://www.youtube.com/playlist?list=PLE61AD6788D9D0FF1) , and ***Charlie Makes A Drum*** under the documentary section:
   * http://rezolutionpictures.com/our-work/

8. This article, below, further illustrates the kind of problems that would not exist if the dams did not destroy their, as someone in the *The Eeyouch of Eeyou Itschee* film described as akin to someone going in and robbing and invading "your" home, their land: https://www.thestar.com/news/canada/2016/05/02/cree-nation-on-quebec-side-of-james-bay-thriving-while-first-nations-on-ontario-side-languish.html

9. ***Eeyouch of Eeyou itschee*** Cree page, on the Grand Council of The Cree site, please understand that this is from the Grand Council of Cree which offers it's Political perspective, and not necessarily that of the Tallymen of James Bay: https://www.cngov.ca/resources/the-eeyouch-of-eeyou-istchee/ (Make sure to click through to the Vimeo video player site to ensure that you can scroll to watch this four part series).

10. I also am encouraging Maine Governor Janet Mills to reach out to our friend Hannah Pingree in her new position as Leader of The Office of Innovation and The Future, (again thank you Governor Mills, for your nice nod to Kurt Vonnegut), to consider a new cooperation with the Cree Tallymen and the Cree Youth who are grappling to find their way to a future worth living, as the Youth of Maine, to follow the example of the Grand Council of the Cree in their work to solve Climate Change.

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See this link for the video about how the Cree Nation of Waskaganish has developed a call to action for it's people to tackle climate change https://www.cngov.ca/news-issues/current-issues/waskaganish-call-to-action-climate-change-adaptation/ or this YouTube video, which needs the captions turned on to English: and this from the Cree Community of Mistissini: https://youtu.be/CBvu1jU_ySg

For the area in Maine that would be affected by the NECEC Corridor:

Maine Public Special Series: "Power Struggle In The Maine Woods": Produced by Fred Bever, a Multi-media weeklong news series:
https://www.mainepublic.org/programs/power-struggle-maine-woods

Some Final Thoughts:

What Are We Doing Unto Others?

If we thought that the CMP Corridor (NECEC) would put our homes underwater, turn our food supply toxic, or Doom our families to a lifetime of cancer, would we vote for it?

Of course not!

Would we want to impose that on our neighbors to the north?

Of course not!

But that's exactly what happens to the Cree and Inuit people in the James Bay area of Canada every time Hydro-Quebec builds another dam(n) in their tribal territory. The waters rise, and their ancient way of life goes further under.

But build more dams is exactly what Hydro-Quebec wants to do. They'll finance their dams by selling electricity to Massachusetts… and CMP will do their bidding by running it right through our backyard!

If we vote to allow Hydro-Quebec to destroy our pristine Maine Forests, we're also voting to slowly exterminate an entire indigenous culture, little by little, one dam(n) at a time.

So we're not just voting on the fate of our Maine Wilderness; we're choosing whether or not we're going to engage in the ethnic cleansing and cultural genocide of the Cree and Inuit people. We're giving Hydro-Quebec the green light to putting the Cree and Inuit Nation further underwater.

Let's do unto our Cree and Inuit neighbors as we would do unto ourselves...
Let's say no to Hydro-Hydro-Quebec, their dams, and their Corridor.
Let's say Yes to Love, Life, and Beauty!

HeidiJV@hotmail.com

"He who stands to benefit, must also bear the loss"

- Walter Eucken, German Economist of the "Mount Pelerin Society"

Some Final Thoughts:

Seeking a Wise Alternative!

Old-time Mainers are known for their ingenuity; Millennials are solving problems that we never even dreamed of. Can't we all put our heads together to create a win/win alternative to Maine's NECEC corridor? Can't we boost our economy, address our energy needs, and solve the climate crisis by creating instead of destroying?

I know that there are a privileged few who would like to profit from Maine's proposed NECEC. Can't we help them profit from something else? Something that wouldn't put another scar on Mother Earth?

I'd like to propose that we, on all sides of the Maine Corridor issue, join our Hearts together in a nonpartisan, non-denominational event; in the spirit of a prayer circle, a ring of protection of love around our Sacred Maine wilderness; to address these issues by focusing our highest energies on creating the best possible outcome for the Future of Maine… our wilderness, our water, our air, our Earth, we the people of Maine, and the innocent wild creatures who count on our wisdom for their well-being… Not to mention our Cree and Inuit neighbors to the North.

Let it be even better than we can ever imagine…

Please send your solutions to (will edit when I figure this out!)

Help us STOP the Hydro-Quebec (HQ) and CMP: NECEC!
Call for a Peaceful Clean Green Energy Economy!

Advocate: We can take further actions, save energy, show up to Town Hall Meetings, call your Representatives, tell your friends, etc., to force the following entities etc., to not approve this Dirty Energy NECEC project! As consumers and voters we have the

HeidiJV@hotmail.com

power to make the policies! We need to urgently establish a new Peaceful Clean Green Energy Economy one in which all are paid a Living Wage! Do this, so that we all can Save Our Maine Woods and James Bay Today!!!!

Please sign this petition: https://nrcm.salsalabs.org/opposenecec/index.html

Help us STOP the Hydro-Quebec (HQ) and CMP: NECEC!
Call for a Peaceful Clean Green Energy Economy!

Send our leaders and utilities the message that we do not want this HQ CMP: NECEC Transmission Line to go through Maine as it enables Hydro-Quebec to commit further Cultural Genocide and Ecological Ethnic Cleansing of our Cree and Inuit Neighbors

Governor Mills and urge her to help stop the NECEC corridor, and for the development of a state energy plan emphasizing Efficiency and Conservation! Use the form from the following website: https://www.corridorno.com/splash?splash=1
Also contact Governor Janet Mills here:
https://www.maine.gov/governor/mills/contact
Or: 1 State House Station; Augusta, ME 04333;
207 – 287 – 3531

Central Maine Power CMP / Hydro-Quebec:
CMP does not make it easy to copy and paste their links so please search for the Central Maine Power website, go to the bottom of the page and look for the contact us site, which they prefer, or if you can't use the internet, call: **1 – 800 – 750 – 4000**
Hydro-Quebec: 514 – 385 – 7252 / 1 – 888 – 385 – 7252

**** *This is not a done deal and YOU have Actionable Steps* ****

4. **SUBMIT YOUR PUBLIC COMMENT**

   a. **Army Corps of Engineers (ACOE) *until April 25th*:**

HeidiJV@hotmail.com

Email Jim Clement directly - jay.l.clement@usace.army.mil

b. Maine Department of Environmental Protection (DEP) *until May 20th:*
Email Jim Beyer directly - NECEC.DEP@maine.gov

c. Land Use Planning Commission (LUPC) *until May 20th:*
Email Bill Hinkel directly - Bill.Hinkel@maine.gov

d. Massachusetts Department of Public Utilities (DPU):
Email alan.topalian@state.ma.us & dpu.efiling@mass.gov
NOTE: The text of the e-mail must specify: (1) the docket numbers of the proceeding (DPU 18-64; DPU 18-65, D.P.U. 18-66); (2) the name of the person or company submitting the filing; and (3) a brief descriptive title of the document. The electronic filing should also include the name, title, and telephone number of a person to contact in the event of questions about the filing.

Help us STOP the Hydro-Quebec (HQ) and CMP: NECEC!
Call for a Peaceful Clean Green Energy Economy!

Actionable Steps (continued):

5. WRITE TO STATE LEADERS – ASK THEM HOW THEY WILL VOTE ON LD271/640/1363/1383/1436:

Find your Senator: http://legislature.maine.gov/senate-home-page/find-your-state-senator

Find your Representative: http://legislature.maine.gov/house/house/MemberProfiles/ListAlpha

6. WRITE A LETTER TO THE EDITOR

a. **Bangor Daily News: (250 words or 600-700 words for OpEd)**
https://bangordailynews.com/opinion/submit/

b. **Portland Press Herald: (300 word limit)**
https://www.pressherald.com/reader-services/letters-editor/

c. **Kennebec Journal and Morning Sentinel: (300 word limit)**
https://www.centralmaine.com/letters-editor/

d. **Lewiston Sun Journal: (250 word limit)**
http://www.sunjournal.com/letters-to-the-editor/#submit

e. **Send it to your local weekly newspaper!**

7. DONATE TO HELP FUND OUR LEGAL EFFORT

https://PayPal.me/SayNOtoNECEC

Join our Say NO to NECEC Facebook group:
https://www.facebook.com/groups/279944929428517/

My Cree Poet Friend Margaret Sam-Cromarty, is a hero I met while she was giving Testimony at the Massachusetts Congressional Energy Committee Hearing at their State House and at a Tufts University Environmental Conference, in the Boston area in the winter of 1992. Please see more of Margaret Sam-Cromarty's poetry here: https://zocalopoets.com/category/poets-poetas/margaret-sam-cromarty/

"Steel Towers"

One cold day
I stood on the shores of James Bay.
The sun shone bright, the sky blue.
I wanted to find a clue.

Why, among the spruce and pine
rows of steel towers stood in line.
They were out of place,
near an Indian camp.

Looking for white birds' tracks,
instead as I turn my back
Tracks of bulldozers meet my sight –
Ruining the landscape in the fading light.

Against the sky and beyond
stand stark steel towers.
In this harsh land of ice and snow
these steel towers are colder than forty below.

We Cree live in harmony
on this beautiful land.

HeidiJV@hotmail.com

In a land where no man had trod,
in the fresh snow I read

Signs of upheaval of black earth.
Bulldozers making roads
and steel towers standing tall.

"James Bay"

James Bay, my home,
is closer than the moon,
its regions so bare,
aloof and remote.

Hudson Bay flows
to James Bay,
both beautiful,
wild and free.

The rugged coasts
of James Bay and Hudson Bay,
their charm
meets my eyes.

The sights and sounds
of James Bay.
They wrap around me,
giving me peace.

My Prayer for the Inuit and the Cree
Dearest my beloved Inuit and the Cree,
I pray
From the heart deep within me,
That your People
Won't be written-off
In the pages of
Long-oppressions-history
I pray
Great Spirit
Let the Inuit and Cree
On their land stay
So one more Sacred Native Culture,

We the world do not slay;
United States Native Americans,
The Sandinistas
The Jews
The Kurds
If the government of Quebec
Delivers its approval of the Dam(n) on James Bay,
The fragile safety net around the world would end up torn in fray,*
The Inuit and the Cree would be forced to flee
And many will flood
Like James Green plains
Tears of misery.
But now we can't allow our dismay,
We have something important to say:
Hydro-Quebec Get Out of James Bay
Get (the hell) Out Without Delay!

* I have heard that the reservoirs emit Greenhouse Gasses.

From: kmichka@aol.com
To: Hinkel, Bill
Subject: Deny CMP Corridor
Date: Monday, May 20, 2019 2:31:51 PM

Mr. Hinkel,

Please submit the following comments to the public record regarding the proposed CMP corridor.

I attended the LUPC public hearing in Farmington on April 2. I clearly heard the CMP representative state that CMP had not considered alternatives to the plan for which they were asking LUPC to grant exceptions, because the alternatives might cost their company more money to execute. That is unacceptable, and I feel the LUPC should not grant the requested exceptions. If, in the interim, CMP has offered alternative plans, there is no guarantee they are being forthright in other information submitted to your department, yet unbeknownst to you, based on the history exhibited that day in Farmington. Please withhold your decision on the matter until you are absolutely certain all the facts are on the table, and there is no doubt that granting an exception would not compromise even one single portion of Maine's myriad natural and economic resources.

All things considered, if public sentiment carries any weight in your department's decisions concerning the proposed corridor, please add my name to the list of those who do not wish Maine's natural resources to be compromised in order to fulfill Massachusetts' law concerning the amount of alternative energy their state has chosen to add to their energy mix.

Thank you,
Kay Michka
Lexington TWP

From:	Monica Russ
To:	Hinkel, Bill
Subject:	NECEC / Testimony in opposition to the project / LUPC
Date:	Monday, May 20, 2019 2:36:47 PM
Attachments:	LUPC_DEP_2Apr19.docx Steve_LUPC_2Apr19.docx

Dear Mr. Hinkel,

My husband and I each testified before the LUPC on April 2nd in opposition to the proposed NECEC project, but did not supply written copies of our testimony. Attached please find them.

Main points:

- CMP/Avangrid stated that they chose the most delicate route to avoid all of the areas possible that would cause detrimental harm including vernal pools, waterways, rivers, ponds, lakes, streams. They didn't. They could have chosen to run the pole line along gravel roads that exist from Quebec to route 201. They could have chosen to bury them. They chose not to, because Avangrid's endgame is wind power. A Cianbro representative told us they had 39 test positive sites for wind along the corridor, and Thorn Dickenson told us they had a wind project permitted for the area but lost the bid because they couldn't be competitive in transmission. Leveraging the NECEC solves that problem for them. Wind turbines will affect the viewshed of this entire area for miles, a place thousands of people visit annually for its wilderness. This project does too much harm visually, environmentally, and as a whole to our economy and our Maine brand.

  · We've heard a lot about 100 foot self weathering monopoles that will turn dark brown and blend in with the wild landscape. However, none of the four members (including a co owner) of the firm hired to do the visual impact study have ever actually seen one of those poles used in a project. They testified to that. So how are they qualified to inform us about what they are going to look like?

  · The landcover data used to prepare the visual simulations was outdated. It was from 1999-2001. How accurate are those representations? We need more views, more winter and four season views, real pictures of similar projects, in order to assess whether NECEC can be buffered from other recreational uses.

  · We also need clarity on the total distance over which an AT hiker would see the corridor. I believe it was testified that it would be visible for 5 miles in each direction from the point analyzed in the VIA. If that's true, that's most of a day of the Maine portion of an AT hiker's experience.

From: andrew walsh
To: Hinkel, Bill
Subject: Proposed Central Maine Power Transmission Line
Date: Monday, May 20, 2019 6:05:36 PM

Dear Mr. Hinkel,

I am writing with regard to LUPC's review of the proposed Central Maine Power (CMP) transmission corridor project and whether CMP should receive a "special exception" permit to cross three resource-protection subdistricts. The resource protection subdistricts include Kennebec River Gorge, Beattie Pond, and the Appalachian Trail. I wrote a lengthy letter to Maine DEP regarding my concerns about the project's impacts to Maine's scenic character and wildlife. I am strongly opposed to the 53-mile section of the project including its likely visual effects to the resource protection subdistricts mentioned above, especially since it has not been determined whether the project would impart any climate benefits.

Concerning the projects visual impacts to the Appalachian Trail, I can speak with some credibility regarding the value and importance of the A.T. having hiked the entire trail in 1978. Maine is arguably the best part of the entire trail experience. I continue to hike on Maine's section of the A.T. and on other Maine trails. I do not want to see any more visual distractions from the trail than already exist. Infrastructure that comes with a transmission project constitutes a blatant, visual intrusion to natural landscapes that deter visitors from the experience they come to seek. These places are too important to sacrifice for a project with questionable benefits, few of which will come to Maine. If the project must be built, other established infrastructure corridors should be sought.

I strongly urge LUPC to reject issuing a "special exception" permit to cross these ecologically, scenically, and recreationally valuable resource-protection subdistricts.

Thank you,
J. Andrew Walsh

(LUPC) review assesses whether CMP's power line should get a "special exception" permit to cross three resource-protection sub-districts: under the Kennebec River; near Beattie Pond; and across the Appalachian Trail.

- There have been no studies regarding the impacts of directional drilling under the gorge and the resulting impact on fisheries.

I disagree with those who see your function as finding a way to permit this project. I see each of you as our last line of defense, a team funded by Maine taxpayers to safeguard our land, air and water, our precious natural resources which are synonymous with Maine's brand. It is in that capacity that we respectfully prevail upon you to deny this project.

Thank you for your consideration.

Best,

Monica Russ McCarthy

Steve McCarthy

70 Augusta Road, Rome, ME 04963

Mailing: PO Box 387, Belgrade Lakes, ME 04918

(207) 716-6780

(207) 314-6758

Honorable Chair and Commissioners,

I am Monica McCarthy from Rome, I oppose NECEC and my position on NECEC is not ambiguous. (points to Say NO shirt)

I want to acknowledge your long day and let you know I'd planned to confine my comments tonight to a couple of things that have come up in your hearings yesterday and today. But others here have invoked climate change as a reason to proceed with NECEC and I must comment.

CMP has provided NO evidence that NECEC will help mitigate climate change. If it will, why does CMP oppose an independent study, as proposed in LD640 by Senator Carson, to assess NECEC's impact? Why don't they want to discuss NECEC's impact on greenhouse gases? I was there with you in January in your pre-hearing conference when CMP's attorney said greenhouse gas emissions weren't part of their application so they weren't in scope for these proceedings, saying it was between Hydro-Quebec and Massachusetts to determine whether the energy being transported through Maine by CMP via NECEC was "clean." If the applicant is selling NECEC to our Governor and to the public as a project we should approve with urgency to address climate change, an independent study should precede approval of NECEC so we know whether we'll get any climate benefits out of the very high price Maine is being asked to pay with its natural resources.

I also strongly disagree with my fellow citizen who testified earlier this evening, who sees your function as finding a way to permit this project. I see each of you as our last line of defense, a team funded by Maine taxpayers to safeguard our land, air and water, our precious natural resources which are synonymous with Maine's brand.

Some comments regarding points that have come up in the hearings yesterday and today re: the PR-Rs:

- We've heard a lot about 100 foot self weathering monopoles that will turn dark brown and blend in with the wild landscape. However, none of the four members (including a co owner) of the firm hired to do the visual impact study have ever actually seen one of those poles used in a project. They testified to that. So how are they qualified to inform us about what they are going to look like?
- The landcover data used to prepare the visual simulations was outdated. It was from 1999-2001. How accurate are those representations? We need more views, more winter and four season views, real pictures of similar projects, in order to assess whether NECEC can be buffered from other recreational uses.
- We also need clarity on the total distance over which an AT hiker would see the corridor. I believe it was testified that it would be visible for 5 miles in each direction from the point analyzed in the VIA. If that's true, that's most of a day of the Maine portion of an AT hiker's experience.
- There have been no studies regarding the impacts of directional drilling under the gorge and the resulting impact on fisheries.

There are some symbols that have universal meanings everyone recognizes. If you start paying attention, you'll notice that in virtually every popular TV show and movie about a dystopian future, from The Walking Dead to the Terminator movies, you'll see looming transmission towers as part of the backdrop, signaling civilization's decline. They are a stock image signaling dehumanizing conditions unfit for life.

We don't go into the Maine woods for a glimpse of a dystopian future.

We go to unplug.

Respectfully submitted before the Maine LUPC (with DEP present) in Farmington on April 2, 2019, and being duly sworn, testify that the foregoing testimony is true and correct to the best of my knowledge and belief.

_____

Monica McCarthy

Rome, Maine

Honorable Chair and Commissioners,

Good evening, my name is Steve McCarthy. I'd like to thank everybody here for coming out tonight and taking your time out, for or against, and thank you folks, for allowing us to speak.

I'm going to talk to the facts that I've learned from listening to CMP and some of their spokespeople. It is UP TO 1,700 jobs, not guaranteed 1,700 jobs. Out of those jobs, ZERO are guaranteed to Mainers. Zero jobs guaranteed. It is up to 3,500 direct and indirect jobs, no guarantee where those jobs will be coming from, or going to.

They chose this route, because eventually, they are going to supply either a conduit for windmills, or as Avangrid has stated, they are already the third largest wind power producer in the United States, they want to expand that. Mr. Dickenson (VP Business Development Avangrid) and I had a conversation while out snowmobiling this year when he explained to me that on the side of Johnson Mountain, they had a wind project permitted, but they lost the bid because they couldn't be competitive in transmission. Transmission meaning, getting the power from the windmill to the line. They're not going to get that wrong again. If NECEC goes through, the aesthetics, beyond the poles, will be the windmills. The route was chosen, directly, for the wind production. Cianbro has 39 test sites, that are test positive along the route, that information was given to me by a Cianbro individual, so taken in conjunction with the poles, and the windmills, this route was chosen directly. They could have chosen to run the pole line along gravel roads that exist from Quebec to route 201. They could have chosen to bury them. They chose not to.

Beyond that, the internet they're talking about, broadband, is on the poles. CMP is not putting that into your communities. It is $25,000 a mile from the pole into town. It doesn't matter if it goes to 20 houses, 25 houses, 100 houses. It's $25,000 per mile from the pole. The reason that it's not there now in the sparsely populated areas is the companies that provide it as a service can't make the money. It's not that they can't get it there. In many communities, it already borders

the communities. But the big companies that sell it to the public cannot make enough money off it to make it viable.

Mr. Dickenson's coworker stated that they chose the most delicate route to avoid all of the areas possible that would cause detrimental harm including vernal pools, waterways, rivers, ponds, lakes, streams. They didn't. They could have followed the gravel road. But it's because of the windmills that are going to affect the views of this entire area that thousands of people go to yearly, that I have taken myself for twelve years as a whitewater guide, into this area, and the reason people go there is for the wilderness. It is going to cause detrimental harm, visually, environmentally, and as a whole to our economy.

In closing, I'll say this: the Conservation Law Foundation opposed this project in New Hampshire, but they approved it for CMP.

Respectfully submitted before the Maine LUPC (with DEP present) in Farmington on April 2, 2019, and being duly sworn, testify that the foregoing testimony is true and correct to the best of my knowledge and belief.

_____

Steven T. McCarthy

Rome, Maine

From: Eben Rose
To: Hinkel, Bill
Subject: Please reject NECEC
Date: Monday, May 20, 2019 5:07:10 PM

Dear Commissioners,

The unorganized areas of Maine are a preserve of sorts, where land use and development is governed by wise and prudent decision making overseen by the LUPC. 12 MRSA §681 emphasizes "strong environmental protections… while recognizing the unique value of these lands and waters to the State…[and preventing] residential, recreational, commercial and industrial uses detrimental to the long-term health, use and value of these areas and to Maine's natural resource-based economy"

As major metropolitan areas make efforts to "decarbonize" their electrical consumption, they can and must do so in nondestructive ways. The elective NECEC transmission corridor is bundled with "sweeteners" that are intended to balance the acknowledged loss of these land-preserving and nature-preserving values. But these "sweeteners" are unrelated to this sacrifice.

Meanwhile there are homesteaders who seek this remote location to live off-the grid. This form of slow development is itself an important public asset because the lessons these homesteaders learn and can teach us all how to live more simply and sustainably in closer harmony with nature and the sources of their consumption. Yankee ingenuity and grit combine to offer alternatives to high-energy consumption habits that tend to accompany metropolitan life.

NECEC is promoted by CMP and AVANGRID as a necessary step toward regional decarbonization. But there are alternatives that you are well aware of that do not sacrifice the unique value of these lands. Northeast Clean Power Link, the already-permitted underground HVDC cable in Vermont, is the third in line for Massachusetts' RFP if rejection of Northern Pass is upheld by the New Hampshire Supreme Court and if NECEC is rejected by the LUPC (as it should be). LD#1436 currently under deliberation by the Maine State Legislature proposes to repurpose the mothballed Portland-Montreal (crude oil) Pipeline as a HVDC conduit linking Quebec to Southern Maine (using similar flat-cable technology as the Kontek link between Denmark and Germany).

AVANGRID is a private for-private company. Their interests are constrained by timely delivery of profit for their shareholders. Their interests are not those outlined in 12 MRSA §681. Land-preserving options that otherwise fulfil the green energy claims espoused by NECEC are not presented as options because they are inconvenient to AVANGRID and the promises it has made implicitly in its assessment of risk to shareholders in obtaining permits. But AVANGRID's convenience and fulfilment of promises to private shareholders is not the responsibility of the LUPC to uphold.

From:	Debbie May
To:	DEP, NECEC; Hinkel, Bill
Subject:	NECEC
Date:	Monday, May 20, 2019 3:01:34 PM

To: Maine DEP and LURC

Good afternoon,

I am requesting you to deny the NECEC permit. I am a property owner in the West Forks and spend a tremendous amount of time there. I feel the project will cause unnecessary, permanent damage to that area.

I would like to point out a couple of things that have been bothering me.

1. I could not help but notice-- and I am hoping you did too--that during the testimonies on this project--The vast majority of those testifying on Central Maine Power's behalf were all being paid for their testimony. The majority of those that were testifying against the project were there on their own behalf-- because they care about the resources of Maine.

Another observation I had, the majority of CMP's witnesses seemed like they were not very knowledgeable about the subjects they were testifying about and had to think about how they were going to answer any questions. Again, on the contrary, the witnesses against the corridor seemed very knowledgeable and quite confident in their answers. Many times when someone has to think about their answers, their testimony may not be "the truth and nothing but the truth". It definitely appeared to me that CMP's witnesses were trying to say what they felt would help the project get permitted instead of telling the true facts.

I understand it must be very hard being in your position to make this decision. I urge you to listen to those that care about Maine, its resources and it's future for generations to come, and deny this permit as it currently stands. At the very least, the entire new portion of this project should be required to be completely underground.

It is obvious, the project was designed with minimal concern for Maine's citizens and resources and maximum concern for profits for CMP.

If you deny the permit at this time, CMP could consider alternatives and propose a project that would not have nearly as much damage to Maine. However, if you approve the project as proposed, there is no way to undo the damage.

Please consider the opposition.

Thank you for your time.

Debra J May

PO BOX 235

New Gloucester, ME 04260

207-926-3726

Please the reject NECEC.

Sincerely,

Eben Rose

RECEIVED
MAY 20 2019
LUPC - AUGUSTA

To. James Beyer NECEC; Bill Hinkle LUPC; Paul Stearns maine gov. May 16, 2019

Tourism is a vital aspect of economic survival in the proposal CMP corridor area. We who live here know that "wilderness" is really an illusion – but fortunately most tourists do not.
The windmills are chipping away at this illusion, but at least, they provide an overall increase in green power. It must be conclusively proven that the corridor project will decrease OVERALL use of fossil fuel for power for it to be even considered. Otherwise, what benefit could possible accrue to the "wilderness" area to offset the losses? The windmills would reportedly bring jobs and economic improvementto us, but I've been driving for over 70 years from Greenville to Abbott and then through the "Maine Woods" to Bingham, Athens and Hinckley to get on the turnpike and have seen only economic deterioration. We must be especially cautious in evaluating any proposals which permanently threaten our limited assets.
The corridor project needs further study and full disclosure concerning the "green" benefits. This should be done by an independent committee made up of people in the area who have "dogs in the fight".

Jim Richards
Shirley

May 20, 2019

Hello!

I hear this is the last day for public comment! Nothing like waiting till the last minute! I actually had this in note form for one of the hearings, but it went so long, so many people wanted to object to the corridor, that I had to leave without speaking and go to bed. I, therefore, very much appreciate the opportunity to share my opinions in written form. It was just a matter of writing them out in full sentences. Thank you for reading this note.

Maine's wilderness is priceless. That means it is so precious that it should not be for sale at any price. However, one side of this debate seems to think it is all about money. They want their profits. They will spend big money to try to get them. They will accuse the other side falsely of taking money from lobbyists. This last point should be enough to count CMP as untrustworthy. We are their customers and they have more than alienated us by slandering us and telling falsehoods about us. Who do they think they are?!

The only citizen testimonies I have heard in favor of NECEC have sounded very alarmed about climate change. We must DO SOMETHING! However, CMP has not shown that the project will affect or improve climate change numbers. As opponents have asked for repeatedly, an independent study ought to be done.

Also, Quebec Hydro does not provide clean, sustainable energy. That means this premise is faulty from the start. How can dirty fuel production help protect our planet? Just in making the facility, they have done much irreversible environmental damage. We don't allow such dams to be built in Maine any longer. We have found that it is detrimental to our environment. Why, then, would we ever want to abet in the crimes (regarding First Nation lands) and other atrocities committed by Quebec Hydro? You know that they don't just get their fuel from their dams, right? They buy any energy they can that is cheap enough – say from the oil sands or fracking – and then sell it again. How does this help our planet? I do not want to be complicit in this kind of behavior.

These days, we are realizing that buying local is the best way to be sustainable. Even if the energy provided by Quebec Hydro were acceptable, transporting it all that way through Maine is definitely not! One of the best quotes I heard at the hearings was that this is "my grandmother's electricity system." We should be examining smaller, more local sources, not constructing giant behemoths such as this. From what I hear recently, environmentalists in MA agree. They want more locally sourced energy. Additionally, CMP has made no commitments to the project after 40 years. If the times have changed and they no longer need the infrastructure they are proposing to set up now, they will not take down their monstrosity and return things to the way they were. That will be on us, the taxpayers. Meanwhile, smaller, more local energy sources will have been crowded out of the bidding process by mighty Quebec Hydro. They will be gone and lost forever.

Also gone forever will be acres and acres of trees. What do we need more of to sequester carbon? Trees! We should be planting trees, not killing them! We should not be destroying the floral diversity in the lines with herbicides, which, naturally affects the fauna as well. I hope you have heard of the many delicate and even not so delicate species that will be unavoidably affected for the worse because of this project. They do not have a voice. We need to do the right thing on their behalf. The

further fragmentation of the forests (which encourages ticks), the reduction of shade…all these things make a difference in a very tricky balance. Let's not be the ones to drop the ball!

Have you seen all the businesses that will be ruined by this eyesore? How about the way of life of just regular Mainers. Lots of the people who live up in the north woods do so for its beauty and its distance from things just like this powerline. Are you prepared for the loss in taxes when people leave in droves and/or choose not to vacation there anymore?

Proponents say that this project will provide up to 3,500 jobs for Maine. Most of those are short-term construction jobs, many specialized and needing specialized equipment that we do not have here in Maine, so a lot of those temporary jobs will go to out-of-staters. Do they think the people of Maine are stupid? That we wouldn't figure that out? Why would we want to work with these people who have so little respect for us? They are trying, by slight of hand, to pull one over on us and I, for one, do not appreciate it!

Is this how we should take care of the planet, natural resources, and neighbors that God has put into our care? No! Allowing this project to go forward is clearly the wrong decision. I encourage you to take a stand and do what is right. Listen to the people you serve, who care about their home state. Stop the NECEC.

Thank you again for taking the time to read and consider this letter.

Sincerely,

Eileen McGuire

Farmington, ME

(207) 778-3615