PRE-FILED TESTIMONY OF CHIEF HUGH AKAGI

Q. What is your name?

A. Hugh Akagi. I am the Chief representing the Passamaquoddy People in Canada. I live in St. Andrews, New Brunswick across from the proposed Downeast LNG site.

Q. Can you please briefly explain your background?

A. I was born here, and except for time away attending University and a teaching year, have lived here my entire life. My house is on ancient lands on Passamaquoddy Bay, in a 100-acre area known as "Indian Point." The Downeast LNG facility would desecrate the view and the sunset from Indian Point. My home is located approximately 300 feet from the very waters, and across the Bay (approximately 3 miles) from where the proposed Downeast LNG facility would be located. I would be disturbed by the industrial noises from the Downeast LNG facility, because sound carries so well over the water here. These noises have never existed on our lands.

I am also a member of Nulankeyutmonen Nkihtahkomikumon ("We Take Care of the Homeland"). I joined Nulankeyutmonen Nkihtahkomikumon after learning of the proposal to construct a liquefied natural gas (LNG) facility on and near tribal lands and ancestral waters and because of my concerns about the impact the proposed Downeast LNG facility would have on our sacred tribal lands, personal

safety, and the surrounding environment. Nulankeyutmonen Nkihtahkomikumon represents my interests in these matters.

Q. What is your educational background?

A. I am a graduate of Dalhousie University in Halifax with a science degree majoring in both Math and Physics, and I began my career teaching science, biology, physics, chemistry and mathematics at Rothesay Collegiate and Blacks Harbour High School. I also worked at the Oceanography Department of the St. Andrews Biological Station, (the oldest fishery research center in Canada), before moving on to do Estuarine research at the same facility. After a ten-year career in that field, I worked in the Chemistry department for another twelve and one half years, finishing with a career assessing the environmental impacts of the aquaculture industry on the Bay. All of this was either in Passamaquoddy Bay, the estuaries emptying into the Bay, or the outer reaches of the Bay and the Islands around it. I would also take part in research in the Bay of Fundy, off the Scotian shelf and in the Gulf of St. Lawrence.

Q. What does it mean to be Chief?

A. I am an elected Chief of Passamaquoddy People (in Canada), I am a representative of my People, and I am a registered member of the Sipayik reservation (in the United States of America). I view my role as helping to protect and keep our People and culture alive and vibrant and to unify our People around our heritage by protecting our territory and all creatures within.

Here, for example, I seek to protect my People and culture, in part, through U.S. or Maine law. While in some ways degrading to our heritage, everything that I state below is an "existing use," a designated use such as navigation, fishing, or even "recreation." It is protection of "scenic character," "water quality," "habitat" and the other standards being applied here. It is unfortunate that we have to use standards designed to protect fish and animals to preserve a People's culture.

Q. What does Downeast LNG in Passamaquoddy Bay mean to you and the Passamaquoddy people?

A. Ships approaching the proposed Downeast LNG terminal would pass through traditional waters and through the ring of islands protecting the Bay. The potential harm to all things within our territory is a risk we can not afford to take. Our waters have suffered enough from the arrival of the other culture's industries. Depletion of pollock, cod, haddock, and flounder should be a warning. The harbor porpoise (integral to our and my way of life on the Bay) is a "threatened" species. The Right Whale, worshipped by our people (including me), is now an "endangered" species. This industry, at the proposed Downeast LNG site, would put these whales at even further risk – ships will hit them – and now put the People themselves at risk!

The Downeast LNG proposal would, for the first time in history, keep the People from the Bay. Now, we are never barred from the Bay. If a large boat transits, we make way around it, but are never denied access to our waters. With LNG we will be kept from the Bay at times by people with guns. This would have a

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severely adverse impact on our existing use of the Bay, navigation, fishing and our culture. The Bay is the physical center of our territory and the cultural center of our People.

The proposed Downeast LNG facility at Robbinston would destroy what little "natural" skyline we have left in our world. I have viewed the river from many locations including an office in a building where I studied and researched ocean science for over 33 years. That office is on the very coastline where the Bay ends and the river begins, almost directly across from the proposed site of the Downeast LNG facility in Robbinston. Where I now see trees I would see giant ships and steel structures and tanks characteristic of other industrial sites in heavily developed areas. The loss of the beauty, the peace and quiet would be a direct assault on the Native world which retreats into these surroundings whenever the need arises. Although I retired from that office one year ago, I continue to have a relationship with this facility and work there occasionally on special research projects. When I do, I work at a building higher up on the hill with an even more expansive view, of both the river and the Bay. Also, to get to Sipayik, I travel either by boat or drive up (the Canadian side) then down the river (the American side). I would have to drive right through the site of the proposed Downeast LNG project. Now, from the road at Mill Cove, where the Downeast project would be located, I can look back and see an incredible view of the entire town of St. Andrews, St. Andrews Island, Deer Island, and much of Passamaquoddy Bay. I greatly appreciate these views of the coastline and the waters. Between the large ships, the bright 24-hour lighting, and

the physical structures, the Downeast LNG facility would take up and destroy that entire view.

I am concerned that the exclusion zones in Robbinston and tanker safety and security zones would prevent me from enjoying the waters we have occupied since time immemorial and that I have regularly used throughout my lifetime and intend to continue using on a regular basis. These waters are a part of our lives and culture. I have a lot of friends who have boats, and we go on frequent trips into these waters. We go out to see whales, to fish, to experience the view, and to live fully in our lands. We would leave St. Andrews, go around the western side of Deer Island, through Head Harbor Passage between Deer Island and Campobello Island, return into the bay through Western Passage, then loop around the back of the islands and up the Canadian side, and never see the same view twice. This route passes through both Maine and Canadian waters, and I derive great pleasure from viewing the scenic areas. The denial of access to these waters is an infringement on my treaty rights as a Native citizen in his own territory. I have recently purchased a 20-foot fishing boat to exercise my rights to fish and travel freely throughout the Bay, even more frequently in my retirement, only to find there would be limitations imposed by large ships, exclusion zones, and homeland security measures with the arrival of LNG in our waters. My free usage of these waters is incongruent with the schedule of tankers going through. I am the last person who would like to encounter armed personnel and gunboats. This infringement will result from the proposed Downeast LNG facility.

Q. What impact would the Downeast LNG proposal have on the Passmaquoddy culture?

A. I am concerned about the effects of a LNG facility on our sacred waters and their inhabitants. Whales and porpoises are culturally very important to me and I obtain great personal benefit from them. I view them regularly and intend to continue to do so from land and from my boat. Whales and porpoises will also find limited access through these waters for it is a known fact that their ability to seek food and communicate is by sonar.

Heavy industry and massive ships pollute the waters with sound waves that are confusing and/or frightening to creatures not used to interference on such a grand scale. This would change the breeding and migratory patterns having devastating effects on creatures already on the brink of extinction. We still harvest the harbor porpoise which makes its home in Passamaquoddy Bay, for a traditional fishery. I entertain family and visitors on these waters (always including Head Harbor Passage) to enjoy the wildlife (birds, mammals, and fish) and will not accept their forced departure from our territory.

No "traditional place" should be sacrificed for the economic benefit of others. To attach a dollar value to sacred parts of our territory is to place a value on the culture itself. Once it has a value it too can be sold. Without our culture, unique to the Passamaquoddy People; we will no longer exist as a People. To allow others ownership of what we hold in the highest regard as Natives (ancestral land, waters, tradition, culture) is to commit **cultural suicide**.

We are the culmination of a culture that has existed in this territory for at least 12,000 years. Our roots are deeper than the waters in question and all that we hold as Passamaquoddy is linked to this land and its waters (the islands, the Bay and the River). The culture I protect is part of me; it is key of my existence on this planet. If I am to understand how I am to walk this world, I will always need access to my culture and its strength. Many Natives are lost in the "new world" because their connection to the land and their culture has been broken until they can no longer find their way. I will fight to prevent the further deterioration of the culture of the Passamaquoddy who struggle to this day with their very existence as Native peoples. The Downeast LNG proposal would have this impact on the People and me.

I feel the need to address this invasion of our territory as destructive to the culture of Passamaquoddy People everywhere. It is a threat to my culture within our waters, for to give industry access is to relinquish control. The Native has always maintained the right to have a say within his/her territory; once industry is established, such as the proposed Downeast LNG, a new set of guidelines (health and safety rules and regulations, homeland security) will be used to deny us access and control.

As a Native, I feel an obligation to my mother (this planet); thus I believe the Kyoto accord was a step in the right direction. Here was an attempt to improve the quality of life on earth by reducing fossil fuel emissions, not increase them (which is what this LNG proposal is all about).

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Passamaquoddy People are a People wherever we might reside. But our link to our traditions and our culture is through the soil, our **waters** and our territory. There is a need to hear from all Passamaquoddy on these issues because any large industrialization has an impact on Natives and Native culture firstly and foremost. I would feel this impact if either facility were to be built. Natives are still reeling from the impacts of the other culture let alone their introduction of industrialization into our world; even though we have been exposed to it for the past hundreds of years (farming, fishing, whaling, etc.). While European culture evolved with industry, Native culture was displaced by it. Evolution is geared to change and accepting it, displacement is dependent on the destruction of the existing culture. I would be displaced by such an industry – I would no longer be able to boat on traditional, sacred waters as I do now because of exclusion zones and the dangers of super tanker traffic, I would no longer enjoy my homeland because it has been industrialized, I would suffer from the detrimental effect on whales, porpoises and other biota, and I would lose the sacred beauty of this Bay.

Q. Is the Downeast LNG proposal in keeping with existing environmental uses, or will it degrade them?

A. It is not in keeping with our use of the environment. This is sheer excess. Natives (myself included) pride themselves as living with their environment by taking only what is needed; there is excess in every aspect of this industry. This industry begs the question of just how far we will go to exploit every energy resource this planet (our mother) has to offer. When will we be satisfied by limiting

ourselves to using less (see Kyoto #10) to preserve what is available until we can find safer and less destructive ways of harnessing this energy? I will view, feel, and hear the insult of the Downeast LNG facility every day.

Also, the center of our very existence as Passamaquoddy People (myself included) is Passamaquoddy Bay itself. The shipping traffic attached to this industry is beyond anything imaginable to such a small area as the waters surrounding Passamaquoddy Bay. To believe that such ships will not impact the bay and its inhabitants is to believe that a tornado cannot scar the earth. Over 400 years ago white sails entered these waters. After hundreds of years we are still feeling the impact of the arrival of those ships, and our existence as Native People has been nearly wiped out as well as our physical presence on this earth. With the arrival of these ships with their cargo, the occupants of this territory (which include all cultures) will feel the impacts on their daily lives just as our ancestors did. What I describe above are just some of the impacts that I, as a present day Native, would feel in this context.

I am concerned that the unity of Passamaquoddy People is shattered and has been shattered by the LNG proposal. Our relationship with those in surrounding communities will also face destruction, as the vast majority of Passamaquoddy and Canadians where I live are in virulent opposition to this proposed industry. Our environment cannot be removed from our society and culture.

Q. Is all that you described above a "use" of the Bay?

A. Yes, absolutely. Our use has been existing for thousands of years. I understand that US law looks to protect existing or designated uses and that "traditional" uses are not specifically designated. However, our use of the Bay does fall within existing uses such as navigation, fishing, and while demeaning, "recreation."

Hugh N. Akagi

Chief Hugh Akagi

Date: June 1, 2007

Province of New Brunswick

The foregoing instrument was acknowledged before me this 1 day of June, 2007 by Chief Hugh Akagi.

G. MELVIN TURNER NOTARY PUBLIC NEW BRUNSWICK

(notary signature)

G. MELVIN TURNER

(notary printed name)

Notary Public

My commission expires: Not applicable

PRE-FILED TESTIMONY OF DAVID MOSES BRIDGES

Q. What is your name?

A. David Moses Bridges.

Q. Where do you live?

A. Pleasant Point is my primary residence. This winter and last winter, I have lived in Bethel, Maine where my son goes to school and where I work in the winter. I will return to Pleasant Point for the summer.

Q. How long have you lived on Pleasant Point?

A. My whole life, off and on.

Q. Are you familiar with the proposal to build the Downeast LNG import terminal at Mill Cove in Robbinston, Maine?

A. Yes I am.

Q. What impact would the terminal have on you?

A. It would restrict my use of our ancestral waters, the waters of the Passamaquoddy People. I canoe regularly on the waters of the Bay. I build canoes by hand and by tradition. I do not use nails or glue; I use wooden maple pegs, spruce root lashings, birch bark, and cedar. The construction is entirely traditional. Building the canoes can take up to a year because I hand gather all my materials, and I am limited to gathering certain materials at certain times of year.

I mostly canoe along the shore. I have dropped a hand-line here and there, but I am not as much a fisherman as an appreciator of the waters, the day, and the wildlife, I canoe on the waters just to be at home. I also sail with friends regularly. I don't have a sailboat, but many of my friends do.

Q. What kind of wildlife do you enjoy viewing?

A. Seals, guillemots, eagles, osprey, harbor porpoise, all kinds of seabirds, and different species of ducks depending on the time of year.

Q. Why do you mostly paddle along the shore?

A. It is safer. It is protected if you are in the lee of the land where there are fewer winds and currents. Also, if anything were to happen, I could land easily. On the Bay I canoe about 10 times a year, and a couple times a year, on average, I paddle across the Bay to St. Andrews as well. When I go to St. Andrews I choose the day carefully, when the winds, tides and currents are safe and in my favor. I also sail, as often as possible when I have free time, on my friends' boats. Between canoeing and sailing, I probably am on the waters of the Bay about 30 times a year.

Q. Do you visit Mill Cove?

A. Yes. I go to Pulpit Rock whenever I can, and I get there by walking along the shore from Route 1. I access Pulpit Rock by parking at the view pull-out across the street from the chocolate place. Last year I worked with a filmmaker at Pulpit Rock and Mill Cove to make a film. I also canoe by Mill Cove.

Q. Would it impact you if the Downeast LNG pier extended out of Mill Cove and into the deep water?

A. Yes. As I described above, it is safer to canoe near the shore. In some situations having to go out to deep water might not be very safe – I might want say in shore because of the wind, weather, current and tides. I would hate to have the safest option taken a way from me.

Q. Where do your friends keep their sailboats?

A. Mainly in Eastport.

Q. Where do you keep your canoe, and where do you put in?

A. I keep it on Pleasant Point when I am in the area. I put in at Split Rock or, if the tide is right (high tide), I put in on the shore by First Island, right off Pleasant Point.

Q. Do you canoe at a certain time of the tide?

A. Yes. My trip timing depends on where I'm going, the day, the tides, and the wind. For instance, if I'm going into the Bay, I go when the tide is still coming in, so that I can come back when the tide starts to go out. The opposite is true if I want to head southeast, to Eastport, and come back from there.

Q. If one tanker a week comes to Mill Cove, arrives at high slack one day and departs the next day at high slack, how would that impact your use of the waters?

A. It would interfere with my use and navigation of the waters, no matter which direction I was heading. Pleasant Point and Eastport are right in the tanker routes, and the passages are narrow. In my canoe, I have to paddle with the tide or at slack tide, and I have to time my trips depending on how far I am going and when I need to return on the opposite tide. You can't really paddle against a tide – you can paddle against the tide when it's a little bit against you, but that's only at the very beginning or end of a tide when the movement is slight. The current in the Bay just moves too fast to attempt to really go against it. Everything is well-timed. I would have to compete with the tankers for the tides and good weather, and the exclusion zones around a transiting tanker could keep me from boating according to the safest schedule.

If I'm going to St. Andrews from Pleasant Point, for instance, it would affect me because I leave when the tide is coming in and my timing could overlap with the tankers

coming through to Mill Cove. Depending on the tides and the wind, the trip takes about 2 ½ to 3 hours. I try to leave Pleasant Point a couple of hours before the slack, and I'm on the water the whole time. It the winds are in my favor, I'll shoot right across the middle of the open water rather than hug the shore. That would put me right in the tanker route. If the tankers are moving at high slack, that affects my ability to boat on either side of the tide. If I'm right in the middle of a trip and the U.S. Coast Guard comes up to me, I can only paddle so fast.

Q. How would these impacts affect you?

A. This would be an unreasonable interference with my use and enjoyment on and navigation of the waters, and it would diminish my ability to be on our ancestral waters freely. If there is more than one tanker per week, that interference would only get worse.

David Moses Bridges

Date: 6/1/07

State of Maine
County of Washington

The foregoing instrument was acknowledged before me this 1 day of ~~May~~ June, 2007 by David Moses Bridges.

Yvonne M. Robinson
(notary signature)

Yvonne M. Robinson
(notary printed name)
Notary Public

My commission expires: 03/23/2014

Post-it® Fax Note 7671	Date	# of pages ▶
To REBECCA BOWLER	From DAVID M. BRIDGES	
Co./Dept.	Co.	
Phone # 802-860-1003	Phone # 207-824-3675	
Fax # 802-860-1208	Fax #	

PRE-FILED TESTIMONY OF LAURENCE COOK

Q. What is your name?

A. Laurence Cook.

Q. Where do you live?

A. Seal Cove, Grand Manan.

Q. What do you do for work?

A. I''m a fisherman.

Q. How long have you done that?

A. 16 years.

Q. What do you fish?

A. I fish lobster, and I also fish herring weirs. I also drag for scallops when I have to. I''m the Chair of the Grand Manan Fisherman''s Association''s Advisory Board of Lobster Fishing Area 38. We work in consultation with DFO to manage the lobster fishery. I am also a representative at ISAC — In Shore Scalloping Association. I''m on the board of directors of the Grand Manan Weir Sector.

Q. Is fishing your sole source of income?

A. Yes.

Q. Where do you fish for lobster?

A. I fish the Gray Zone, out of Seal Cove on the southwest side of Grand Manan, and on the northwest side of Grand Manan.

Q. What is the Gray Zone?

A. It is an area where the boundary between Canada and the United States is disputed, so both Canadian and U.S. fishermen fish for lobster there. It begins in the Grand Manan Channel and extends southward to the Grand Manan Banks. It surrounds Machias Seal Island.

Q. When do you fish in the Gray Zone?

A. From the end of June until the second Tuesday in November — when the regular lobster season in my other areas is over.

Q. Where are your herring weirs located?

A. I have four weirs on Grand Manan — one on the northwest side, one on the north, and two on the southeast side.

Q. How do you think an LNG terminal sited in Passamaquoddy Bay would impact your fisheries?

A. It depends. It depends on how many ships come through and how often. It depends if the weather is bad and they have to circle around in the area.

Q. If they transit through the Gray Zone what type of problems would you encounter?

A. If the security zones are enforced in the Gray Zone and we couldn''t get into our weirs while the tankers were transiting, it would be a problem. We would not have advance notice of when the tankers were coming and what their route would be. We would not know where we could safely set our traps. For instance, although there is a designated shipping channel to St. John, no one stays in the shipping channel because they would waste a lot of time and money. So I''d imagine it would be the same way in the Channel.

Also, if they cannot get into Head Harbour Passage because of visibility problems there would be tremendous gear loss if they circle in the Gray Zone. I don''t think there''s enough room for them to circle in U.S.-only waters in the Grand Manan Channel, so they would have to be in the Gray Zone too. The Gray Zone is very heavily fished for lobster, and I and other members of my association would lose a lot of gear because it would be chewed up by the tankers.

Q. Would the transiting tankers affect your weir fishing?

A. Yes. Lights have a large impact on weirs. If a tanker is circling at night in Owen Basin, for instance, it may impact my weir on the northwest side of Grand Manan Island. The noise might be a problem too — it depends on how loud the ship is and how they''re running the ship. A steady noise if it doesn''t change does not have a big impact, but a sudden change in noise and vibration would be bad.

Q. Would there be any other effects on your weir fishing?

A. Yes. They would have huge impact on the buyers who come up to the weirs. One of the big problems with sardines is getting them to the plants quickly before they spoil, because it''s hot. I sell mostly to Connors Brothers and some to Nova Scotia for bait. If those buyers have to wait on the tankers, a lot of herring could spoil.

Q. How long a delay would cause the herring to spoil?

A. It depends on the temperature.

Laurence Cook

Province of New Brunswick Date:

The foregoing instrument was acknowledged before me this 5th day of June, 2007 by Laurence Cook.

Cathy Y. O'Neill

(signature)

CATHY Y. O'NEILL

(printed name)

Notary Public

My commission expires: Dec. 09

CATHY Y. O'NEILL
COMMISSIONER OF OATHS
MY APPOINTMENT EXPIRES
DECEMBER 31 2009

PRE-FILED TESTIMONY OF DONNELL DANA, SR.

Q. What is your name?

A. Donnell Dana.

Q. Where do you live?

A. I live in Perry, Maine.

Q. What do you do for work?

A. I own a fishing boat, and I drag for scallops and sea urchins in the winter months. I fish for scallops in both Cobscook Bay and off of Pleasant Point in Passamaquoddy Bay, and for sea urchins mostly in Cobscook Bay. This summer, I'll be harvesting rockweed from May 21 to October 21 in Cobscook Bay. Rockweed is seaweed that will be sold and used for animal feed. I will also be lobstering and gill netting for flounder all summer. I lobsterfish from Pleasant Point into the Calais River. I have about 150 traps. I also gill-net for flounder out in front of Pleasant Point.

Q. How would an LNG terminal at Mill Cove affect your work?

A. If a terminal goes in and tankers are going by, it would interfere with our work dragging for scallops and fishing for lobster and flounder. Also, it looks like the scallop fishery is coming back off St. Croix Island in the Calais River, and I'd like to give that a try. I need to check my lobster traps once every two days. We can go every slack low or high water, every six hours or so. I've heard that the tankers have to go at high slack tide, so that would interfere with our access.

Q. Do you fish at Mill Cove?

A. Yes, I usually get a good spring run of lobster there. We set traps at Pulpit Rock. We wouldn't be able to fish there anymore if the terminal goes in. There are lots of egg-bearing lobsters in Mill cove, more than anywhere else I know. It is an important spawning area because of the rocks, easier tide, and warmer water because of the tide flat. Also, there is a bait shortage in Maine. LNG would have an impact on herring and make the shortage even worse.

Q. What percentage of your income would be affected by an LNG terminal at Mill Cove?

A. About a third of my income comes from Passamaquoddy Bay. I have children and grandchildren and extended family members that depend on me for our income. There are many pieces of income that I draw from. I trade scallops for electrical work in my home, or for cords of wood. Most of my income is commercial fishing, but I still have the traditional values of bartering. The Downeast LNG proposal would have a huge impact on my income. I cannot afford that impact.

Q. Is there anything else you'd like to add?

A. The Bay is a big ecosystem. There is a lot of spawning and larvae, herring, lobster, and flounder. Tankers taking on a lot of ballast water will really hurt our fisheries. I don't want to quit fishing but if this LNG plant comes in, it will limit my days of fishing and I might have to start driving a truck again. The terminal may create some local construction jobs for a time, but it will take a lot of jobs from this area.

Donnell Dana Sr.

Donnell Dana, Sr.

State of Maine Date: 5-14-07

County of Washington

The foregoing instrument was acknowledged before me this _____ day of May, 2007 by Darnell Dana.

Jeanne A Guisinger

(signature)

Jeanne A Guisinger

(printed name)

Notary Public

My commission expires: 3-24-11

PRE-FILED TESTIMONY OF JAMES A. FAY, Ph.D.

Q. What is your name?

A. Dr. James Fay.

Q. What is your occupation?

A. I am Professor Emeritus of mechanical engineering at MIT, specializing in fluid mechanics, including the safety hazards of liquefied gases. A copy of my CV is attached.

Q. What is your pre-filed testimony?

A. My pre-filed testimony consists of the attached paper that I authored. I present the paper and its conclusions to this Board under oath and as my opinion.

Q. Your paper addresses the Quoddy Bay proposal on Pleasant Point. Is that relevant to the Downeast LNG proposal in Robbinston?

A. Yes, the same principles apply and the conclusions would apply to either facility. The only difference is the location of the unloading pier.

James Fay Date: 31 May 2007

James Fay, Ph.D.

State of Maine
County of Sagadahoc

The foregoing instrument was acknowledged before me this 31st day of May, 2007 by James Fay, Ph.D.

Tracy L. Rattleff
(signature)

TRACY L. RATTLEFF
NOTARY PUBLIC, MAINE
MY COMMISSION EXPIRES JULY 2, 2009
(printed name)
Notary Public

My commission expires: _____

JAMES ALAN FAY

Biographical Summary

James A. Fay is Professor Emeritus of Mechanical Engineering and Senior Lecturer at the Massachusetts Institute of Technology. His current field of interest is environmental engineering, and his recent research activities have concentrated on air and water pollution problems, including the dispersion of air pollutants in the atmosphere, acid rain, the safety hazards of liquefied gases, renewable energy (including small scale tidal power) and the spread of oil and other hazardous liquids on the ocean. In previous years he carried out research on combustion and detonation, hypersonic heat transfer, magnetohydrodynamics and plasmadynamics.

Professor Fay served as Chairman of the Massachusetts Port Authority (1972-1977) and as Chairman of the Air Pollution Control Commission of the City of Boston (1969-1972). He has served on twelve boards, committees and panels of the National Research Council, including two terms on the Environmental Studies Board. He is currently a director emeritus of the Union of Concerned Scientists and a former director of the Conservation Law Foundation.

A fellow of the American Academy of Arts and Sciences, the American Physical Society, the American Institute of Aeronautics and Astronautics, and the American Association for the Advancement of Science, Professor Fay is also a member of the National Academy of Engineering and three technical societies. In 1980 he was an Overseas Fellow of Churchill College, Cambridge University, and in 1990 a Fulbright Lecturer in India.

Professor Fay received his B.S. degree from Webb Institute of Naval Architecture in 1944, the M.S. degree from the Massachusetts Institute of Technology in 1947 and the Ph.D. degree from Cornell University in 1951. He was an Assistant Professor in the Department of Engineering Mechanics at Cornell University from 195.. to 1955. Since 1955 he has been a member of the faculty in the Department of Mechanical Engineering at M.I.T.

Public Safety Issues at the Proposed Pleasant Point LNG Terminal

James A. Fay

77 Massachusetts Avenue, Rm. 3-258

Cambridge, MA 02139

August 5, 2004

1 Introduction

Quoddy Bay L.L.C.[1] has proposed to construct and operate a liquefied natural gas (LNG) import terminal on the Sipayik tribal land at Pleasant Point, near Eastport, ME. To reach this terminal, ocean-going LNG tankers must move through Canadian waters between Campobello and Deer islands (Canada) as well as U.S. and Canadian waters between Eastport and Deer Island. A tanker spill at any location along this route would have serious consequences for persons and property on the shore adjacent to the stricken vessel, whether that be on Campobello or Deer I. or Eastport and the Sipayik Reservation.

Natural gas, a hydrocarbon fuel, is usually piped directly from a gas well to the end consumer, never being stored locally in large amounts. When cooled to liquid form, however, as much as 50,000 tons can be stored in insulated tanks on land or aboard ship. In this form it is especially hazardous if it escapes by accident from its container, spilling onto ground or water and turning very rapidly into gaseous form, whereupon it will mix with air and then burn if ignited. By its very nature, an LNG import terminal is a hazardous industrial facility which could experience accidental fires that might harm surrounding populations and property.

To build and operate an LNG terminal at the Pleasant Point site, Quoddy Bay must obtain permission from the Federal Energy Regulatory Commission (FERC)[2], an independent agency that regulates interstate commerce in natural gas and electricity. Although primarily an economic regulator, FERC has asserted jurisdiction over the safety aspects of the LNG facilities it permits. FERC requires facility owners to meet certain technical standards in site selection and equipment design and operation before it awards the right to import LNG and to connect the facility to an interstate natural gas transmission line. FERC's jurisdiction does not extend to safety aspects of marine tankers; they are regulated by the U.S. Coast Guard.[3]

FERC's objective in safety regulation is to limit, but not necessarily prevent, harm to persons and property outside the confines of the terminal site, should there be an accidental release of LNG at the site. The principal harmful effects are two: vapor plumes or clouds that can be ignited outside the site boundaries and harmful thermal radiation from on-site fires that extends across the site borders. But FERC's safety rules do not consider all credible spills on the site or any from the LNG tankers while in transit to the terminal or being unloaded.

This report explains the safety requirements that will likely be applied by federal regulators to the proposed LNG terminal in Pleasant Point. It delineates the geographic extent of harmful effects that could be expected from LNG spills at the site, including those that are excluded from FERC and U.S. Coast Guard safety regulations.

2 FERC sites election criteria

FERC rules[4] require the LNG terminal owner to install extensive technological features that will limit the harmful consequences of an accidental spill of LNG to within the property line enclosing the terminal. The harmful effects are twofold: combustible mixtures of vapor and air, such as might be driven by the wind blowing over an evaporating pool of spilled LNG, and thermal radiation from a fire burning above a liquid spill on the site. The types of spills to be considered are also twofold: a

[1]Quoddy Bay L.L.C. is owned by Smith Cogeneration (www.smithcogeneration.com).

[2]Federal Energy Regulatory Commission (www.ferc.gov).

[3]The safety of the natural gas pipeline connecting the terminal to the interstate transmission line is regulated by the Office of Pipeline Safety of the U.S. Department of Transportation, but the FERC permit for the LNG terminal confers on the terminal owner the right to seek seizure of private land to construct the connecting pipeline, if necessary.

[4]Code of Federal Regulations, 49 CFR 193.

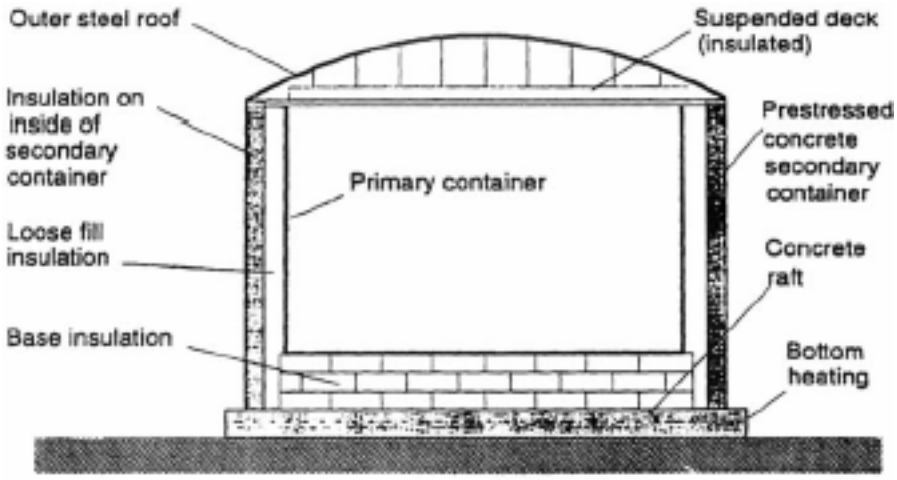

Figure 1: The primary and secondary containment tanks for a ”full containment” storage tank of the type to be used at the proposed Harpswell LNG terminal.

spill from transfer piping connecting the storage tanks and the regasification or unloading facilities, and the failure of the primary storage tank enclosure.

Limiting these effects at a terminal requires the construction of impounding areas surrounding potential spill sources so as to collect the spilled liquid and slow its vaporization or burning rate. If the spills are sufficiently small, harmful effects will not extend beyond the site line. For transfer line spills, the LNG is collected in a central impounding area. For storage tank spills, the inner storage container is surrounded by a secondary containment tank of slightly larger size, as shown in Figure 2, which can contain all the LNG that might spill from the inner primary container.

The potential for harmful effects to humans from a given spill decreases with distance from the spill site. The harmful effect of ignitable natural gas vapor is measured by the flammability distance, a distance down wind from the spill site at which the vapor has been so diluted by mixing with air that it cannot be ignited. Any ignition at a closer distance can propagate a flame, but that flame will not propagate beyond the flammability distance. If the latter distance lies within the site boundary, no flame can extend beyond that boundary.

Thermal radiation from on-site LNG fires fed by an evaporating pool of spilled LNG can cause first, second or third degree burns to the skin of humans exposed to the radiation, depending upon the intensity of radiation. For a given fire, this intensity decreases with distance from the fire. The least intense thermal radiation that FERC rules allow humans outside the site boundary to be exposed to is 5 kilowatts per square meter, an amount that produces second degree burns after only thirty seconds exposure.[5]

The FERC requirements for the proposed Quoddy Bay terminal can be estimated from the Final Environmental Impact Statement for the Hackberry LNG project in Louisiana.[6] This project, consisting of three storage tanks and two unloading piers, employs the technology likely to be used at the Pleasant Point facility. Values from this report of the flammability and thermal radiation dis-

[5]More intense and thereby more damaging exposure is permitted depending upon land use characteristics at the site boundary.

[6]Final Environmental Impact Statement, Hackberry LNG Project, Cameron LNG, LLC. FERC/EIS-0156. Office of Energy Projects, Federal Energy Regulatory Commission, Washington, DC 20426. August 2003.

Table 1: Flammability and radiation distances for FERC-defined spills

Spill source	Size (ton)	Flammability (ft)	5 kW/m2 Radiation (ft)
Transfer piping	840	770	320
Storage tank (primary)	74,000		929

tances for a transfer line spill, and the thermal radiation distance for a primary containment spill, are listed in Table 1, together with the amounts of the respective spill volumes. It would appear that for these FERC-defined spills neither radiation nor flammability will exceed the FERC limits beyond the site boundary.

3 Risks that FERC ignores

There are several important public safety risks that are not considered in the FERC regulations discussed above.

1. First of all, FERC allows damaging thermal radiation beyond the site boundary as long as its level is below 5 kilowatts per square meter. However, it is not until the thermal radiation intensity falls below 1.6 kilowatts per square meter that there is no damage to exposed humans. A safe radiation distance for fires would be that for which the thermal radiation level does not exceed 1.6 kilowatts per square meter. Distances at which the radiation exceeds this value would lie within a *thermal radiation danger zone.*

2. Secondly, FERC's regulations ignore the greatest risks of all, that foreign or domestic terrorists could destroy the storage tank primary and secondary containment systems, or the LNG tanker cargo hold, allowing LNG to spill unhindered onto ground or water, where it would most likely burn. Because the lateral extent of such spills would be so much greater than those considered in the FERC regulations, it is to be expected that their harmful effects would exist very far beyond the site boundaries.

To show how public safety can be adversely affected by credible spills that have been overlooked by FERC, we have extended Table 1 to include the effects listed above.[7] This expanded assessment is listed in Table 2. Two additional spills are considered, those from the secondary storage tank containment system and a single hold of a marine tanker (last two rows of Table 2). For these and the previous spills of Table 1, the safe radiation distance defining the outer boundary of the thermal radiation danger zone, mentioned in item 1 above, has been calculated for all spills (last column of Table 2). Also, the flammability distance for the FERC primary containment failure accident is shown in the flammability column.

[7]The methods used for this assessment are identical to those contained in "Consequence assessment methods for incidents involving releases from liquefied natural gas carriers", Report 131-04 GEMS 1288209, ABS Consulting, Inc., May

13, 2004, (available on FERC web site at www.ferc.gov/industries/gas/indus-act.asp) and its Attachment 1 of June 29, 2004, as listed on the FERC site at http://ferris.ferc.gov/idmws/search/fercgensearch.asp under docket AD04-6.

Table 2: Flammability and radiation distances for all credible spills

Spill source	Size (ton)	Flammability (ft) Danger zone	1.6 kW/m2 Radiation (ft) Danger zone
Transfer piping	840	770	1,230
Storage tank (primary)	74,000		1,490
Storage tank (secondary)	74,000		19,685
Tanker hold	5,250	19,360	7,870

3.1 Thermal danger zones

The thermal radiation danger zones for the largest credible spills listed in Table 2 are shown in Figure 2. All of these extend beyond the site boundaries, especially so for the tanker and secondary tank spill with fire. But even the FERC spills with fire from transfer piping and primary containment send damaging radiation beyond the site boundaries. Altogether, about 20 square miles of U.S. shore land in the Pleasant Point area and 3 square miles on Deer Island are at risk for damage to humans from on-site spills at the proposed LNG terminal.

3.2 Tanker danger zones

Spills from a fully loaded LNG tanker can occur not only at the unloading dock, as shown in Figure 2, but also at any point along the ship channel while approaching the terminal. Figure 3 shows the proposed path to be followed by an LNG tanker heading for the terminal. Thermal radiation danger zones for spills at four locations along the path are shown. At any location, about 2 square miles on the U.S. shoreline and an equal amount on the Canada shoreline (Campobello and Deer Islands) lie within the thermal danger zone.

3.3 Flammable vapor danger zones

The blue circle in Figure 2 depicts the flammability danger zone for a spill, without fire, from the tanker while located at the terminal pier. For any such spill, the flammable vapor plume or cloud would extend from the tanker in the downwind direction, encompassing an area of about a square mile. Winds from the northwest, and clockwise to the southeast, would send the vapor plume to U.S. land area from Eastport to the Passamaquoddy shoreline, while winds from the southwest, and clockwise to the northwest, would send the vapor over land areas of Deer Island.

The spills described in Tables 1 and 2 do not include spills without fire from the secondary containment of the land storage tank. Because such a spill would be more than ten times the tanker spill in volume, the corresponding flammability distance would be considerably greater than the blue

circle shown in Figure 2.

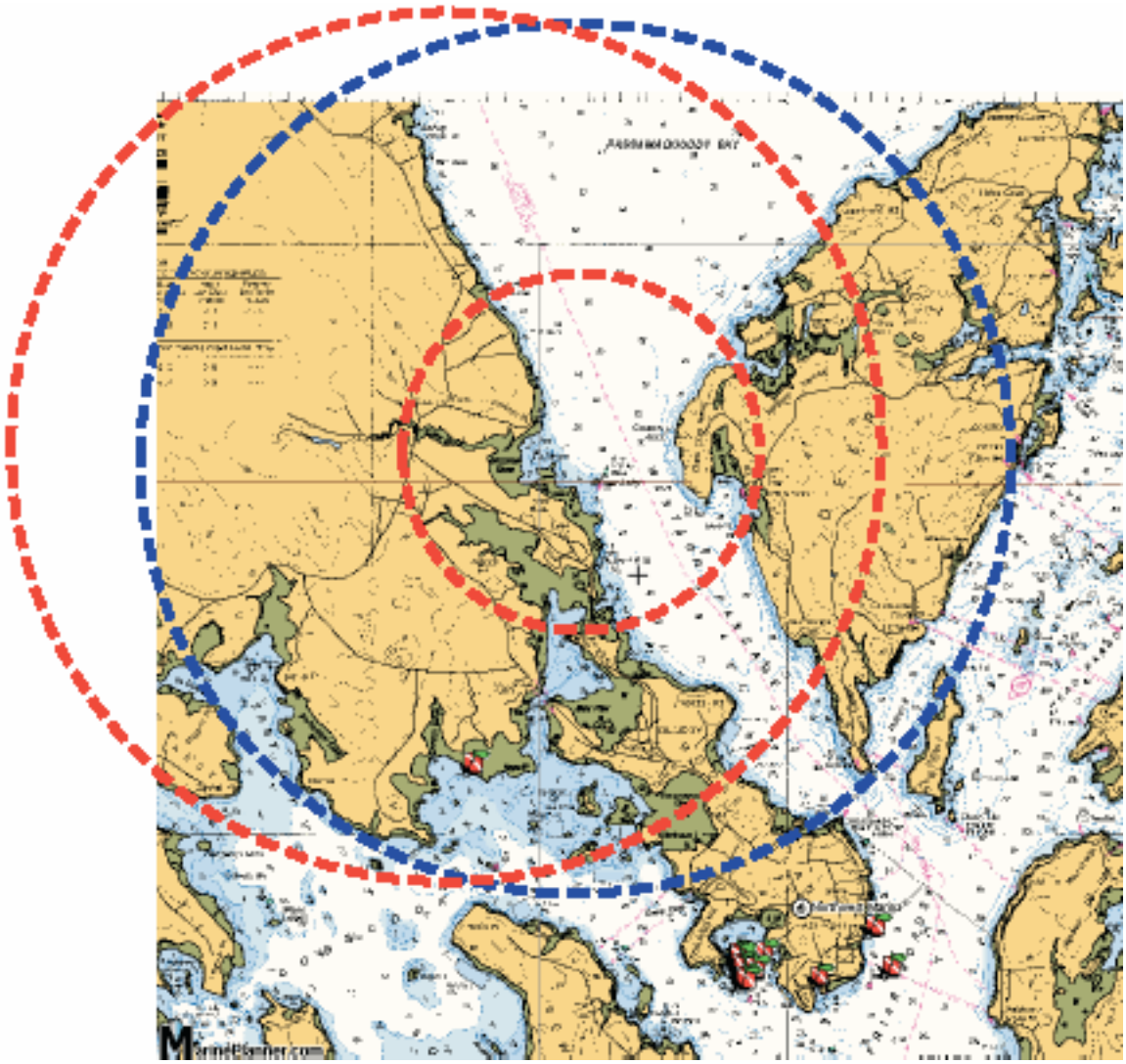

Figure 2: The thermal radiation and flammable vapor danger zones for spills listed in Table 2. Red circles are distances to radiation intensities of 1.6 kW/m2 for a spill with fire; larger for loss of secondary containment of land storage tank, smaller for spill from one hold of LNG tanker. Blue circle is flammable vapor distance for a tanker spill.

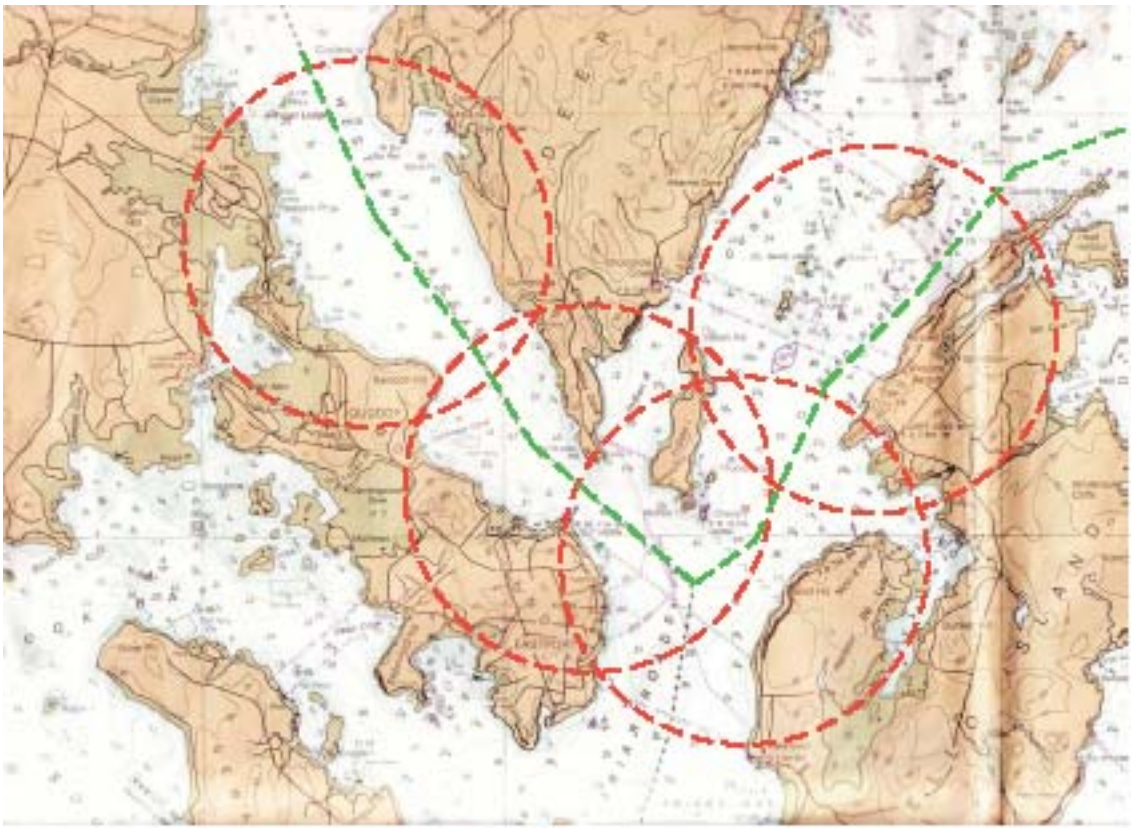

Figure 3: The path of a tanker approaching the proposed LNG terminal (green dashed line) and the radiation danger zones for a spill at four locations along this path.

4 Conclusions

1. **The federal safety requirements for the proposed Pleasant Point LNG terminal will not prevent harm to humans outside the site boundary for the spill scenarios that FERC considers.**

2. **For all credible spills, including terrorist attacks on the storage tank and LNG tanker, the danger zone for humans extends almost 4miles from the terminal site, encompassing 20 square miles of land in the Pleasant Point area.**

3. **For a tanker spill anywhere along the route leading to the LNG terminal, the thermal radiation danger zone for humans extends 1.5 miles from the tanker route, encompassing up to 4 square miles of land along U.S. and Canada shores in Eastport, Campobello Island and Deer Island, depending upon the spill location along the tanker track.**

JAMES ALAN FAY

Biographical Summary

James A. Fay is Professor Emeritus of Mechanical Engineering and Senior Lecturer at the Massachusetts Institute of Technology. His current field of interest is environmental engineering, and his recent research activities have concentrated on air and water pollution problems, including the dispersion of air pollutants in the atmosphere, acid rain, the safety hazards of liquefied gases, renewable energy (including small scale tidal power) and the spread of oil and other hazardous liquids on the ocean. In previous years he carried out research on combustion and detonation, hypersonic heat transfer, magnetohydrodynamics and plasmadynamics.

Professor Fay served as Chairman of the Massachusetts Port Authority (1972-1977) and as Chairman of the Air Pollution Control Commission of the City of Boston (1969-1972). He has served on twelve boards, committees and panels of the National Research Council, including two terms on the Environmental Studies Board. He is currently a director emeritus of the Union of Concerned Scientists and a former director of the Conservation Law Foundation.

A fellow of the American Academy of Arts and Sciences, the American Physical Society, the American Institute of Aeronautics and Astronautics, and the American Association for the Advancement of Science, Professor Fay is also a member of the National Academy of Engineering and three technical societies. In 1980 he was an Overseas Fellow of Churchill College, Cambridge University, and in 1990 a Fulbright Lecturer in India.

Professor Fay received his B.S. degree from Webb Institute of Naval Architecture in 1944, the M.S. degree from the Massachusetts Institute of Technology in 1947 and the Ph.D. degree from Cornell University in 1951. He was an Assistant Professor in the Department of Engineering Mechanics at Cornell University from 195.. to 1955. Since 1955 he has been a member of the faculty in the Department of Mechanical Engineering at M.I.T.

PRE-FILED REBUTTAL TESTIMONY OF JAMES FAY, Ph.D.

Q. What is your name?

A. Dr. James Fay.

Q. What is your occupation?

A. I am Professor Emeritus of Mechanical Engineering at MIT. My research specialty is fluid mechanics, including the safety hazards of liquefied gases. A copy of a brief biography is attached.

Q. What is the purpose of your pre-filed rebuttal testimony?

A. It is to address the thermal radiation exclusion zone extending onto Route 1 in the context of Maine's title, right or interest requirement. This is not a critique of FERC rules or an assessment of safety. It is a rebuttal of the title, right or interest claims made in the pre-filed testimony of R. C. Wyatt and R. K. Dickinson of June 1, 2007, at pages 17-19.

Q. Have you reviewed DeLNG's thermal radiation exclusion zone and the pre-filed testimony describing it?

A. In addition to the testimony of R. C. Wyatt and R. K. Dickinson of June 1, 2007, I have reviewed a report, "Resource Report 11 Safety and Reliability, Volume 1, Public Information (No author or date)" referenced in the Wyatt/Dickinson testimony on page 18. The information in the pre-filed testimony and the report that I have reviewed concerns the thermal radiation exclusion zones defined for the two LNG storage tanks under the condition of a defined accident of loss of primary

containment followed by an LNG pool fire at the top of the tank. In particular, I reviewed the information for the 1600 btu/sq ft hr (5 kW/sq m) contour.

The only specific information contained in this material is that shown in Exhibit DLNG-2-1, Thermal Exclusion Zones, of the Wyatt/Dickinson testimony. This exhibit contains a sketch of the thermal exclusion zones referred to above. The 1600 btu/sq ft hr (5 kW/sq m) contour is shown to fall beyond the DeLNG property line onto U.S. Route 1 property, and to touch the property line of the abutter to the south. Areas within this contour must be legally controlled by the developer or a government agency in accordance with the National Fire Protection Association code. *See* 49 C.F. R. §§ 193.2007, 193.1507& 193.1509.

What is missing from all of the information I reviewed are two vital pieces of information: (1) the exact location of the tanks with respect to the DeLNG property line; and (2) the distance of the 1600 btu/sq ft hr (5 kW/sq m) contour from the tank center, as determined according to the requirements of the FERC/DOT standard for exclusion zones. DeLNG provided only a sketch, no distances are given, and there is no way to review the size of the contour from this map. Without this information, I am unable to assure that the exclusion zone does not also extend beyond the property line to the south, further onto Route 1, or onto the property on the other side of Route 1.

I note that in passing that the Wyatt/Dickinson testimony on page 18 says that "DeLNG sought a site that would accommodate a 1,000-1200 ft outermost

radius" for exclusion zones. Exhibit DLNG-2-1 shows a maximum exclusion zone radius of about 1800 ft. Clearly, DeLNG's site selection seriously underestimated the size of the site needed to prevent exclusion zones from intruding into neighboring properties, and which it has attempted to remedy by shoehorning the oversized tanks into an undersized site to the abutters' disadvantage.

Q. What is the significance of the outer edge of the referenced exclusion zone extending onto Route 1?

A. The outer edge of the exclusion zone means that at its furthest edge, the thermal radiation will be 5 kw/sq m or 1600 btu/sq ft hr. That means that an exposed person would receive second degree burns in 30 seconds unless shelter is found. Because of this, the entire exclusion zone must be legally controlled by the developer or a government agency in accordance with National Fire Protection Association code. *See* 49 C.F. R. §§ 193.2007, 193.1507 &193.1509. In addition, I understand that Maine law requires that DeLNG must demonstrate title, right, or interest over all of the property proposed for the permitted development or use.

Q. Can government-owned property be within the exclusion zone?

A. Yes, if the government entity responsible for the property controls property in accordance with the regulations and the referenced section of the NFPA code.

Q. What does such control entail?

A. In short, it requires that the government agency that manages Route 1 have the authority and willingness to exclude people from the road under the circumstances required by the rule, the referenced section of the Nation Fire Protection Association code, and DeLNG's safety and security plan. None of the materials I reviewed indicate that the government agency controlling Route 1 will be controlling that portion of Route 1 accordingly.

James Fay

Date: June 27.2007

James Fay, Ph.D.

State of Maine
County of Kennebec

The foregoing instrument was sworn to and affirmed before me this 27th day of June, 2007 by James Fay, Ph.D.

Tracy L. Rattleff

(signature)

TRACY L. RATTLEFF
NOTARY PUBLIC, MAINE
MY COMMISSION EXPIRES JULY 2, 2009

(printed name)
Notary Public

My commission expires: _____

Building and building foundations are to be designed to meet applicable building code and industry standards, including Code of Federal Regulations, Title 49 – Transportation, Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards, as well as any applicable state or local standards. The pipeline can be constructed to minimize environmental impacts and to applicable standard industry codes.

Marine Facility Alternatives

In addition to its RSS Study and pipeline alternatives analysis, Downeast LNG undertook an examination of various onsite alternatives, once the Mill Cove site was selected as the preferred site. The onsite options considered for the marine facility focused on five different alternatives. These alternatives are reviewed by the testimony of Larry Cunningham.

Land Acquisition

The lands intended for project development have been, or can be, sufficiently secured to allow consideration of the project's requirements for resource use and establishment of title, right and interest. The primary Mill Cove facility and terminal site includes a property right of interest via a purchase option and the pier's submerged land right to use can be established by the permitting review presently underway. Off-site property associated with the natural gas sendout pipeline can be duly acquired via (a) land options, (b) eminent domain, and (c) lease provisions with the U.S. Fish and Wildlife Service (in the case of the Moosehorn Wildlife Refuge pipeline crossing). Laydown areas necessary for construction material storage have already been optioned by Downeast LNG.

Site Selection and Planning for Thermal Exclusion Zones

As noted previously, selecting a parcel of property for the development of an LNG Import terminal involves a number of factors. Pursuant to federal law, one such factor is the availability of acreage to adequately accommodate mandated "thermal exclusion zones" that are centered on LNG

storage tank and containment areas within the project area and the distance to specified radiant heat flux levels. The calculation methods and acceptable criteria for the LNG facility exclusion zones are specified by the U.S. federal safety standards in Title 49 CFR § 193.2057 and 193.2059 (see Resource Report 11).

As such, preliminary exclusion zone planning is very important to initial site selection. Exclusion zones that might overlap entire roads that serve as critical ingress/egress routes for the community would be unsatisfactory, as would exclusion zones that prevented access to or use of important community infrastructure. For early site selection purposes, Downeast LNG sought a site that would accommodate a 1,000-1,200 foot outermost radius of area around the conceptual storage tank locations, as this amount of area typically encompasses almost any eventual exclusion zones within the site, even before site specific calculations are performed.

Exhibit DLNG-2-I illustrates the three applicable radiant thermal exclusion zones associated with the Downeast LNG site and its associated storage tanks and containment areas. The three areas of exclusion zone are defined by their respective "thermal flux" levels – i.e., the innermost 10,000 BTU/ft2-hr zone, the mid 3,000 BTU/ft2-hr zone, and the outermost zone of 1,600 BTU/ft2-hr.

In the case of the Mill Cove site, the property was sufficient to appropriately accommodate all thermal zones The Downeast LNG site arrangement satisfies federal mandates, even with the inclusion of important shoreland zoning setbacks and avoidance of private property to the south, because:

- The 1,600 BTU/ ft2-hr radiant thermal exclusion area will not reach any outdoor assembly areas of 50 or more persons outside of the facility property line; and
- It will also be areas that Downeast LNG or a government agency can legally control all activities in accordance with § 193.2057 and § 193.2059 for as long as the facility is in operation (49

CFR 193.2007).

II. TECHNICAL ABILITY

As noted previously, Downeast LNG has recruited highly experienced professional personnel from its inception. A special emphasis was placed on gaining professionals with specific Maine experience. This effort included, but was not limited to, individuals with specialized training in wetlands identification and construction mitigation, faunal identification and protection, marine and freshwater biologist and oceanographers, and local marine pilots. We also recruited engineers with Maine expertise including those with local experience in marine and civil engineering.

In all, more than 100 environmental, engineering, marine transit and energy planning professionals have been involved to date with the Downeast LNG project. Importantly, a vast amount of Maine specific knowledge and experience resides within this project team. Their combined efforts have ensured that the project planning and evaluations conducted to date fully satisfy regulatory compliance requirements – both technically and procedurally. A sound foundation in technical ability has been established to ensure that, as the project continues to advance from development into construction and operation, an equivalently high level of expertise and Maine knowledge and experience will continue to be a part of the Downeast LNG project.

The professionals involved with the Downeast LNG project are not limited to just those of the company, but also include governmental entity professionals with years of engineering and environmental experience. These individuals are responsible for reviewing the project with respect to literally hundreds of federal, state and local regulatory programs protecting the environment and community infrastructure. Over 55 individual permits, approvals, and formal consultations will be required to complete just the pre-construction development phase of the Downeast LNG project. Numerous other permits and approvals will be required to fully authorize actual operations. These

JAMES ALAN FAY

Biographical Summary

James A. Fay is Professor Emeritus of Mechanical Engineering and Senior Lecturer at the Massachusetts Institute of Technology. His current field of interest is environmental engineering, and his recent research activities have concentrated on air and water pollution problems, including the dispersion of air pollutants in the atmosphere, acid rain, the safety hazards of liquefied gases, renewable energy (including small scale tidal power) and the spread of oil and other hazardous liquids on the ocean. In previous years he carried out research on combustion and detonation, hypersonic heat transfer, magnetohydrodynamics and plasmadynamics.

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PRE-FILED TESTIMONY OF MARTIN "DUTE" FRANCIS

Q. What is your name?

A. Martin Joseph Francis. I go by Dute.

Q. Where do you live?

A. I live on Pleasant Point. I have always lived there, all 54 years of my life. My father is 90 years old, and he has lived there all his life. All of my family has lived there all their lives.

Q. What do you do for work?

A. I am a full-time clam digger. I dig clams all year round. It is my sole source of income. Clamming is traditional. I have aboriginal fishing rights.

Q. Where do you clam?

A. On the north side, on Passamaquoddy Bay, I fish at Lewis Cove. I also fish at Mill Cove. Mill Cove was open last year for the first time in years – decades. In Cobscook Bay, I work at Half Moon Cove, Lincoln Cove, (also called the old Pig Farm), Birch Point, Fred Sargent's Island off of Birch Point, in the East Bay, and all the way into the Perry side of East Bay.

Q. What time of day do you clam?

A. I clam at low tide.

Q. How would the Downeast LNG terminal proposal coming into Mill Cove affect your clamming?

A. I would not be able to clam at Mill Cove anymore if the pier and ship are there. My income would be affected by the loss of access to Mill Cove. I could go clamming somewhere else, but it is easier to get to Mill Cove. Mill Cove is right off Route 1. In Cobscook Bay, I have to drive on secondary roads, and I have to drag my canoe sometimes a good distance to get to the water. To get to Birch Point, I

have to drag my canoe 300 feet through the woods. To get to Lincoln Cove, I have to drag my canoe even further. Then I canoe around to different points in Cobscook Bay. It is a much longer process to clam in Cobscook Bay than to drive up to Lewis Cove or Mill Cove.

Q. What was it like when they opened Mill Cove to clamming?

A. Mill Cove was excellent for clamming. Lewis Cove was the best, and Mill Cove was the second best. The north side of Mill Cove was not open, only the southern side. That's where the pier and tankers would be.

Q. What is open now by Pleasant Point, Perry and Robbinston Shores and the Western Passage?

A. The southern part of Mill Cove is open. Lewis Cove is shut down again. I believe that the plan is to better the situation and open the flats. Maine says that it is trying to fix the problem.

Q. How would this affect your income?

A. This summer I'm going to try harvesting rockweed. But I will be clamming a lot too. We support our families in a traditional way – we give our harvest to them, we share our income with them, and we trade our harvest for other things. What we get for a bucket of clams translates into a week's worth of moose meat from the family in our sister Passamaquoddy tribe in Indian Township, in Princeton. I also sell the harvests and supply my family with income. Whatever hurts my fishing here will hurt them as well.

Martin Joseph Francis

Martin Joseph Francis

State of Maine

County of Washington

Date: 5/19/07

The foregoing instrument was acknowledged before me this 19th day of May, 2007 by Martin Joseph Francis.

Jeanne A Guisinger

(signature)

Jeanne A. Guisinger

(printed name)

Notary Public

My commission expires: 3-24-11

PRE-FILED TESTIMONY OF VERA FRANCIS

Q. What is your name?

A. Vera Francis.

Q. Where do you live?

A. I reside at Pleasant Point and also on St. Mary's Reserve. I have lived in this area all my life. I am a member of the Passamaquoddy Nation, which has communities in the U.S. and Canada. My family ties are on both sides of the border, but more in Canada. We are North American Indian.

Q. What is your background?

A. I am an ecologist and educator in bioregional ecology and the arts. I am also the coordinator and a member of Nulankeyutmonen Nkihtahkomikumon ("We Take Care of the Homeland"). I am a student in New Brunswick.

Q. What is the purpose of your testimony today?

A. I am testifying as the coordinator and spokesperson for Nulankeyutmonen Nkihtahkomikumon, as well as an individual member.

Q. What is Nulankeyutmonen Nkihtahkomikumon?

A. Nulankeyutmonen Nkihtahkomikumon is a non-for-profit organization whose purpose is to preserve our sacred tribal lands and the surrounding environment; to unfetter the customary Passamaquoddy practice of promoting ecological prosperity (taking care of the land for descendants); and to assure continued preservation of traditional religious and cultural ceremonies and rites and ways of life. The group represents its members and our members' descendants have the cultural right that our ancestral lands is in a condition suitable to maintain traditional ways.

Q. How would the proposed Downeast LNG facility impact you on a personal level?

A. In many ways. I know that my testimony needs to be focused on what is considered important by Maine law. I want it to be clear that these are not all the ways in which a Downeast LNG facility would impact me – these are the only ones that I know I must discuss for your proceedings.

First, I boat regularly on the Bay. I boat as often as possible, and I have been doing so all of my life. My friends and my partner have boats. My partner's boat is docked part-time on Campobello Island and part-time in St. John. We go out on the waters of Passamaquoddy Bay to take in the views and see the wildlife. We see the most wildlife in the early morning but there is plenty to see during the day too. The Bay is full of wildlife, of all different kinds. I also fish with my partner, for lobster and ground fish. My partner exercises her aboriginal fishing rights in the Bay in both Maine and New Brunswick.

The tankers would impede our free passage on the waters of the Bay, our enjoyment of them, and our fishing rights. We would be barred from the Bay, maybe at gunpoint, while LNG tankers pass. We have never before been barred from the Bay temporarily. Our time to boat is limited anyway by work, other commitments, and weather, and we don't want to lose any more boating time. The Bay is central to the heart of our traditional life.

And we don't want to lose it to LNG tankers. The tankers would not only restrict our navigation of, and safety on the waters, but even if we were out and able to resume boating, our appreciation of the views, the wildlife, and the Bay would be diminished by the presence and travel of those tankers. They are huge, bigger than any ships that come

through, and they carry dangerous cargo. I fear for this land and these waters with the thought of them passing by. As a member of the Whale Society, I am gravely concerned about how intensified tanker traffic and associated noise could impact the Whales.

I also visit Mill Cove. I go there by boat and car. I take my grandchildren there and do what my grandmother did with me. We go along the beach and collect keepers (a small treasures of sea glass or marbles marking our time together, and many are left in our garden). We learn about the beach, edibles, and tidal pools. We use it as a classroom and a place for sharing songs, stories, prayers, and dreams. Most of the time I do this closer to home, on the reservation at Pleasant Point, but I often go to Mill Cove for a change of pace and I want to keep being able to go there. I grew up on the coast, on the beach, of this whole area. I don't want my grandchildren to have that site restricted. I also visit Pulpit Rock. I go there by water. If the terminal and pier are built at Mill Cove, then I would not be able to continue using the Cove or to boat to Pulpit Rock.

I participate in Indian Days at Split Rock. We open Indian Days with a ceremonial trip that symbolizes our traditional route of travel. We travel in canoes from Indian Township to Split Rock where the People from Indian Township are welcomed by the community at Pleasant Point. We even have a traditional song marking our travels to our special places and gatherings. I have not been in the canoes, but I greet the boaters when they arrive. I have not been a boater because I know that the current, combined with the wind, can make the turn treacherous. I'd rather welcome them. The welcoming ceremony is one of the most important ceremonies we have, and to open Indian Days with it is a significant statement of its meaning to us.

A terminal and pier at Mill Cove would disrupt this ceremony because it would force the canoes to travel farther out from shore, in deeper waters and swifter current. This would be unsafe for boaters and I'm not sure if the ceremony would be able to continue safely. This would be a tremendous cultural and religious loss for my community and for me personally.

Q. What is Nulankeyutmonen Nkihtahkomikumon's position regarding the proposed Downeast LNG facility?

A. We are opposed to the Downeast LNG facility being sited in our ancestral homeland on many different levels.

Q. Why is that?

A. Our members use and appreciate the Bay, the waters, the fisheries, and Mill Cove in much the same way as I do. Their uses, uses that exist today and have existed for thousands of years would be unreasonably infringed upon.

I and our membership share other concerns. We do not want to see our ancestral lands and waters that we rely upon to meet our physical, cultural, spiritual and traditional economies and activities sacrificed as a short-term solution to off-set the U.S. energy problem. I am concerned that Maine does not have an adequate energy policy that addresses health, environmental and safety issues. This LNG is not even going to provide any significant energy to Maine. It is a moneymaking stopgap measure for others at our expense. With global climate change and abundantly available wind and tidal resources, the focus should be more on sustainable, renewable sources of energy to the community and region's benefit.

LNG is a direct threat to the health and well being of the Passamaquoddy Nation and the rights of our descendants. Downeast LNG is not fully accounting for the risks to our health, the health of wildlife and the environment, and the culture that this development and tanker traffic would pose. On a practical level, the communities are just not equipped to handle a hazardous material catastrophe that this kind of development poses. The wildlife that inhabits the area is diverse and culturally important – the Bay has a large and healthy harbor porpoise population, for instance, and we want to keep it that way.

Beyond a catastrophe, LNG in Passamaquoddy Bay threatens our culture and way of life. This is our ancestral homeland. It is painful to see this kind of development here. It is also unfortunate that this process does not consider our rights to maintain a distinct culture. The land and waters include many historic, prehistoric and sacred sites. Navigating and fishing freely are critical to our culture. We have aboriginal fishing rights that would be infringed upon, if not eliminated, by the exclusion and safety and security zones. Current shipping traffic does not exclude us from the waters, as LNG would do.

Vera Francis

Vera Francis

Date: June 1, 2007

Eastport, Maine

The foregoing instrument was acknowledged before me this 1st day of ~~May~~ June, 2007 by Vera Francis.

Jeanne A Guisinger
(notary signature)

Jeanne A. Guisinger
(notary printed name)
Notary Public

My commission expires: 3-24-11

PRE-FILED TESTIMONY OF LINDA GODFREY

Q: Please state your name.

A: Linda Cross Godfrey.

Q: Where do you live?

A: I reside at 19 Water Street in Eastport, Maine.

Q: How long have you lived in Eastport?

A: We've lived there for 17 years.

Q: What is your job?

A: I own or am a partner in several small businesses.

I own The Atlantic Leadership Center LLC which just celebrated its 15th year of operation. The Atlantic Leadership Center produces corporate and community leadership programs, retreats, and workshops and offers consultation on leadership, management, supervision, and community development to companies and community organizations. Through this company, I have guided the Washington County Leadership Institute as Senior Instructor for the eleven years of its existence.

This company also produces history and nature based Elderhostel programs on Campobello Island, New Brunswick, Canada, and uses the entire Quoddy Loop area for programs. These Elderhostels, which host a couple hundred persons each summer, have the natural environment and especially water based operations at the heart of their program. Persons participate in whale watching, hiking, visiting natural sites overlooking or on the bay, and in general utilize the natural area for the success of the program. The titles of our Elderhostel programs show a clear connection to this whole Quoddy Loop area:

The Bay of Fundy: Angel Fires and Natural Phenomena
Life at the Glorious Edge: The Roosevelts and Rusticators on Campobello Island
Franklin and Eleanor: Island Influences and Inspirations
Eleanor Roosevelt: From Summer Visitor to First Lady of the World

In addition, The Atlantic Leadership Center offers retreats for women based on spiritual subjects which include the natural environment as a major component of success. The spiritual feelings that persons involved in our programming receive from the natural environment are beyond measure, with some guests claiming that our program offered in this area that is so

pristine has altered their life for the better. Others claim that very few locations are left in the world that provide the natural environment and spiritual feeling that is present here. Some of the retreats/seminars offered include:

Sacred Trees/Sacred Water
Ancient Days/Ancient Ways: Leadership for Native and Aboriginal Women
Third Millennium Leadership Symposium
Gifts From the Sea: Lessons from the Work of Anne Morrow Lindbergh

I am a minority partner in my husband Bob's business called The Quoddy Loop. The business promotes the Quoddy Loop <www.QuoddyLoop.com>, the greater international Passamaquoddy Bay area. The business also created and manages the website <www.OldSowWhirlpool.com>, which contains information about the largest whirlpool in the Western Hemisphere, the Old Sow Whirlpool, located in Passamaquoddy Bay. A companion business, Old Sow Publishing, constructs and manages websites for area businesses and organizations. The business also provides publishing and computer technology services to The Atlantic Leadership Center. The Quoddy Loop Tour Connection is the newest addition to this business and we are acting as Land Planners for the first Cruise Ships to come to Eastport. We will provide the program services and community logistics for these visits.

I am a partner in The Commons Eastport, founded in 2003. This business purchased and renovated an historic building in Eastport's historic district, at the edge of Passamaquoddy Bay. This business represents the work of 61 area artisans, has three office spaces, and rents two high end weekly rental apartments which overlook the bay. Our efforts have been recognized by the National Trust for Historic Preservation through their Main Street Project, and were featured at its 2006 National Conference in New Orleans, Louisiana as one of 5 national projects of special note. Our business was also selected by the National Trust for Historic Preservation as the featured story in the June, 2006 national publication. We were selected to make a presentation on Community Initiated Development at the organization's March 2007 national convention in Seattle. We are being seen as national leaders in the area of community revitalization.

I am a partner in a new business known as 15 Sea Street Pier which is presently under development in Eastport's historic district, at the edge of Passamaquoddy Bay. This 1907 building was once part of the sardine canning operations in Eastport, and will be renovated to be a multi-use business which will include multiple art and marine related businesses on the first floor, a 20 room boutique hotel on the second floor, and four long term high end apartments on the third floor. This property is expected to be the major anchor business in historic downtown Eastport. It will feature a small marina for serving sailing craft, be the boarding location for local schooner operations, and have a diving operation to promote Passamaquoddy Bay as an area known worldwide for its diving excellence and underwater beauty.

I am a partner in The Lupine Corporation, located on Campobello Island, New Brunswick, just across Passamaquoddy Bay from Eastport, Maine. We are a 15 year old management company which provides seasonal management for The Lupine Lodge at the Adams

Estate, an 11 acre park setting attached to Herring Cove Provincial Park and next to Roosevelt Campobello International Park. We offer 11 tourist rooms and a dining service for up to 50 persons for breakfast, lunch and dinner from Memorial Day to Canadian Thanksgiving. The Lodge is located at the edge of Passamaquoddy Bay. Visitors come to the facility to match their interest in the natural environment of the area. They participate in bird watching, whale watching, kayaking, sailing, hiking, golf, star gazing, and beach combing. This facility has been a host location for 8 years to Elderhostel groups that are attracted to this area for the reasons mentioned.

Q. Where are the businesses located?

A. They are all located along Passamaquoddy Bay. Offices of The Atlantic Leadership Center are located at 49-51 Water Street, in downtown Eastport. This entire building is The Commons. The Sea Street building is located in downtown Eastport at 15 Sea Street. Both are located right on the bay and look toward Campobello Island, Head Harbour Passage, Welshpool, Friar's Head, Herring Cove Provincial Park and Roosevelt Campobello International Park. Our offices are in an historic building, part of Eastport's Historic Downtown in which 29 buildings are listed on the National Register of Historic Places.

All of these businesses are located exactly where LNG tankers propose to transit. This is the area of the bay which LNG tankers propose to layover in bad weather. This route and layover area place Eastport in a "Zone of Concern," which would require search lights, siren systems, surveillance cameras, community shelters, gun boats, etc. —all of which are counter to the type of scenic environment and ecosystem our business depends upon.

Q: Are you familiar with the Downeast LNG proposal?

A: Yes.

Q: What are your general concerns with the siting of the LNG facility near your home and business?

A: My general concerns are related to all of the potential dangers to our ecosystem, environment, and eco-economy which Downeast LNG would bring to our area. My specific concern is related to the proposed transit and layover route which bring all of my businesses and the areas we operate in into the "Zones of Concern" reality. My businesses and financial well being, like those of fishermen, are directly dependent on preservation of the Passamaquoddy Bay area's ecological attributes. Those attributes provide the basis for all of our programming. We will also be using St. Croix Island for more of our programming, and the location of Downeast LNG to that site is of concern for reasons of safety, aesthetics, and access.

Construction of the proposed Downeast LNG facilities would also have a significantly detrimental impact on my business because this project could result in further industrialization of

the area, destroying its rural, relatively safe, highly scenic, and ecologically significant attributes.

The proposed Downeast LNG project, should it be constructed, would reduce the attractiveness of this area to me and my livelihood. I depend on the Bay's existing uses including the area's fishing communities, water quality, wildlife, and the active life that revolves around the Bay.

The proposed LNG projects would negatively impact the fisheries, due to LNG safety and security zones that preclude fishing in those areas. Each of the LNG ships' millions of gallons of ballast water intake and engine cooling-water intake would have a negative effect on the lobster fishery, as well as on other commercial species. Negative effects on the local fishing industry would impair our use of and dependence on the Bay.

Q: How would the LNG facility affect your livelihood?

A: All of my businesses utilize the natural attributes of the area for their success. My livelihood, as well as income that supports seasonal employees, artisans, and construction workers renovating our historic properties on the waterfront, depends on the environment now present in Passamaquoddy Bay. Proposed LNG industrial operations, with all of the attendant safety and security risks, harm to the environment, and heavy industry realities threaten my livelihood and the future of our businesses.

Q: Do you have any other concerns with the siting of the LNG facility near your home and business?

A: Yes. My personal health could be impacted as the quality of life is reduced, industrial based functions threaten air and water quality, and the level of stress increases. With the threats that surround LNG operations, the intrusions into this pristine area of the safety requirements that accompany LNG in "Zones of Concern", I consider the operation to present a risk to my health, livelihood, spiritual practices, and quality of life. I consider this to be an unacceptable future for Passamaquoddy Bay, for myself, my family members, friends, those I employ, and customers.

The projects would also increase risks inherent with LNG projects themselves, as well as resulting crime risks associated with large numbers of temporary workers, additional vehicular traffic, and from potential additional industrialization of the area that frequently follows construction of LNG terminals.

Q: In what ways do you use and enjoy the coastal area in the vicinity of the proposed LNG facility?

A: I reside near the shore just south of Eastport's business district and enjoy views of Campobello Island and Friar Roads, with views of Roosevelt Campobello International Park as

well as the communities of Welshpool and North Road, on Campobello Island. We are part of a new working waterfront reality, where the creative economy is developing and a strong eco-economy is growing. This is a place where work and quality of life mingle freely. Both are based on the area's natural resources and attributes. LNG threatens that.

Q: Describe how the Downeast LNG facility would impact your existing uses of the local waterways and recreational opportunities at Mill Cove.

A: Industrialization brought by an LNG facility would adversely affect my existing use and enjoyment of Passamaquoddy Bay. The proposed LNG facilities would increase noise pollution from LNG ships and their accompanying vessels. Electrical generating facilities accompanying LNG terminals produce noise. The area's quiet nature would be disrupted by the addition of LNG terminals. These activities would destroy the reason persons, including myself, seek this environment for rest and relaxation. Likewise, additional lighting required for security at the proposed terminals would diminish enjoyment of the natural surroundings. The freshness of our air would be negatively impacted by the oil burning from the LNG tankers and tugs, possible pollution from the tugs and the onshore facilities serving the tankers. This operation may stir up old toxins settled on the bottom of the bay, and will threaten the sea, bird life, and other biota that call Passamaquoddy Bay home.

Q: Do you have any other thoughts that you would like to share with the Board?

A: Where now we regularly utilize the Bay freely, LNG would place restrictions on uses of the waterway, threaten the natural elements which support us, and possibly cause destruction of the fishery and marine life that is the basis of our businesses. As the developers themselves state, the area of our home and businesses will be defined as a "Zone of Concern" which means we would have the intrusion into this pristine area of surveillance cameras, search lights, community shelters, small boats (gun boats), helicopters, siren systems, shelter in place programs—all negatives to the way life is in this area, and destructive to our businesses. These intrusions would radically transform the very nature of the Bay, and my experience of it, from a nature sanctuary and thriving eco-economy into an industrial zone.

I consider the proposal of the Downeast LNG operation and the choice of its developers in selecting Passamaquoddy Bay to be discriminatory against persons in our small geographic areas, a place believed to be a lower economic area, and one that has a primary nature-based economy. There are better locations, better technology and better economics for this type of LNG project is other locations. I consider this proposed operation to have raised significant issues of Environmental Justice as Passamaquoddy Bay is not well suited for this type of operation, yet it is seen by those proposing this operation as a place where the people, the environment, the web of life in our air, land and sea, our eco-economy and our future are all expendable. This is a place and a subject that deserves every bit of environmental protection Maine has to offer. This is about the future of much more than our area, it is about the state of *Maine, and our* international community.

Linda Godfrey

Date: 6-1-07

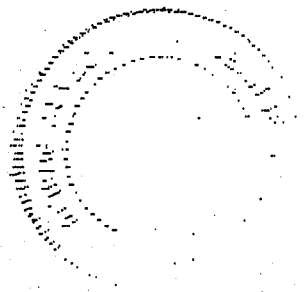
State of Maine
County of Washington

The foregoing instrument was acknowledged before me this 1st day of May, 2007 by Linda Godfrey.

Jeanne A Guisinger
(notary signature)

Jeanne A Guisinger
(notary printed name)
Notary Public

My commission expires: 3-24-11



PREFILED TESTIMONY OF ROBERT A. GODFREY

Q: Please state your name.

A: Robert A. Godfrey.

Q: Where do you live?

A: I reside at 19 Water Street in Eastport, Maine.

Q: How long have you lived in Eastport?

A: As of July first of 2007, I will have lived here for 17 years.

Q: What is your job?

A: I own one business, Old Sow Publishing. The business promotes the Quoddy Loop—the greater international Passamaquoddy Bay area. The business also created and manages <www.OldSowWhirlpool.com>, a website about the largest whirlpool in the Western Hemisphere, located in Passamaquoddy Bay. Old Sow Publishing also constructs and manages websites for area businesses and organizations. The business also provides minor publishing services to my wife's business, Atlantic Leadership Center (formerly, Atlantic Leadership Institute). Atlantic Leadership Center produces history and nature-based Elderhostel programs on Campobello Island, New Brunswick, Canada.

Q. Where is your business located?

A. 49 Water Street, in The Commons Building, in downtown Eastport.

Q. How long have you owned the business?

A. Since 1994.

Q: Are you familiar with the Downeast LNG proposal?

A: Yes.

Q: What are your general concerns with the siting of the proposed Downeast LNG facility at Mill Cove in Robbinston?

A: Construction and operation of the proposed Downeast LNG facility would affect ferry access among Quoddy-area communities, would affect marine-related recreational

activities, and would adversely affect the scenic beauty of the area. The disruptions to the ferry schedule and the ability to freely recreate on the waters would make this area less conducive to my activities. Should the terminal be constructed, it would reduce the attractiveness of this area to me. I greatly enjoy the scenic attributes of the area and the recreational and aesthetic uses of the Bay.

The project would industrialize the area and destroy its rural, relatively safe, highly scenic, and wilderness attributes that I rely upon, use, and enjoy.

The LNG ships from both Downeast LNG and Quoddy Bay LNG would pass significantly closer than one mile to downtown Eastport and to Eastport residences, including my home and business. Sandia National Laboratories and the recent Government Accountability Office report on LNG to Congress indicate that an LNG ship pool fire could result in second degree burns on unprotected skin within 30 seconds. There are several navigational hazards in the passages into Passamaquoddy Bay, including a difficult right-angle turn just offshore from downtown Eastport, plus Clark's Ledge and Dog Island north of the downtown. Since the local harbor pilots have indicated that the LNG ships would "hug" the Eastport shoreline, due to the presence of Old Sow Whirlpool, Clark's Ledge and Dog Island present hazards to those ships. These navigation hazards, coupled with the ships' thermal hazard zone, present unacceptable risks to the environment and my personal safety.

Yesterday, May 31, 2007, I exchanged emails with Alan Moore of the U.S. Coast Guard. He confirmed that the most recent Downeast LNG simulation study in his possession is labeled, "preliminary." See email attached as an exhibit to my testimony.

Q: Explain how changes in existing uses of local waterways impact you.

A: Part of the area's attractiveness are its fishing communities. My business is right next to the Eastport breakwater where many fishermen dock their boats, and I enjoy watching them navigate the waters and use the natural resources of the fisheries to earn their keep and provide for their families. The proposed LNG projects would negatively impact the fisheries, due to LNG safety and security zones that would seriously impinge upon and even preclude fishing in some areas. Also, each of the LNG ships' millions of gallons of ballast water intake and engine cooling-water intake would have a negative effect on the lobster fishery, as well as on other commercial species, in Passamaquoddy Bay. Ballast water uptake would also deplete planktonic and larval-stage species that are essential food to other species such as whales, fish, and birds. Whales and birds are some of the attractions of this area to me, so depleting food for these species could negatively affect me. Negative effects on the local fishing industry would reduce the local economy of which I am a part, and would also reduce the attractiveness of the area to all.

Q: In what ways do you use and enjoy the coastal area in the vicinity of the proposed

LNG facility?

A: I currently enjoy the scenic, peaceful, and relatively crime-free nature of this area. I enjoy hiking the rugged trails near the shoreline and taking in the views, watching marine, terrestrial, and avian wildlife of this international area, and examining the unique geological conformations found along the shore. Heavy industrialization brought by an LNG facility would significantly diminish that enjoyment.

I reside near the shore just south of Eastport's business district and enjoy views of Campobello Island and Friar Roads, with views of Roosevelt Campobello International Park as well as of the communities of Welshpool and North Road, on Campobello Island. I regularly enjoy seeing loons, osprey, bald eagles, great blue heron, gulls, other seabirds, as well as porpoise, seals, and whales from my home and business. Industrialization of the waterway would reduce the probability — and thus, my enjoyment — of my seeing those animals.

I frequently watch the night sky, and enjoy observing the aurora borealis that can frequently be seen here. In fact, I receive predictions from NASA and other sources of atmospheric and space-related news, that I pass along to members of my "Aurora Alert" email list. The lights from heavy industry would diminish my enjoyment of this existing and significant scenic attribute.

Q: Describe how the Downeast LNG facility would impact your existing uses of the local waterways and recreational opportunities at Mill Cove and on the Bay.

A: Heavy industrialization of the Passamaquoddy Bay area would significantly reduce enjoyment of my home, the greater surrounding community, and the area's natural attributes. Mill Cove's south shoreline is lined with "Perry Conglomerate" cliffs. Perry Conglomerate is "new," soft rock. One can easily observe shells embedded in the rock. Geodes are sometimes found on the beach. Walking along the shoreline cliffs at low water, allow me to see and enjoy many unusual rock configurations — caves, tunnels, and pillars — created by wave erosion. An LNG terminal at Mill Cove would diminish the amount of shoreline that could be walked, thus diminishing my enjoyment of that area. I understand that school children are sometimes taken to Mill Cove to observe the unusual rock formations. Their ability to visit the shoreline could also be diminished.

The additional lighting required for security at the proposed terminals would diminish my enjoyment of the natural surroundings, especially the night sky. Ambient light significantly reduces one's ability to enjoy the night sky, and especially the aurora borealis. I have accompanied tourists who are visiting this area, in observing the aurora, who have told me that they've never before even been able to observe the Milky Way — much less the aurora borealis — due to the excessive ambient light in their home night sky. LNG facilities would reduce my ability to enjoy the night sky, and all that entails.

The proposed LNG facilities would also increase noise pollution from the facilities themselves, LNG ships, and their accompanying vessels. Electrical generating facilities accompanying LNG terminals produce noise. The area's quiet nature would be disrupted by the addition of LNG terminals.

Q: Do you have any other thoughts that you would like to share with the Board?

A: The Society of International Gas Terminal and Tanker Operators (SIGTTO) — an international non-profit organization whose mission is to establish best practices standards in the gas industry in order to keep the industry, the product, and the public safety — have a publication, "Site Selection and Design for LNG Ports and Jetties." That publication clearly indicates that the conditions in Passamaquoddy Bay do not conform to the LNG terminal standards established by that body. The proposed Downeast LNG terminal and the Quoddy Bay LNG terminal locations in Passamaquoddy Bay — because most of the counter-indicated conditions can't be mitigated — do not and cannot comply with those standards, making Passamaquoddy Bay entirely inappropriate for LNG terminal development.

Robert A. Godfrey

Date: 2007 June 1

Robert A. Godfrey

State of Maine
County of Washington

The foregoing instrument was acknowledged before me this 1st day of June, 2007 by Robert A. Godfrey.

Jeanne A Gwisinger
(notary signature)

Jeanne A Gwisinger
(notary printed name)
Notary Public

My commission expires: 3-24-11

From: "Moore, Alan" <Alan.H.Moore2@uscg.mil>
Subject: **RE: DeLNG Simulation Study**
Date: May 31, 2007 4:02:13 PM EDT
To: <info@savepassamaquoddybay.org>
Cc: <rshems@sdkslaw.com>

Bob - I'm checking with the developer as my only copy is marked "preliminary". Will advise you of the status upon their response.
Alan

-----Original Message-----
From: info@savepassamaquoddybay.org [mailto:info@savepassamaquoddybay.org]
Sent: Thursday, May 31, 2007 1:32 PM
To: Moore, Alan
Subject: DeLNG Simulation Study

Alan,

I spoke with our attorney, who is asking if you have a version of Downeast LNG's simulation study newer than the 3rd Draft (eg, 4th Draft or Final Report). If you do have a newer version, I have a question.

Many thanks!

Bob

Robert Godfrey
Save Passamaquoddy Bay 3-Nation Alliance
www.savepassamaquoddybay.org

PRE-FILED TESTIMONY OF CLIFFORD GOUDEY

Q. What is your name?

A. Clifford A. Goudey

Q. What is your occupation?

A. I am a naval architect and research engineer at the Massachusetts Institute of Technology in Cambridge, Massachusetts, where I have been employed for 27 years. A copy of my CV is attached.

Q. What is your pre-filed testimony?

A. My pre-filed testimony consists of the attached power point presentation that I researched and prepared. It details the physical and tidal navigation hazards that an LNG tanker would encounter coming into Passamaquoddy Bay. Weather and other hazards are not included. I provide the power point presentation and its conclusions to this Board under oath and as my opinion.

Q. Have you reviewed the Proof of Concept Simulation Study for Robbinston, Maine LNG Terminal (27-31 July, 2006) (third draft)?

A. I have. It provides little if any assurance that the tankers can safely transit through Passamaquoddy Bay.

Q. Why?

A. The important thing to know about this simulation is that it is fully dependent on the information provided it. The parameters that determine whether a run is successful or ends in disaster are data inputs. Pivotal in this simulation is current and on page 5 of the report we read "Tidal current and velocity data was provided to MSI by DELNG for construction of the tidal

current model." The quality or completeness of this data is not reported and there is no evidence that this data has any basis in actual tidal currents in Passamaquoddy Bay. Indeed, one of the more telling conclusions of the report found on page *iv* reads. "Prior to transit operations, current meters should be installed in the area between Cherry Island and Dog Island, and in the vicinity of the DELNG terminal dock, to advance the analysis and database regarding tidal current velocity determinations."

There is no evidence that the simulation accounts for the complex nature of the currents, both in transit and at the berth. The simulator may be state-of-the-art, but it depends on proper inputs to be a reliable predictor of transit success.

On page 18 of the report we read, "The tidal current model received adjustments based on the pilots [sic] comments during the data validation. Once the modifications were made to the current direction, thereby meeting the pilots' expectations, the current velocity could be scaled to provide the desired magnitude."

The reliance on such anecdotal information gives great cause for concern regarding the validity of these simulations.

Q. Does the simulation properly account for wind?

A. No, there does not seem to be a proper accounting of how landforms affect wind yet the wind is assumed goes to zero at the berth. On page 16 we read, "For wind shadowing, we determined based on small boat competitive sailing experience that at a distance of 400 meters downwind from the berth location wind would be full wind speed. The wild shadow effect would range from zero wind speed at the berth location to full wind speed 400 meters downwind using the following formula.

Fraction of full wind speed – square root (distance downwind from the berth in yds/400 meters)"

Extrapolating insight from small boat sailing to the piloting of LNG tankers is a questionable practice. In suggesting that these tankers are protected from the winds of Passamaquoddy Bay while they are at or near the berth, the authors fundamentally flaw significant portions of the report.

Q. Do you have anything else to add?

A. The unique risks associated with bringing large LNG carriers into Passamaquoddy Bay cannot be dispelled with a simulated proof-of-concept evaluation. This is especially true if the environmental inputs related to currents and winds are inadequately prescribed.

Date: 5/31/07

Clifford A. Goudey.

State of Massachusetts
County of Middlesex

The foregoing instrument was acknowledged before me this 31 day of May, 2007 by Clifford A. Goudey

(signature)

(printed name)
Notary Public

My commission expires: _____

Mary Ellen DeAngelis
Notary Public
Commonwealth of Massachusetts
My Commission Expires
September 4, 2009

Exhibit A - Resume

Clifford A. Goudey
Massachusetts Institute of Technology
Bldg. NE20-376, Three Cambridge Center
Cambridge, MA 02139

Phone: 617-253-7079
Fax: 617-252-1615
email: cgoudey@mit.edu

EDUCATION:

MASSACHUSETTS INSTITUTE OF TECHNOLOGY Sept. 1974 to June 1977
Master of Science degree in Naval Architecture and Marine Engineering
Master of Science degree in Mechanical Engineering

UNIVERSITY OF MAINE, Orono, Maine Sept. 1964 to Sept. 1968
Bachelors degree in Mathematics

PRESENT POSITION:

MASSACHUSETTS INSTITUTE OF TECHNOLOGY July 1980 to present
Marine Advisory Leader, MIT Sea Grant College Program
Director, Center for Fisheries Engineering Research
Director, Offshore Aquaculture Engineering Center

PROJECTS AND TASKS:

- Principal Investigator: Reducing the Habitat Impact of Trawls and Dredges, National Engineering Test Center for Offshore Mariculture, A Listserver for Ocean Farmers of America Forum, Development of Unmanned Feeding Systems for Open-ocean Fish Cages, Growth Trials of Haddock in Open-ocean Fish Cages, Right Whale Acoustic Detection, Sea Grant Technology Program in Sea Scallop Mariculture, Oceanographic and Fisheries Data Collection and Telemetry from Commercial Fishing Vessels, Adopt-a-Boat program, Study Fleet Technology Evaluation. Passive acoustics in fisheries,
- Design responsibilities: AUV Odyssey I & II, RoboLobster, MicroAUV, ASC Artemis, RoboKayak, TUGOS, Ocean Drifter, Whalespar, Robofeeder, Whale-free Buoy, OAC single-point mooring, Seabed Monitoring System, AULS listening nodes.

PROFESSIONAL ACTIVITIES:

- Member NRC Committee on Reducing Porpoise Mortality from Tuna Fishing
- Steering Committee and Rapporteur, World Symposium on Fishing Gear and Fishing Vessel Design, St. John's, Newfoundland, Nov. 1988
- Steering Committee and Session Chairman, International Symposium - Safety & Working Conditions aboard Fishing Vessels, Rimouski, Quebec, Aug. 1989
- Participant, National Industry Bycatch Workshop, Newport, Oregon, Feb. 1992
- Participant, IATTC Scientific Advisory Board meeting, San Diego, Apr. 1993
- Member, Massachusetts Sea Scallop Working Group
- Founding member, Ocean Farmers of America Forum, Oceanf-l
- Member, Atlantic Offshore Cetacean Take Reduction Team
- US organizer, US/Egypt Marine Resources Workshop, Cairo, April, 1999
- Collaborator, Gulf of Mexico Offshore Aquaculture Consortium, 1999 to present
- Keynote engineering speaker, OOA IV, St. Andrews, N.B. Canada, June 2001
- Industry Advisor, NEFMC Habitat Committee
- Advisory Panel - Northeast Consortium pelagic ecosystem monitoring project

PATENTS:

U.S. Patent 4,119,300 Semi-automatic Trawl Door Hook-up System.
U.S. Patent 4,180,935 Hydrofoil Trawl Door.
U.S. Patent 4,358,148 Lifeboat Release Mechanism.
U.S. Patent 5,413,065 Flexible fabric barge.
U.S. Patent 5,617,813 Anchorable mobile spar and ring fish pen.
U.S. Patent 6,685,518 Buoy that Resists Entanglement by Whales and Boats

SELECTED PUBLICATIONS:

Goudey, C.A. & C.A. Holberger, 1983. "The Development of Fishing Trawl Test Capabilities at NSRDC". Oceans '83, San Francisco, CA, Aug. Center for Fisheries Engineering Research Report No. 6, MITSG 84-10, Cambridge, MA.

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Goudey, C.A. 1999. Progress in Reducing the Habitat Impact of Trawls and Dredges. FIG project final report, MITSG 99-8, Cambridge, MA

Goudey, C.A. and H.L. Kite-Powell. 1999. US/Egypt workshop on sustainable coastal development through aquaculture and fisheries. MIT SG 99-3. Cambridge, MA

Goudey, C.A., G. Loverich, H.L. Kite-Powell, and B.A. Costa-Pierce. 2001. Mitigating the environmental effects of mariculture through single-point moorings (SPMs) and drifting cages. ICES Journal of Marine Science, 58:2, 497-503.

Goudey, C.A, T. Boaz, and C. Bridger. 2002. The Design, Installation, And Performance of A Single Point Mooring for an Offshore Cage. in *Open Ocean Aquaculture: from research to Commercial Reality*. WAS, Baton Rouge, LA

An Assessment of LNG Risks to Passamaquoddy Bay

Cliff Goudey

Massachusetts Institute of Technology

Cambridge, MA

Submitted to the proceeding of

STATE OF MAINE BOARD OF ENVIRONMENTAL PROTECTION

and

DOWNEAST LNG, INC. AND DOWNEAST PIPELINE, LLC

Topics to be covered

- **Properties of LNG.**
- **Risks posed by thermal radiation and flammable vapor clouds.**
- **Public safety risks of proposed terminals.**
- **Public safety risks of proposed tanker routes.**
- **Navigation hazards and grounding survivability.**
- **Implications for Maine BEP.**

Properties of LNG?

- **LNG is natural gas refrigerated to a liquid 1/600th the volume of the original gas.**
- **LNG is a clear, odorless liquid - mostly methane.**
- **LNG is cryogenic - it boils at -259° F.**
- **LNG is lighter than water (r = 0.42).**
- **LNG vapor is odorless and heavier that air (152%).**
- **LNG vapor is an asphyxiant.**
- **At normal temperatures LNG vapor is lighter than air (54%).**
- **Methane has a flammability range between 5% and 15%.**
- **Common LNG contaminants can broaden this range.**

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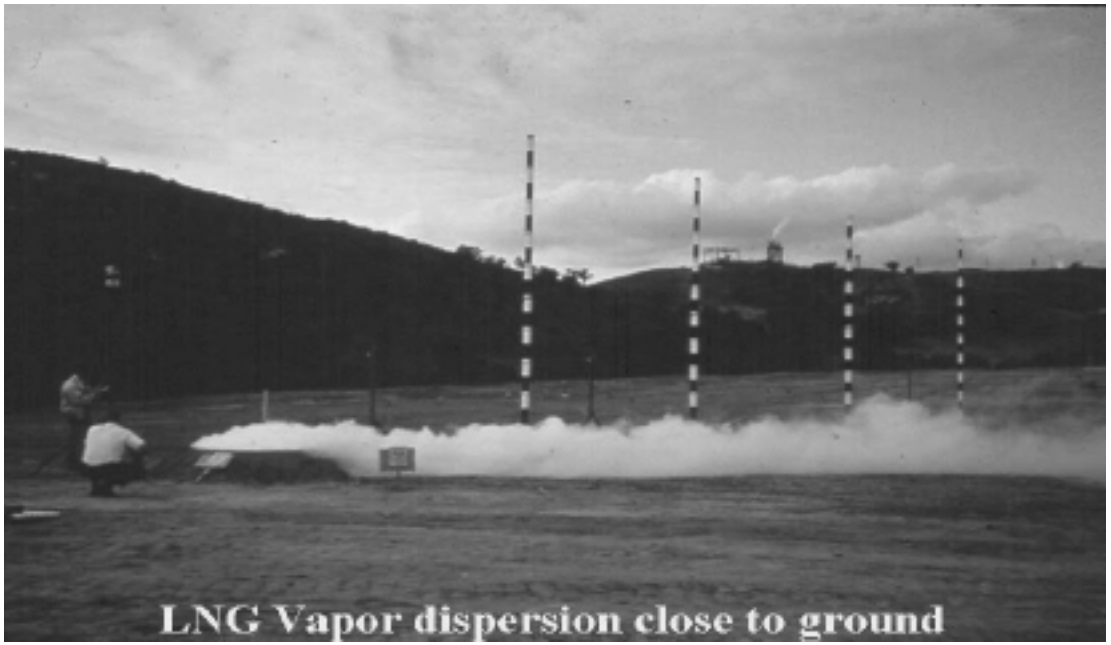
More LNG Properties

- **LNG vapor can explode in confined spaces.**
- **Unconfined methane does not normally explode, but**
- **Vapor from “hot” LNG can explode.**
- **Unconfined methane can be detonated by another explosion.**
- **LNG vapor will hug the ground until it warms and becomes lighter than air.**



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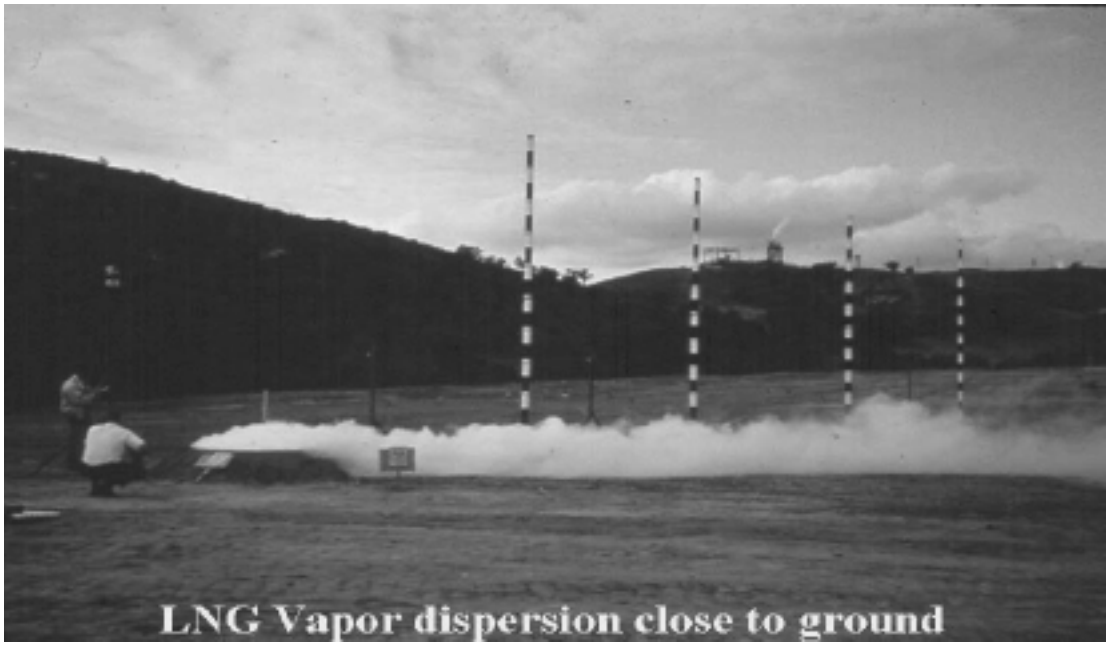


Flammability Limits - comparison with other fuels

Methane has the broadest range of any common fuel

Gas	Flammability Limits (%)
Hydrogen	4.0 - 75.0
Acetone	2.6 - 13
Methane	**5.0 - 15.0**
Ethane	3.0 - 12.5
Propane	2.1 - 9.5
Butane	1.9 - 8.5
Jet fuel (JP-4)	1.3 - 8.0
Gasoline	1.4 - 7.6

Energy Density - comparison with other liquid fuels

Liquefied methane (LNG) has more energy per pound than any other fossil fuel cargo

Fuel	Energy Density (MJ/kg)
Methane	**55.5**
Propane	50.3
Kerosene	46.3
Gasoline, automotive	45.8
Diesel	45.3
Gasoline, aviation	43.1
Oil, crude (petroleum)	41.9
Ethanol	29.7

Two of the Hazards

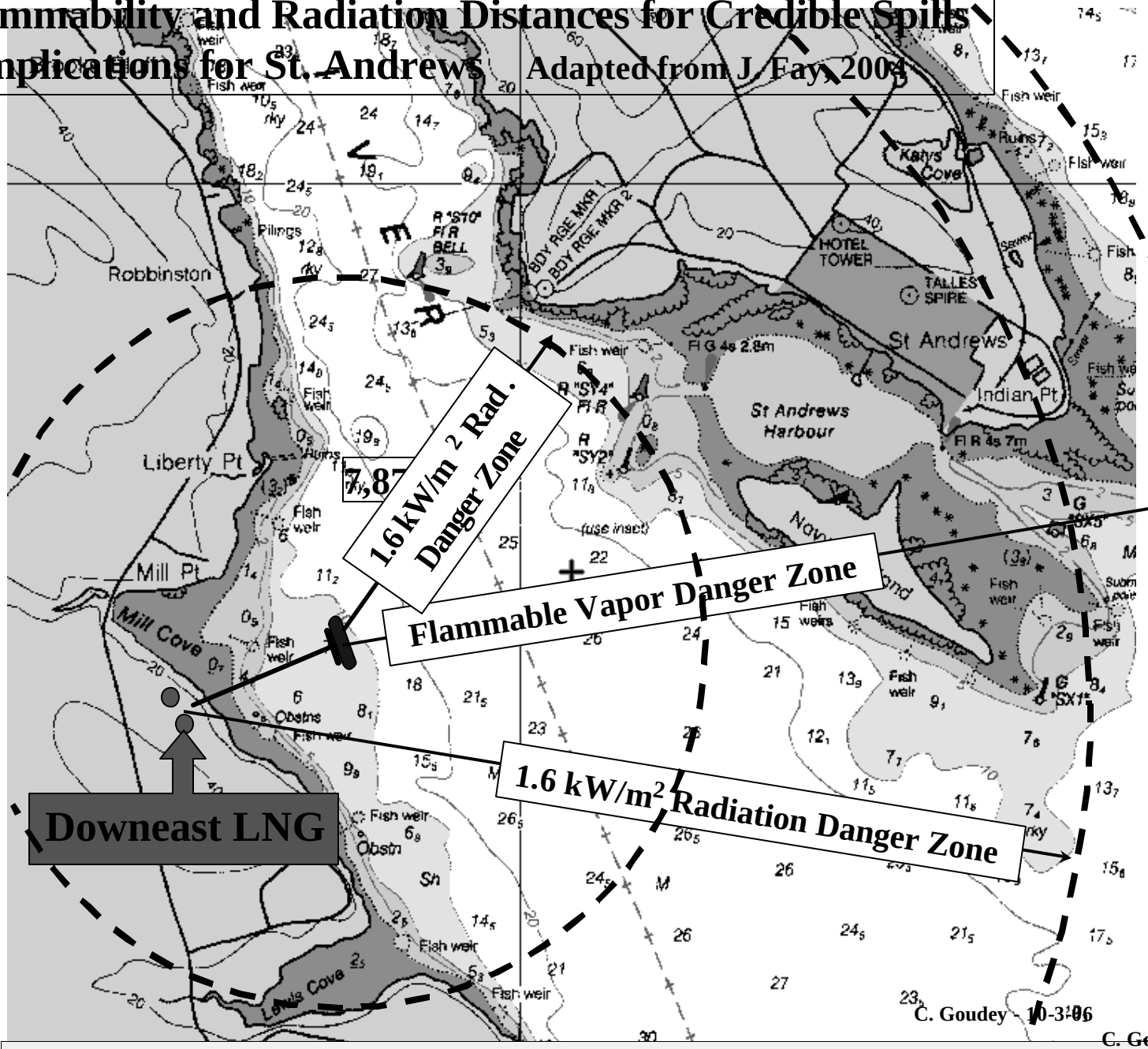
Thermal Radiation Hazard relates to the danger to life and property from a burning pool of LNG.

Flammable Vapor Cloud relates to the distance unignited LNG vapors can travel and remain a fire hazard.

Currently, these hazards are assessed using computer models that use spill size (rate and duration). Output is typically in terms of a danger radii that depends on acceptable thermal radiation criteria or lower flammability limits.

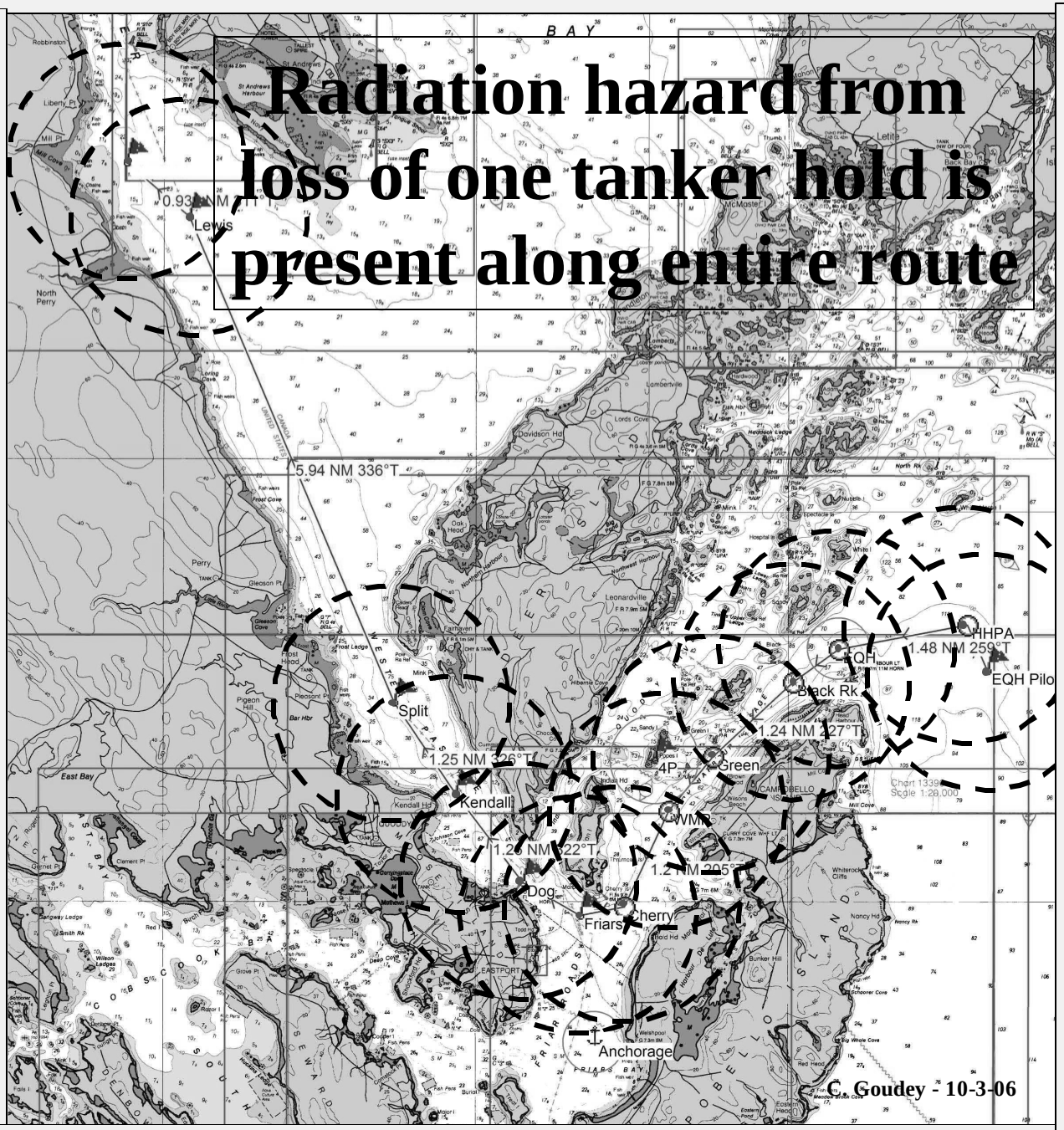
Flammability and Radiation Distances for Credible Spills - Implications for St. Andrews

Adapted from J. Fay, 2004



C. Goudey - 10-3-06

C. Goudey - 5-28-07



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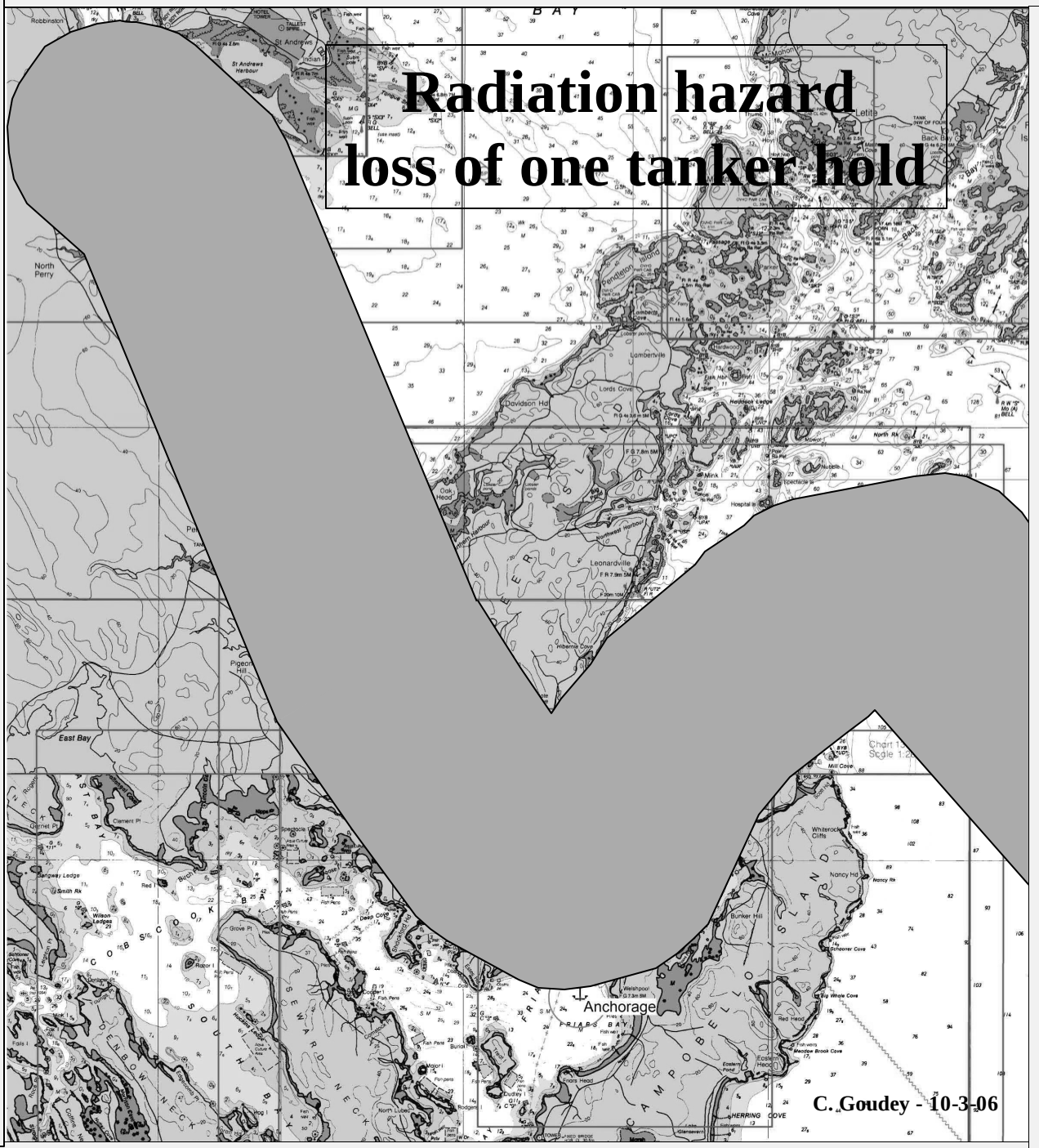

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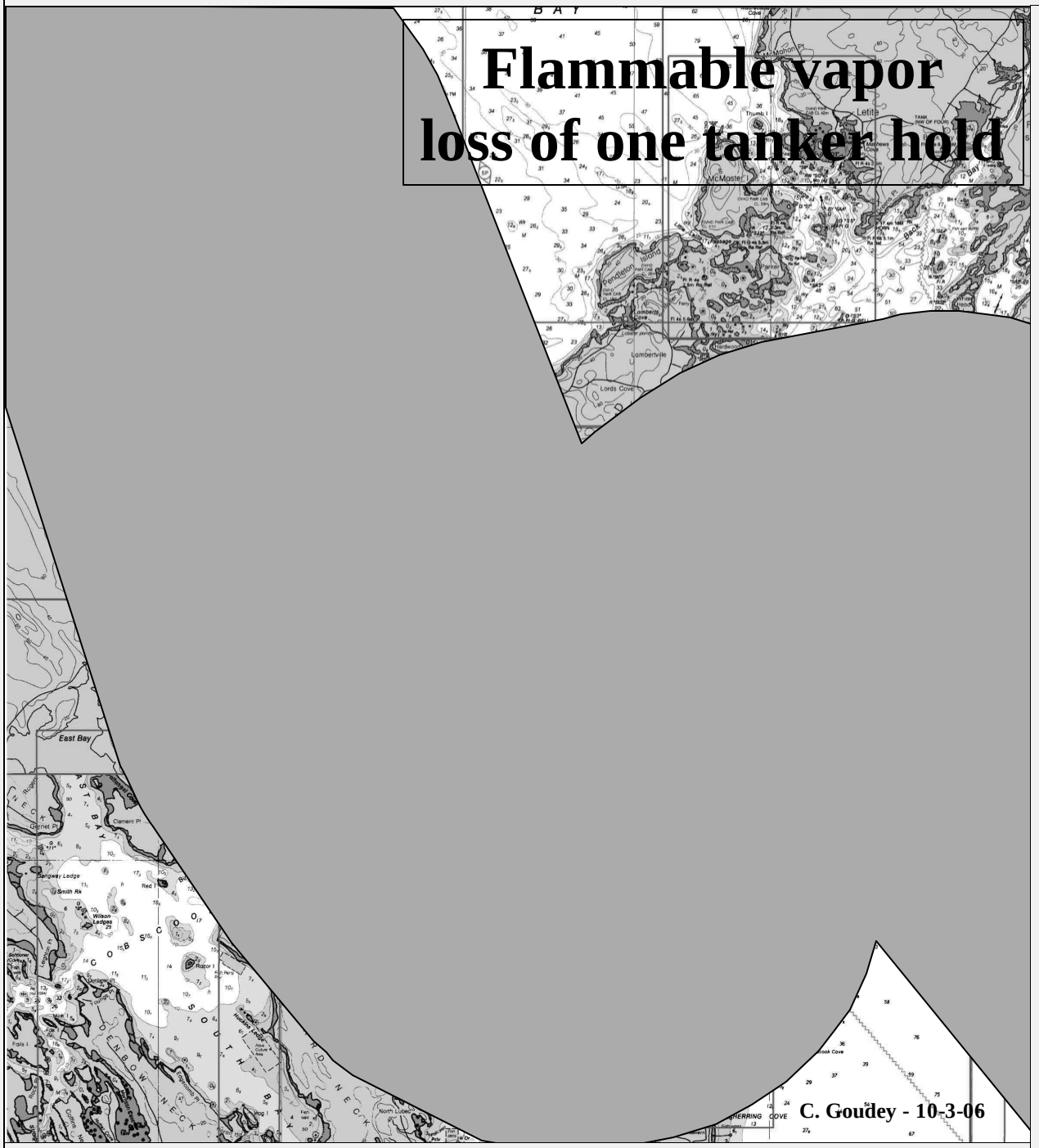
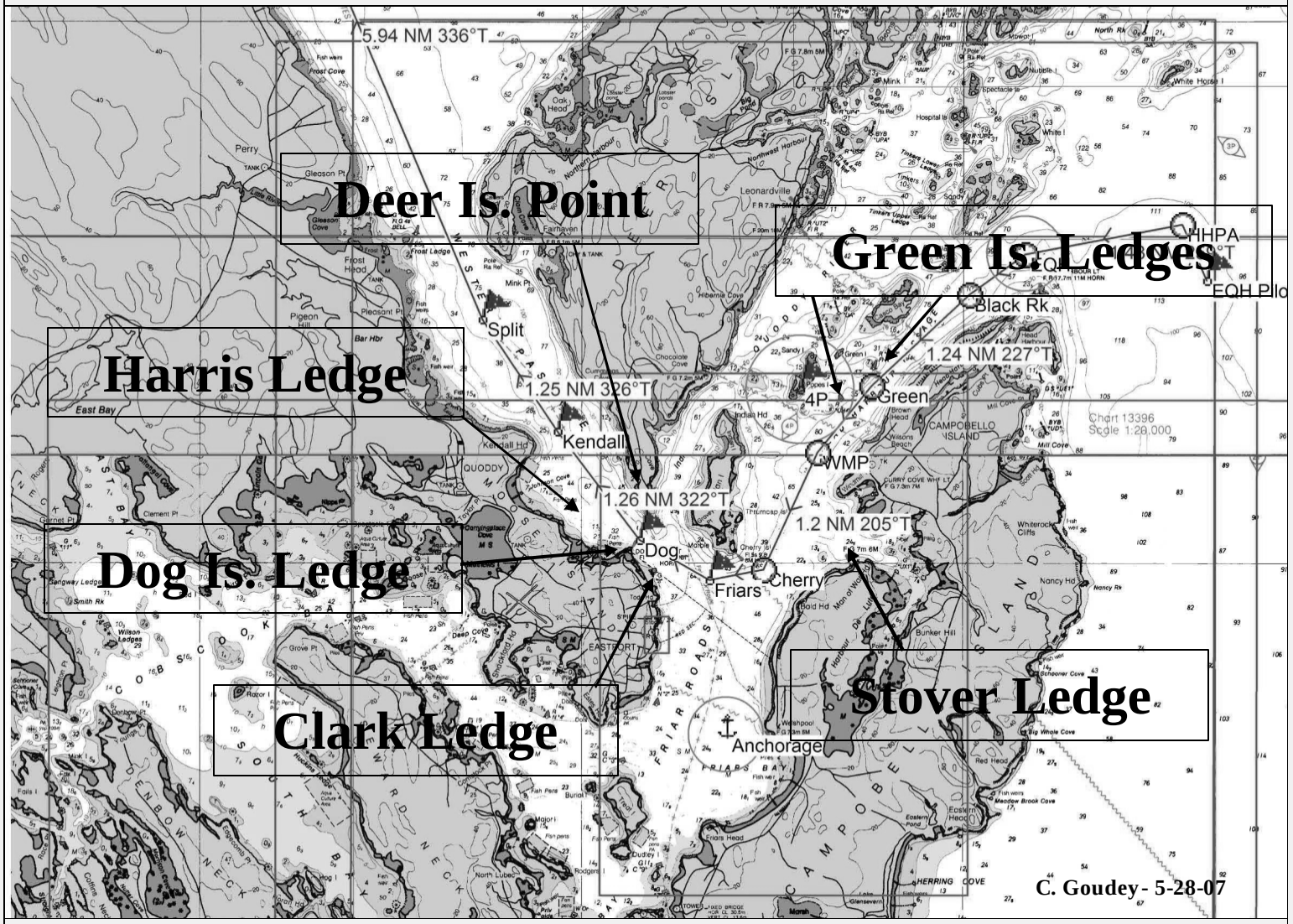
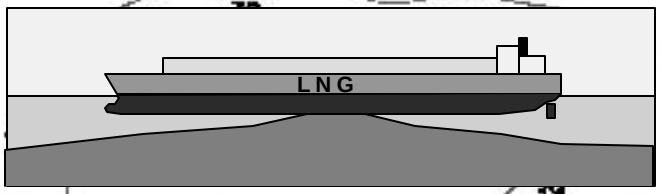

Flammable vapor
loss of one tanker hold
C. Goudey - 10-3-06
C. Goudey - 5-28-07

The Navigation Hazards - to name a few



Stovers Ledge Grounding

High tide

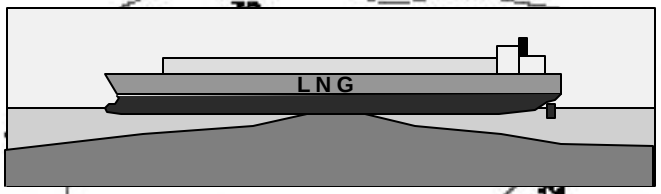


Fish Weir
Thrumcap Islet
BDY RGE MKR 18
Cherry Islet
CHERRY ISLET LT
Fl (2) R 12s 9.8m
6M HORN
Stovers Ledge
Curry Cove
MALLOCH BEACH WHARF LT F G
Man of War Head
North Road
Racoon Hill
Bald Head

C. Goudey - 5-28-07

Stovers Ledge Grounding

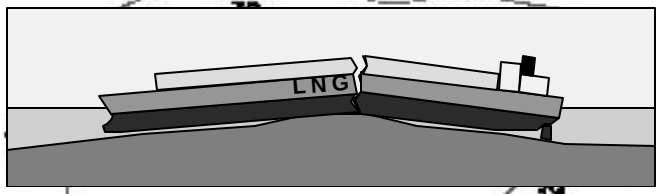
Low tide



C. Goudey - 5-28-07

Stovers Ledge Grounding

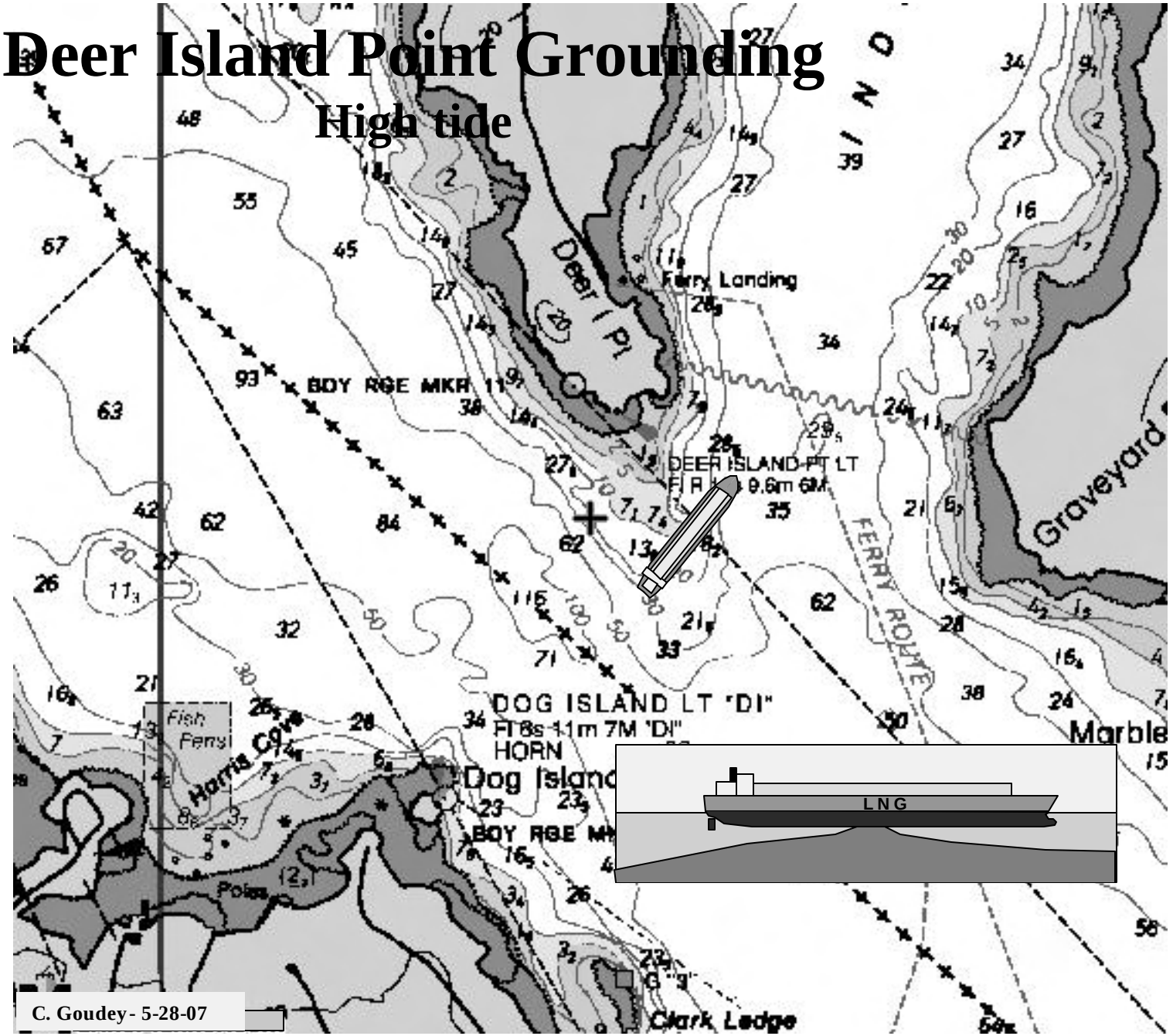
Ship fails due to hogging



C. Goudey - 5-28-07

Deer Island Point Grounding

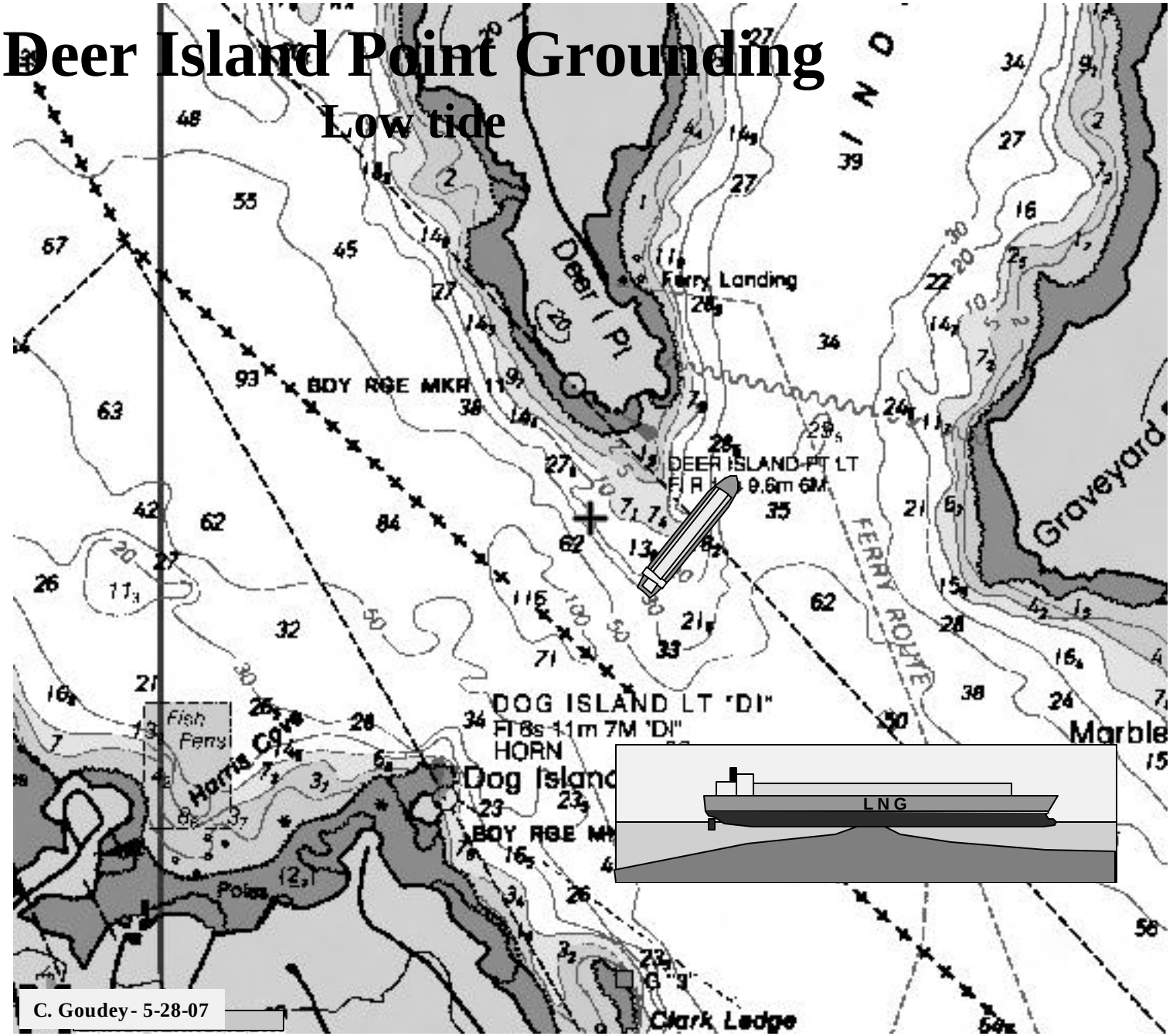
High tide



C. Goudey - 5-28-07

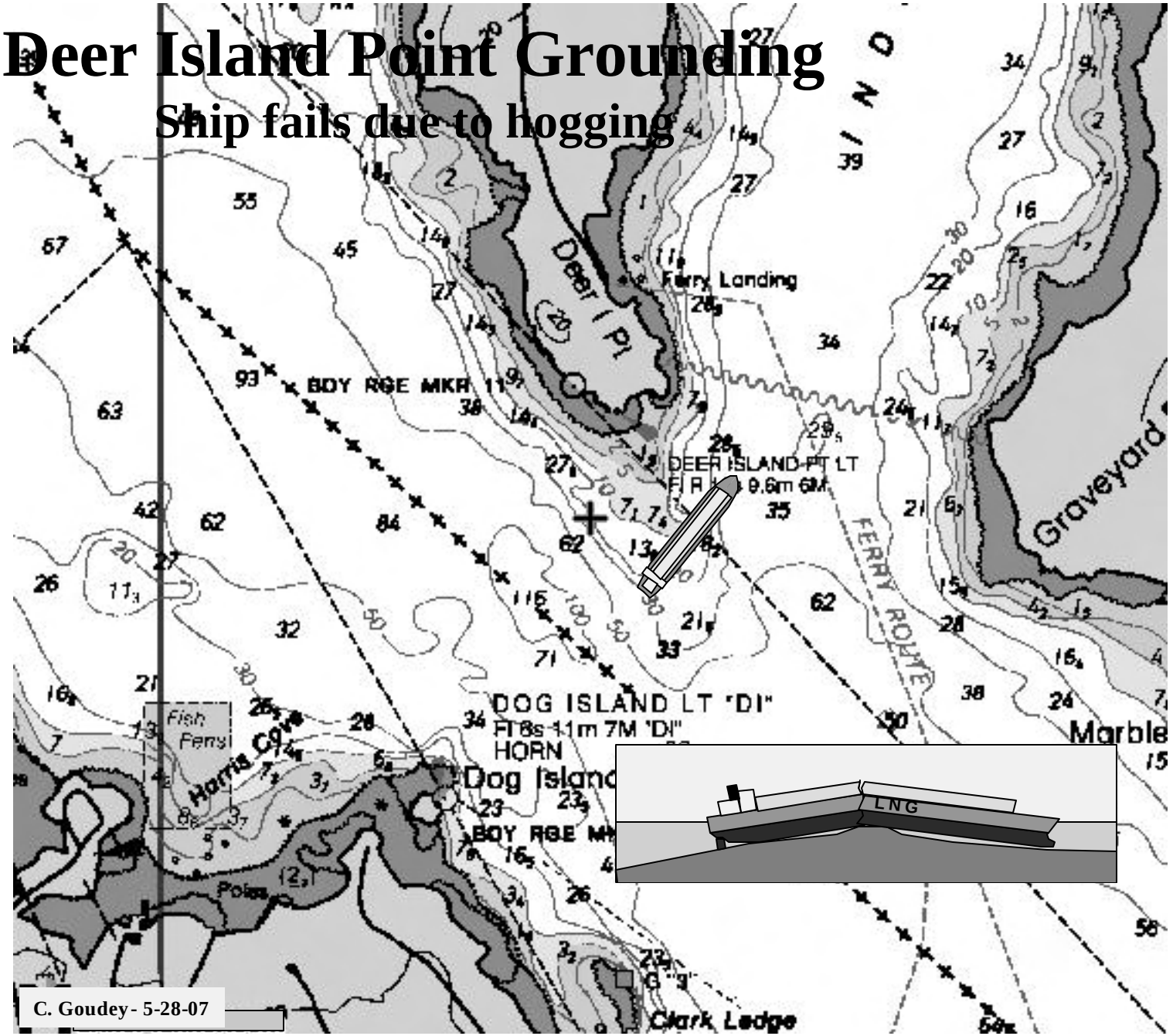
Deer Island Point Grounding

Low tide



Deer Island Point Grounding

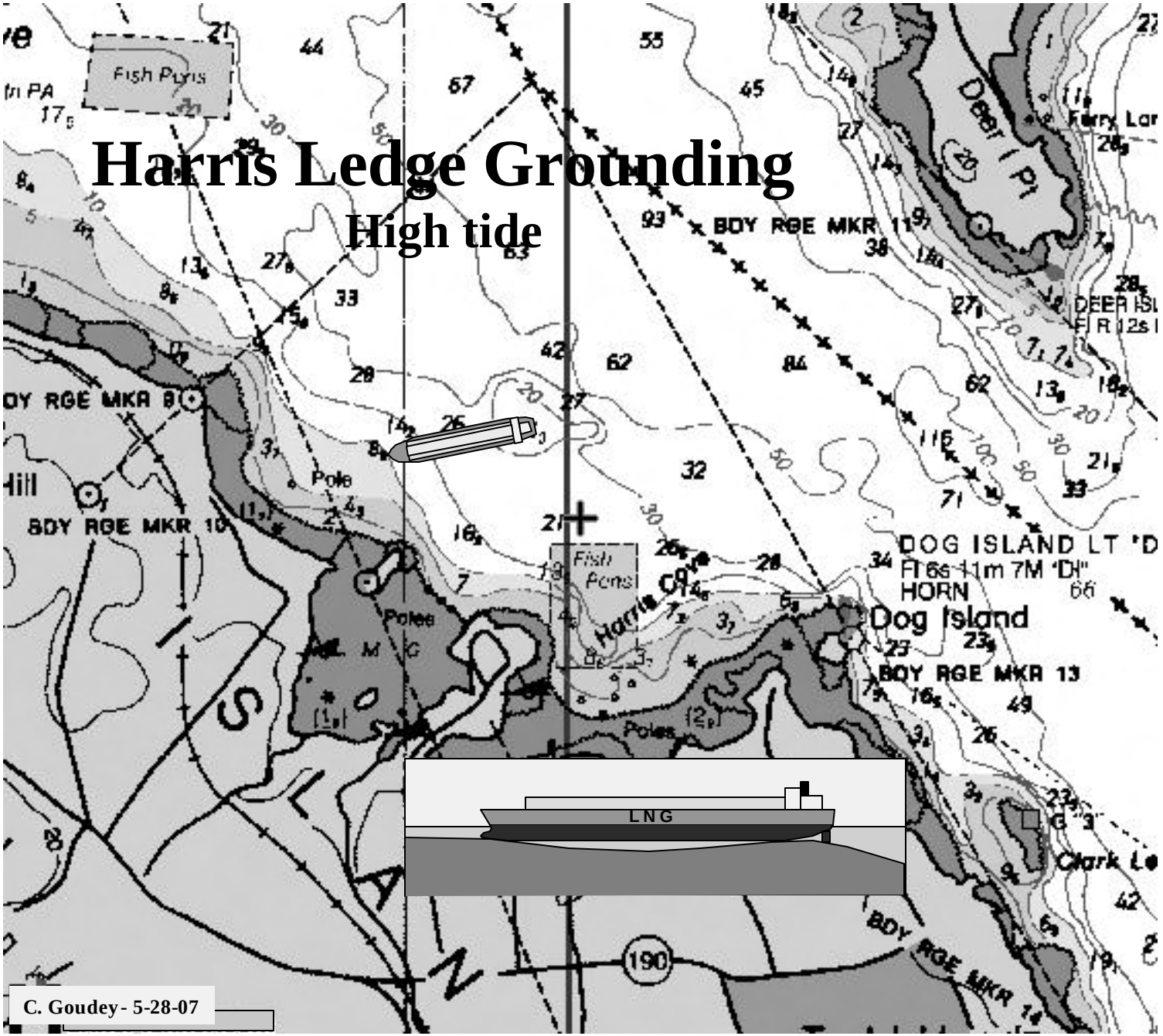
Ship fails due to hogging



C. Goudey - 5-28-07

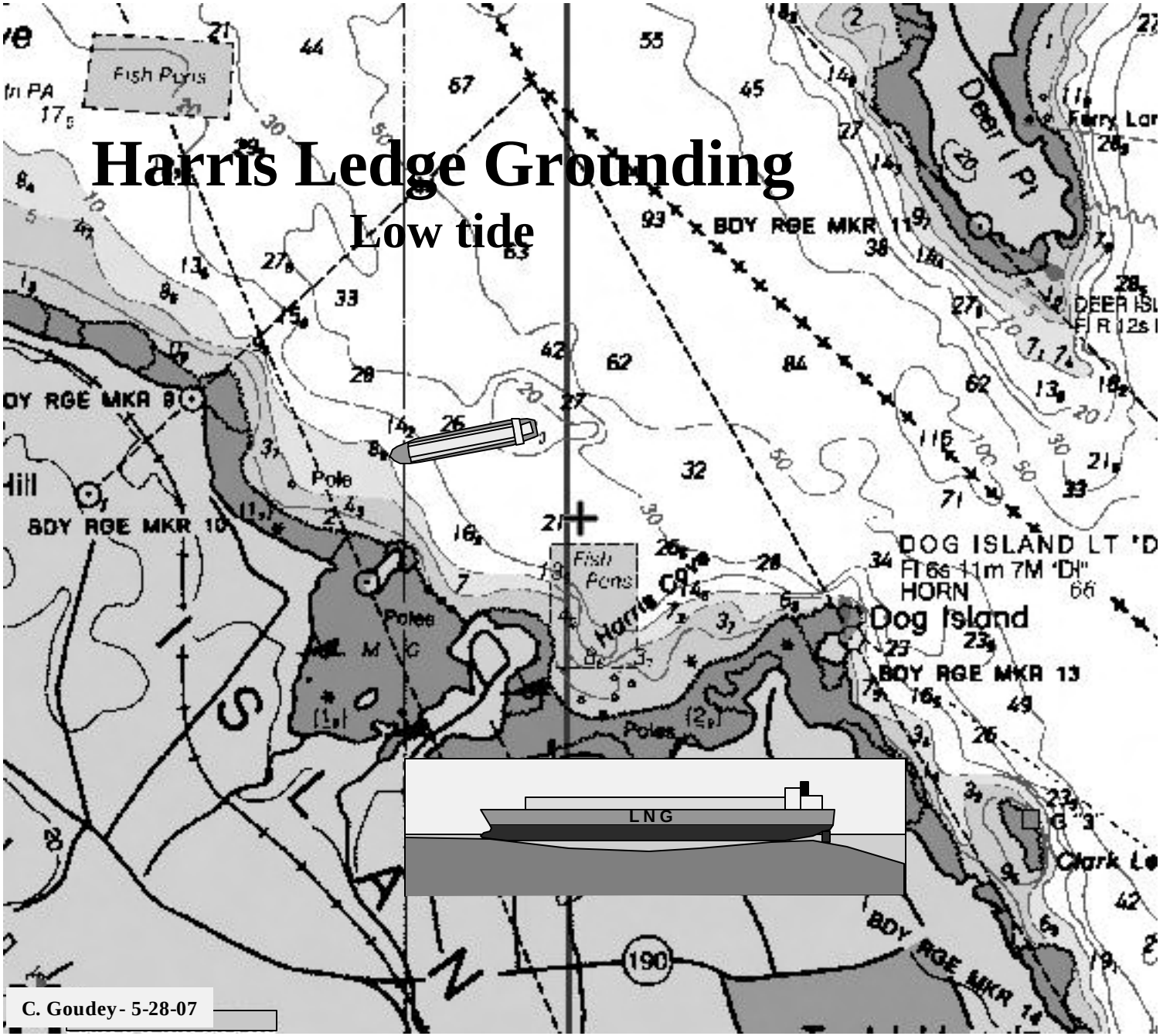
Harris Ledge Grounding

High tide



Harris Ledge Grounding

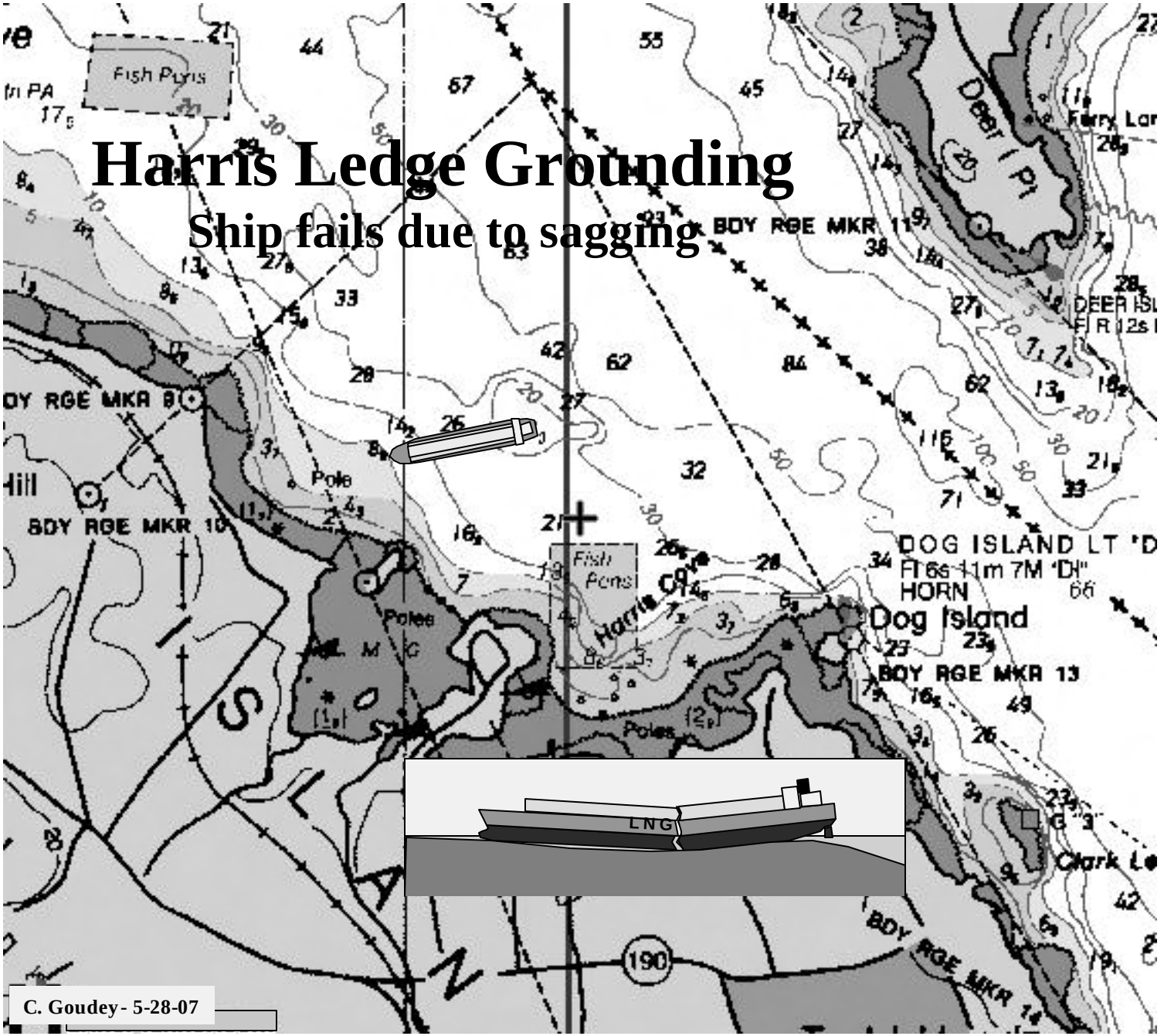
Low tide



C. Goudey - 5-28-07

Harris Ledge Grounding

Ship fails due to sagging



C. Goudey- 5-28-07

Green Island Ledge Grounding

High tide

C. Goudey - 5-28-07

To those who say it can't happen:

Near-miss shuts down LNG imports on Elba

An incident Tuesday raises safety concerns at the rapidly expanding facility.

SAVANNAH MORNING NEWS - March 15, 2006

A potentially disastrous spill was averted early Tuesday morning when a liquefied natural gas tanker discharging its load at the Southern LNG terminal on Elba Island broke from its moorings and pulled away from the pier. ÉÉÉ

Does Maine BEP know enough about grounding risks and their potential consequences to grant Downeast LNG's application?

No.

What is needed:

1. **Detailed surveys of grounding hazards.**
2. **Assessment of tide range consequences**
3. **Grounding consequence analysis**
   a) **Structural response - plating fracture and tearing**
   b) **Longitudinal bending strength**

Conclusion

Unlike other existing U.S. LNG terminal locations, the site proposed by Downeast LNG is unique in presenting this risk of tanker break-up on grounding. Neither Lake Charles, Elba Island, Moss Point, nor Everett have the rocky hydrography, the tidal currents, or the extreme tidal range of Passamaquoddy Bay.

This unique risk combined with the public safety and environmental consequences of such a disaster provides ample reason for denying this application.

PRE-FILED TESTIMONY OF BRENT R. GRIFFIN

Q. What is your name?

A. Brent Griffin. I live in Edmunds Township.

Q. What do you do for a living?

A. I fish. I've been fishing since I was 15. I am 27 now. I fish out of Eastport.

Q. What do you fish?

A. Lobster, halibut and scallops. I fish halibut from Eastport to Cutler. I fish for lobster from Quoddy Head to Cutler in the Grand Manan Pasage and have 800 traps. I fish for scallops by Eastport, Friar Roads, and Cobscook Bay.

Q. Do you think that the Downeast LNG proposal will have an impact on you?

A. Yes, the shipping route will have a big impact. From what I understand, you have to stay away from the tankers when they transit or are stuck in the fog and I fish along the shipping lane. I can stay close to existing ships, but will not be able to with LNG tankers.

Q. How does that affect you?

A. My equipment will be chewed up by the ships and the safety and security zones will keep me from tending the gear. I already lose gear. More ships and I lose more gear, especially if they do not tell you the route. Security and exclusion zones will keep me from fishing for halibut and scallops. I fish in Passamaquoddy Bay right on the shipping lane or security zone.

Q. What percent of income is from scallop and halibut?

A. Approximately 10%. I would probably lose about half of that because of the security or exclusion zones.

Q. Is the rest of your income from lobstering?

A. The rest is from lobster fishing. I also cut some wood in the winter.

Q. How much of your lobster income would be affected.

A. It all depends on the shipping route. If the tankers go through Grand Manan Channel, I stand to lose more. I have 15 trap trawls with balloons. This is expensive gear to replace, around $3,000 per trawl. One ship can cut the lines. This has already happened. 600 pound break-aways are on the ropes so that whales do not get snagged. A

ship will easily burn and fray the rope or break the break-away. The gear is then lost and so is my money.

Q. Any other impacts?

A. Yes, because I keep my boat in Eastport, I may not be able to come and go when I need to tend my equipment. The LNG tankers would have to execute a complex maneuver right by Eastport to turn from Head Harbor Passage to the Western Passage. That will take time and keep in or from port longer because of the security zone. It would hurt my gear rotation. I have a limited window to reach my gear at the right tides.

Q. How many people fish in the same part of Grand Manan Channel?

A. More than 20. All of the Grand Manan Channel is heavily fished and some of the best lobster grounds around.

Q. Would they be affected the same way?

A. Yes, unless they announce a set shipping route that we can work around with confidence.

Q. Do you have any other businesses?

A. With my family, I am part owner of lobster buying station, Quoddy Bay Lobster, Inc. The lobster we buy comes mostly from either Passamaquoddy Bay between Pleasant Point and Mill Cove (Perry shore) or the Grand Manan Channel. I am very concerned that the LNG tankers and the Downeast LNG facility will affect my business. The LNG will make a major impact on fishing on the Perry Shore, and as I explained, in the Grand Manan Channel. My family and I depend on lobster caught all along the tanker route – Grand Manan Channel, Friar Roads, and from Gleason Cove to Mill Cove. The security and exclusion zones and gear loss will harm the fishing. The fishermen I buy from and I will not be able to tend our traps when we need to. The impact on fishing and navigation will be severe.

Brent Griffin

State of Maine

Date: May 18, 2007

County of Washington

The foregoing instrument was acknowledged before me this 18th day of May, 2007 by Brent Griffin.

Mary F. Pottle

(signature)

Mary F. Pottle

(printed name)

Notary Public

My commission expires: 02-09-13

PREFILED TESTIMONY OF DALE GRIFFIN

Q. What is your name?

A. Dale Griffin.

Q. Where do you live?

A. Whiting, Maine.

Q. What do you do for work?

A. I lobster fish from May to December, and I cut wood in the winter. Wood is getting scarce, so I've been relying more on my fishing income for the last three or four years. I fish out of Eastport.

Q. What percentage of your income comes from each?

A. Right now it's probably about 60-40%, 60% from fishing. I'm trying to get more from fishing because wood is harder to come by.

Q. Where do you fish?

A. I have a Maine license for 800 traps. I fish in the Grand Manan Channel from Quoddy Head down to Long Point, toward Cutler, out to three miles. My boat that goes on the Grand Manan Channel has the 600 traps. I fish about 200 traps with my other boat, and I go more inland. I catch crabs in those traps as well. Lately I've been fishing around Treat Island off Eastport in Friar Roads, and up in Cobscook Bay some. I usually put some traps on the Western Passage from Gleason's Cove up to St. Croix Island, especially around Mill Cove and the Robbinston boat landing. I will put some up there this year.

Q. What kind of gear do you have?

A. I have a lot of single traps, and I'm trying to go more into trawls. Right now I have about half and half on my boat that goes to Grand Manan, 300 singles and 300 trawl traps. There are usually five or six traps on my trawls. On my other boat I use buoys, mostly singles and sometimes two traps to a line.

Q. How would an LNG terminal in Mill Cove impact you?

A. It depends on the tanker traffic and the restrictions on us around those tankers. It sounds like I'd have to stop and wait until the tankers go by through the Channel and inland. If that happens I would lose time fishing, and I have to fish at certain tides in the Channel, at high or low slack, and at some places an hour or two before. I have to get the buoys farther out right at high or low slack at certain spots. If not, I can't get them. Trawls I can get more often, like an hour before high water or low water slack and an hour after each too. The buoys in close to shore I can get most anytime. Inland, we'd have to stop when they come in and make that turn. I would also lose a lot of gear that would be chewed up by the tanker and the tugs. If I set traps inland around Treat Island, Friar Roads, and up the Western Passage I would lose a lot of gear. I wouldn't even put traps in Friar Roads where they're be making a turn with those tugs, because I usually set five or six trap trawls there, and they'd all get chewed up. I'd lose gear all they way up the Perry Shore with the tugs and tankers going through. I don't see how we wouldn't lose out on either end, on both time and traps, in both places where I fish.

Also, I fish out of the breakwater in Eastport. I will not be able to get in or out of port when the tankers transit. This is particularly severe here in Eastport where the tankers have to maneuver a 90 degree turn from Head Harbor Passage through the Old

Sow whirlpool up to the Western Passage. That takes more time and keeps me in or out of port longer. That would have a real impact on my rotation.

Q. Could you move your traps?

A. I and the other affected fishermen have thousands of traps. There are not enough spots. If the Downeast LNG proposal is approved, there will not be enough room for us to all move. All of the good spots are taken already.

Q. How often are you out fishing?

A. Most weeks you try to get three or four days in, but when they're running good later in the season you have to pull more often. It changes from year to year.

Q. What other issues impact your fishing?

A. Sometimes I can lose a whole week because of weather. If I have to lose more time it would hurt a lot.

Q. Do you ever have a shortage of bait?

A. We have the wharf here in Eastport and we're expanding that business. We buy lobsters from some other fishermen, and then we sell our lobster and what we buy to Blair West out of Buck's Harbor. He comes and picks it up. He guarantees that we have bait. It can be difficult to get bait, so we're lucky.

Q. How many fishermen fish from Gleason Cove to Mill Cove?

A. There are about 20 commercial fishermen with about 4,000 traps. This does not count the 5-trappers.

Q. Is Mill Cove a good lobster ground?

A. Yes it is. There are many egg-bearing lobsters there. It is a nursery. We always see the big females there. I believe that the nursery is important to the Passmaquoddy Bay Fishery. The Downeast LNG pier would go right over the nursery.

Dale Griffin

Dale Griffin

State of Maine
County of Washington

Date: MAY 19 2007

The foregoing instrument was acknowledged before me this 19th day of May, 2007 by Dale Griffin.

Jeanne A Guisinger
(signature)

Jeanne A. Guisinger
(printed name)
Notary Public
My commission expires: 3-24-11

PRE-FILED TESTIMONY OF LARS LUND, MASTER MARINER, RETIRED

Q: What is your name?

A: Lars Lund. I am a retired Master Mariner. I have gone to sea my entire working life, about 34 years. I am 1957 graduate of Maine Maritime Academy. I worked for the Moore-McCormick Lines, Inc. based in New York City.

Q: What types of boats have you captained, mastered or been an officer on?

A: Throughout my career I have sailed in all licensed deck officer capacities. For my last 11 years before retiring, I served as a master. My license was an unlimited Masters issued by the U.S. Coast Guard. The vessels I have commanded were freighters and a tanker, a vessel 688 feet in length. I was also a master on an LNG tanker which was in lay-up awaiting work. This vessel was 936 feet in length with a beam of 180 feet. While I did not leave port on the LNG Tanker, I became very familiar with its dimensions and sail area (the area the catches wind and requires significant force to overcome to maneuver).

Q. Where have you captained freighters and tankers?

A: Throughout the world, with the exception of the near and far east. I have been to Europe, Africa, and North, Central and South America (on both the Atlantic and Pacific sides). I have taken ships into approximately 40 different ports.

Q: Are you familiar with the Passamaquoddy Bay area.

A: Yes, I live in Seeley's Cove, New Brunswick. Seeley's Cove is on the Bay of Fundy, just east of Passamaquoddy Bay. I have toured Passamaquoddy on a small

DAVID A. BARTLETT NOTARY PUBLIC NEW BRUNSWICK

vessel. I attended the Port and Water Safety Act workshop sponsored by the U.S. Coast Guard in regard to the safety of LNG tankers transiting into Passamaquoddy Bay. I have also studied charts of and weather data for the Bay.

Q. As a captain entering a port for the first time, what would you do in preparation?

A: To assure that safety of the ship, people, other ships, and the environment, I would read sailing directions, study charts, contact the port and home office and speak with other vessels.

Q. Did you do that here?

A. Not in its entirety. I took a ride on a boat and looked at the charts and weather data, and spoke with other mariners. That was sufficient to let me know it would not be prudent to allow regular LNG traffic as proposed. The further research was not required. In particular, the tour and charts were ample to let me see that this proposal is not prudent.

Q. Do you believe that LNG tankers can be safely brought into Passamaquoddy Bay and up to Mill Cove on a regular basis?

A: I do not. My initial reaction when I heard of this was how glad I was to be retired, not having to transit such a narrow and dangerous, in my opinion, channel. I think there comes a point, when taking calculated risks, such as bringing these large vessels into Passamaquoddy Bay is pushing the envelope beyond good sense.

Q: Why do you not think that it is good sense?

A: The passages are so narrow and the other factors over which we have no

DAVID A. BARTLETT NOTARY PUBLIC NEW BRUNSWICK

control so variable that we factor out human error. The issue is not whether, under ideal conditions, a ship of that size with a dangerous cargo could be brought in. The issue is whether it should be done as a matter of routine, even with stringent conditions. Doing that leaves little or no room for human error.

Q: What are the factors that concern you?

A: There are many adverse factors in bringing LNG tankers through Head Harbour Passage; some of these are:

- Fog and sea smoke: It is my understanding that other ports have a minimum range of visibility for the movement of these vessels. I understand that two miles visibility would be required here. We do not often have two-mile visibility for weeks at a time. The Coast Guard says that it is foggy here approximately 25% of the time, often for days at a time. That does not count sea smoke.

  Business pressures will push this envelope. A laden ship cannot wait for the sometimes up to 10 to 30 days that we have thick fog. This is especially true because there is no designated anchorage here and ships would have to continue to steam while waiting for the fog to lift. This is very expensive.

- Wind: The vessels have a large "sail" area making maneuvering, especially in restricted waterways, hazardous. In Passamaquoddy Bay, there is often a strong northeast or northwest wind that averages 17.5 to 20 knots per hour in the winter. Gale force winds (34 knots or higher) are present 10% to 15%

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of the time. Such winds will catch the "sail" provided by the LNG tankers, particularly when they attempt the approximately 90 degree maneuver turning north by Eastport into the Western Passage. An enormous amount of power will be required to overcome this wind while maneuvering or turning. This is particularly true while turning into the Western Passage from Head Harbour passage when there is any strong adverse wind. The St. Croix River and Western Passage act as a funnel for these winds.

- Tides and currents. The tides and currents are some of the world's most severe. The whole of Passamaquoddy Bay fills and drains with the 20 to 30-foot tides only through two narrow passages – the Western passage and Letete Passage. The currents in those passages when the tides run are very strong and run up to six knots and are sufficiently strong to form the Old Sow Whirlpool at the base of the Western Passage. The tanker would transit into and through the Western Passage and could only do so at slack tide when the current is lower. It would have to be positioned and enter the Western Passage precisely in the 20 to 30 minute window of slack high tide.
- No real-life experience. A boat of this size has never been brought into Passamaquoddy Bay. The first one will be an experiment.
- Delays at the loading port will add to the bottlenecks. Passamaquoddy Bay is susceptible to bottlenecks with these big ships.
- Ship and or tug equipment failure while transiting the channel. All tugs and the ship will have to be fully operational *all* of the time. Again, there is little

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or no margin for error.

- With the additional traffic and adverse weather (fog, wind etc.) there are bound to be bottlenecks. To not have any other traffic in the channel while the LNG tankers are transiting seems highly unlikely and might delay the vessels using Bayside and other vessels.
- Masters and pilots should be required to attend simulation training. It is important to note, however, that the best simulation is only as good as its inputs. Passamaquoddy Bay has so many unique navigational issues including weather, fog, highly variable winds, geographical hazards, extreme tides, currents, sea smoke, traffic, fishing gear, etc. that it would take enormous time and money to fully simulate it. It is doubtful that all of Passamaquoddy Bay's unique and myriad variables are in the simulation. This bay is more complex than most.
- At present, the pilots have no real life experience using tugs to turn and dock the LNG tanker.
- More pilots will be required.
- Tugs to be used to hold the LNG tankers alongside, while at berth, due to strong tidal currents.

These are only some of the items that will negatively impact if permission is granted to allow these vessels access to their proposed discharge berth in Mill Cove, Maine. While it might look on paper to have a smooth operation, it is my experience that in the maritime industry there are so many unforeseen circumstances that will

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prevent this. Again, there is no room for error.

Q: How would you resolve these issues?

A: The answer is simple: a better location, either offshore, or in a port with direct access to the ocean.

Q: You have been retired for a long time. Has technology improved to allay your concerns?

A: Technology has greatly improved, but largely when out at sea with GPS navigation and similar technology. In-port transits such as the transit from Head Harbour Passage to Mill Cove, however, remain largely a matter of judgment. You need a feel for the ship and the water and to react accordingly. Here, there is:

- no real life experience bring boats of this size into Passamaquoddy Bay,
- Very real business pressures to push the envelope.

I would be very concerned.

Date: 2007-05-31

Lars Lund

Affirmed before me on this date in Saint Andrews, New Brunswick.

Notary Public

DAVID A. BARTLETT NOTARY PUBLIC NEW BRUNSWICK

David A. Bartlett
(printed name)

239 Water Street
Saint Andrews, NB
Canada E5B 1B3

PRE-FILED TESTIMONY OF ANGUS McPHAIL

Q. What is your name?

A. Angus McPhail.

Q. What do you for a living?

A. I fish. I've been fishing for 20 years.

Q. What do you fish?

A. Lobster and herring.

Q. How many Lobster traps do you have?

A. I fish 800 traps and use all of them. I keep my traps in the Grand Manan Channel now. I used to keep then in Passamaquoddy Bay mostly between Gleason and Mill Coves from shore to the Canadian line. I fished there for 20 years. I fished the Grand Manan Channel last year and will this year. I still fish the Bay, but I now have a federal license so I fish out in the Grand Manan Channel. My fishing in the Bay now is as a stern man for another fisherman who has 400 to 500 traps between Gleason and Mill Coves.

Q. How do you fish for herring?

A. I have a herring weir at Pulpit Rock. I still have the rights to the weir, but have not fished it for the last five or six years. I hope to start it up again soon. The fish were back last year.

Q. What impacts would the Downeast LNG facilty would have on your weir?

A. I don't know. I am concerned whether noise, lights from the pier, facility and tankers, and the exclusion zone would have an impact. My weir is close to the proposed Downeast LNG facility.

Q. Are there any lobster in or by Mill Cove?

A. Yes, Mill cove is a lobster nursery. There are a lot of egg-bearing lobster there. In 2003, I assisted in a study with Carl Wilson from the Maine DMR to track lobster. My former boat, the Julie Ann was the boat that was used. I also fish there so I know that Mill Cove is loaded with egg bearing lobster. It is a seed ground. The drop off, less tide and current, and the warmer water from the tidal flat make it a perfect place for the egg bearing lobster. To my knowledge, it is the biggest nursery in Passamaquoddy Bay, at least on the Maine side of it.

Q. Where by Mill Cove is this nursery?

A. Right where the Downeast LNG pier would go and throughout Mill Cove. I'm not sure that Downeast LNG did the studies to really know the impacts on the lobster.

Q. What would be the pier's impact?

A. Access is a big issue. The traps and my weir could be in the exclusion or safety zone. Tugs would also stir up and muddy the waters where the lobster nursery is. It could hurt the nursery. Mill Cove is all mud and it's not deep. Gear loss would also be huge issue.

Q. Is the Perry Shore heavily fished?

A. Yes it is.

Q. How heavily is it fished?

A. The Perry Shore from Gleason Cove to Mill Cove from the Canadian boundary into shore is heavily fished. Approximately 20 commercial fishermen fish that area. There are approximately 4,000 traps in that one stretch. There are lots of buoys and many buoys have 3 or 4 traps on them. This does not include the several 5-trap licenses. The whole Bay from Friar Roads on up to Devils Head is heavily fished.

Q. Would the Downeast LNG proposal impact your fishing or your ability to navigate?

A. I keep boat in Eastport. I would not be able to come or go when a tanker transits. The tankers would have to make a sharp turn from Head Harbor Passage into the Western Passage by the Old Sow Whirlpool right by Eastport, and then back out again. That turning maneuver will take more time that the tanker simply going steaming ahead. The longer the tanker takes, the longer I am kept in port by the safety and security zone.

I need to get to my gear on time. I am also worried about gear loss. I think that the tugs by Mill Cove would muddy the water and hurt the nursery. The nursery is important to replenish lobster.

Q. What percent of your income is from fishing?

A. That's no one's business. I work 80% of my time fishing.

Q. Is there anything else that you would like to say?

A. This proposal would make it difficult if not impossible for me to fish. It would prevent me from accessing my traps when I have to. I would lose gear in Grand Manan Channel. The fisherman that I am sternman for in the Bay would lose a lot of gear from the tanker and four tractor tugs. It would ruin the fishery by keeping us from it when the tankers are around. A lot of people fish from Gleason Cove to Mill Cove and the Grand Manan Channel. LNG tankers going through there would affect most of the fishermen around here. This would be bad for all of the Maine fishermen who fish in or around Passamaquoddy Bay. There will be more loss than good from this.

Angus McPhail

Angus McPhail

State of Maine
County of Washington

Date: 5/31/07

The foregoing instrument was acknowledged before me this 31 day of May, 2007 by Angus McPhail.

(notary public signature)

TARI L. CAMICK
Notary Public • State of Maine
My Commission Expires September 1, 2011

(notary public printed name)
Notary Public
My commission expires: _____

PREFILED TESTIMONY OF MARIA RECCHIA

Q. What is your name?

A. Maria Recchia.

Q. Where do you live?

A. My office is in St. Andrews, New Brunswick.

Q. What do you do for a living?

A. I work for Fundy North Fishermen's Association. I am the primary staff person, so I coordinate the Association's activities; I interact with government, research issues, and do communications work (both internal and external).

Q. What is your relationship to this matter?

A. Fundy North Fishermen's Association has intervened in the proceedings. I am also the primary contact person for the three other fishermen's associations that have intervened – Fundy Weir Fishermen's Association, Grand Manan Fishermen's Association, and Campobello Fishermen's Association.

Q. Please describe the membership of these four organizations.

A. Most are full time fishermen. In the four associations we have members fishing for lobster, herring, groundfish, scallops, sea urchins, quahogs, crabs, and other species.

Q. What are the membership numbers of those four organizations?

A. Fundy North has 80 members, Fundy Weir has 65, Grand Manan has 180-200, and Campbello Island has about 20 members.

Q. How would the Downeast LNG terminal affect your membership?

A. It would significantly impact their ability to fish and would reduce their income, and cause considerable crowding locally and up the coast – which is their livelihood – in

a lot of ways. Fundy Weir members have herring weirs, and lighting and noise from the tankers and the pier would deter fish from entering their weirs. For weirs to work, herring have to enter shallow water. Any light or sudden noise or vibration such as boat lights or the noise or vibration caused by a bow thruster spooks the herring and causes them to scatter to deep water away from the weirs. Even fire works on July 4th spook the herring and the weirs are empty on the fifth.

Passamaquoddy Bay is a very important herring fishery. The currents, caused by the area's unique tides, create upwelling of plankton on which the herring feed. Herring caught here either goes to the Connors Brothers sardine factory or to Maine for bait. The tails and heads from Connors Brothers also go to Maine for bait. Maine has a bait shortage and its lobster industry depends on herring caught on the Canadian side of Passamaquoddy Bay. The herring weir fishery is a historic fishery that is very environmentally and socially sound. Such fisheries hold even more promise for the future since there is a growing interest in eco & socio- marketing of seafood.

Also, the millions of gallons of ballast water the LNG tankers would uptake while off-loading in Maine would take up larvae of many commercial species (including lobster and scallop) and important feed (i.e. plankton and krill) – the base of the food chain. We feel that such activity over time would diminish the productivity of the Bay, and therefore limit the food available to fish, shellfish, whales and seabirds. This could diminish the fishery, and disturb the environment in Maine and Canada. The members are aware that Mill Cove where the Downeast LNG pier would go is an important lobster nursery and that area is particularly susceptible to larvae being caught into ballast water.

The biggest threat to our fishermen's livelihoods are the safety and security exclusion zones which would limit the members' access to fishing grounds. Assuming that Canada allows the LNG tankers to transit, Canada would implement the safety and security zones required by the U.S. Coast Guard and Transport Canada. The tides in a lot of the areas where the associations' members' fish are so strong that the fishermen can't fish all the time – the tidal currents pull the buoys underwater. If the fishermen do not have sufficient advance notice of when a tanker is coming in and have to change their strategy, they can lose their catch for a number of hours, or the whole day can be lost because they would miss the slack tide. They would bring in less catch and make less money. If there is a large lobster in a trap you often don't get other lobsters coming into it or perhaps the large lobster eats the others. Nonetheless, if traps soak longer, you catch fewer lobsters.

There is also the very important issue of gear loss. Licensing this Maine facility will cause gear loss along the entire tanker route. Our members note that the tugs and tankers would have no choice but to transit through Canadian waters, but that gear loss would occur in both Maine and Canada where the tankers would transit. The LNG tankers are large, and they will have to be assisted by at least four tugboats and a lead boat when they enter into Head Harbour Passage. The additional space, propulsion systems, and boats would significantly increase transit's impact and would entrain gear.

I understand that the tugs can be incapacitated by rope – which is obviously a primary component of fishing gear – so we are told that the tugs have powerful cutters to cut ropes they come in contact with. This could ruin a huge amount of gear and the fishermen would lose those traps. Ultimately, the fishermen could be forced to stop

fishing certain areas altogether because it would not be practical because of access limitations and gear loss. Those fisheries will be lost.

We have seen similar problems with tugs in St. John, where an LNG terminal is being constructed. St. John is already industrialized, of course, and there is already a lot of ship traffic – crude carriers come in, as well as container ships – and now, with the terminal construction, there are a lot of ships and barges coming in for construction purposes. At the refinery in St. John, they service the ships through a monobuoy – the carriers pump the oil into a pipe at a buoy rather than coming up to a pier. Tugs help the carriers line up and attach to the buoy. They have caused major amounts of gear loss. They pull up gear, chew it up, and ball it up. We have tried working with all parties in St. John to set up traffic lanes for the ships where the fishermen will not set gear. We have set them up before but the ships and tugs often do not adhere to the lanes, and they are still losing gear and they have not solved the problem. The tugs do not keep in traffic lanes around the monobuoys. They take up a lot of space to maneuver and have been extremely destructive to gear.

It is also important to note that the Maine fishery will suffer the same impacts as the Canadian fishery. Here, the Maine and Canadian fisheries are side by side. The tankers will transit over the international line – simultaneously in both US and Canadian waters – for much of their transit.

Q. What has happened as a result of gear and fishery access problems in St. John?

A. When fishermen lose access to a fishing area, they are forced to fish somewhere else, which means that they are infringing on another fisherman's fishing area. Lobstermen have unwritten rules on infringing on another fisherman's areas. Everyone

gets squeezed and this travels up or down the coast. In Saint John, fishermen are also losing access to their wharf, due at least in part to the marine industrial expansion occurring in conjunction to with the LNG terminal there. These fishermen have nowhere to dock or moor their boats. If they have to leave, their only choice will be to move to another wharf. This creates crowding around other wharves and communities and stresses those wharves and communities. This is affecting the entire southwest New Brunswick fishery.

Q. Would the Downeast LNG proposal affect the fishermen on, or who fish by Grand Manan Island and the so-called "gray zone" where both Maine and Canadian fishermen fish?

A. Yes for the same reasons as above. Those fishermen heavily fish the Grand Manan Channel. We are hearing that they want to take the LNG ships through the Grand Manan Channel instead of using the fishing lanes in order to minimize the amount of time in Canadian waters. If this is true then they will affect a lot of fishermen, particularly Maine fishermen, if the tankers stay in US waters to the extent possible

Q. What is the weather like in this area?

A. Passmaquoddy Bay is known for fog. In fact our fishermen have strong evidence through personal observations over many decades that that Head Harbour Passage is extremely foggy much more so than either Eastport, St. Andrews or the Grand Manan airport, which is where all the weather stations are. Fishermen talk about a bank of fog that just sits from the Wolves to the bottom end of the Grand Manan channel. In July and August there may be fog there more than half the time. Figures we have seen for fog for the whole area (from weather data from Eastport and St. Andrews) is fog 25% of the time

over a whole year. I think you might have to increase this figure in this specific location because of this persistent fog bank. This also includes seasmoke or vapor in the winter.

Q. How does the Downeast LNG terminal relate to this problem?

A. If the terminal goes into Passamaquoddy Bay, it will stress fishing communities on both sides of the border. Like in New Brunswick, Maine fishermen will likely be forced out of the area, move south, and stress other fishing areas along the coast of Maine. The problems that I have described in southwest New Brunswick will only worsen and be extended and compounded. This area relies upon the vibrant fishing and marine economy. For most members, fishing is 100% of their income, or close to it. Sometimes their spouses work outside of the home, but sometimes fishing is the sole source of income for an entire family. Other businesses are supported by and supportive of the fishing industry – there are local fish buyers and processors. Stores and other businesses support this natural-resource-based infrastructure. The fisheries allow coastal communities to exist.

LNG in Passamaquoddy Bay would create enormous pressure on the surrounding communities in Maine and New Brunswick. Its effects on the fisheries will ripple out and impact everything related directly and indirectly to the fishing industry.

Passamaquoddy Bay, which does not have the heavy industry that St. John has, also has a land- and water-based tourist economy that relies upon the undeveloped nature of the Bay. Aside from the impact on the fishermen, LNG in the Bay will negatively impact those businesses that rely on the environment. This kind of development – LNG – can only impinge upon the existing viable uses of Passamaquoddy Bay. We would lose local, sustainable jobs – putting communities at risk – in favor of industry, pollution and,

aside from the construction phase, only a few skilled jobs that will be filled by people from elsewhere who have those specific skills.

Q. Is there anything else that you would like to add?

A. Yes, the Downeast LNG proposal would adversely and significantly impact our fishermen's ability to fish. As a result, they will lose income and feel considerable stress.

All Coastal Communities will suffer from a decrease in tourism, reduced income from the fisheries, which will impact all of the related and reliant businesses. I believe that it will make fishing a less desirable livelihood in our coastal communities which will lead to more people moving away. And I believe that the environment will be harmed by industrial use of sea space; *i.e.,* pollution (toxics, noise, and lights), loss of larvae in ballast water uptake, and the tendencies for LNG to attract many other environmental harmful industries such as petrochemical plants and other fossil fuel-based industry. These ships coming through present a huge danger to the fishery, environment and local economy.

Maria Recchia
(signature)

Province of New Brunswick
Canada

Date: May 30, 2007

The foregoing instrument was acknowledged before me this 30th day of May, 2007

by ~~Rob~~ MARIA RECCHIA

(signature)

Roderick I.T. MacDonald
Barrister & Solicitor
641 Vincente Place, Box 150
Tofino, BC V0R 2Z0
Ph: (250) 725-2843 Fax: (250) 725-2854

(printed name)

Notary Public NOTARY PUBLIC IN AND FOR BRITISH COLUMBIA

My commission ~~expires~~ is for life

PREFILED TESTIMONY OF FRED WHORISKEY

Q. What is your name?

A. Fred Whoriskey.

Q. Where do you reside?

A. St. Andrews, New Brunswick.

Q. What do you do for work?

A. I am a research scientist, and am Vice President, Research and Environment of the Atlantic Salmon Federation (ASF), a not-for-profit organization dedicated to the conservation of wild Atlantic salmon. The ASF represents 40,000 people through its core membership and affiliate network of local watershed groups.

Q. What is the purpose of your testimony?

A. To provide expert testimony on the impacts of a liquefied natural gas terminal at Mill Cove in Robbinston, Maine on Atlantic salmon (*Salmo salar*) whose habitat would be affected by the pipeline, terminal, and tanker traffic to and from the terminal. Many Atlantic salmon populations in proximity to the proposed project are endangered.

Q. What are your qualifications to testify as an expert on this topic?

A. I have a PhD in biology, and have conducted research and environmental work with Atlantic salmon since 1977, including within the project area. A recent CV of my full qualifications is attached.

Q. Please describe the materials you used to prepare your testimony.

A. Included in the materials I reviewed are those provided in the Downeast LNG's Site Law and Natural Resource Protection Act Applications (as updated on May 18, 2007), and Downeast LNG's Resource Report 3 submitted to the Federal Energy Regulatory Commission. I also relied upon scholarly articles and data. These include:

Anderson, J. M., F. G. Whoriskey and A. Goode 2000. Atlantic Salmon on the Brink. Endangered Species UPDATE 17(1):15-21.

Brooking, P., G. Doucette, S. Tinker and F. Whoriskey 2006. Sonic tracking of wild cod, *Gadus morhua*, in an inshore region of the Bay of Fundy: a contribution to understanding the impact of cod farming for wild cod and endangered salmon populations. ICES J. Mar. Sci. 63: 1364-1371.

F.W

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Carr, J. F., F. Whoriskey and D. Courtemanche 2004. Landlocked Atlantic salmon: movements to sea by a putative freshwater life history form. Aquatic telemetry: advances and applications. FAO/COISPA, Rome. M.T. Spedicato, G. Lembo, G. Marmulla (eds). pp.141-150.

Carr, J. W. and F. G. Whoriskey 2002. Assessment of Atlantic salmon in southwestern New Brunswick outer Bay of Fundy Rivers, with emphasis on the Magaguadavic River, 1992 – 2001. Project report for the New Brunswick Wildlife Trust Fund. Atlantic Salmon Federation, St. Andrews, New Brunswick.

ICES 2007. Report of the working group on North Atlantic salmon. ICES CM 2007/ACFM:13.

Lacroix, G. L. and P. McCurdy 1996. Migratory behaviour of post-smolt Atlantic salmon during initial stages of seaward migration. J. Fish. Biol. 49: 1086 – 1101.

Lacroix, G. L., P. McCurdy, and D. Knox. 2004. Migration of Atlantic salmon postsmolts in relation to habitat use in a coastal system. Transactions of the American Fisheries Society 133: 1455-1471.

Whoriskey, F.G. and J. W. Carr. 2001. Returns of transplanted adult, escaped, cultured Atlantic salmon in the Magaguadavic River, New Brunswick. ICES Journal of Marine Science 58: 510-516.

Whoriskey, F., P. Brooking, G. Doucette, S. Tinker and J. Carr 2006. Movements and survival of sonically tagged farmed Atlantic salmon released in Cobscook Bay, Maine, USA. ICES J. Mar. Sci. 63: 1218-1223.

I also used information from my ongoing research projects in this area which have not yet been published.

Q. What is your opinion of Downeast LNG's conclusion that no further analysis of impacts on the Downeast LNG marine operations is required because "[i]n view of the very low numbers of wild Atlantic salmon returning to the St. Croix River, it is highly unlikely that any salmon would be found at the Project area in Mill Cove at any point in time and the likelihood of any interaction or impact on the species is remote." Section 7 of its Site Location of Development Application, Section 7, at 22 (revised on May 18, 2007).

A. Downeast LNG discounts the probability of impacts upon Atlantic salmon on the grounds that abundance is so low—that because salmon are few in number, the chance of interaction is minimal. This is an illogical conclusion that starts from a false premise. Salmon numbers in the region are severely depressed, and considerable protection and recovery efforts are being applied to them to restore their health and to stop further harm. Once populations are restored, which we hope to have due to present recovery efforts, significant unmitigated harm should not be permitted to happen to them. The premise

should be that Atlantic salmon populations in the project area are endangered and/or depressed, and the project should evaluate its potential impacts in hindering recovery efforts, or potentially impacting future healthy populations.

Downeast LNG also has incompletely documented the distribution of Atlantic salmon in the project area. In the immediate project area, they have highlighted the presence of salmon only in the St. Croix and Digdeguash Rivers. However, salmon have been found in additional rivers in the region that empty into Passamaquoddy Bay, which the proponent has failed to list. These include the Magaguadavic River, the sixth largest river in New Brunswick, the Waweig River, and Dennis Stream.

The migration routes of salmon smolts to the ocean from the latter two systems must take the fish past the proposed terminal site. This pattern is similar to that that would occur for salmon from the St. Croix River. Sonic telemetry studies of Magaguadavic River smolts and adults also indicate that these fish could pass in proximity to the terminal site during migrations.

Q. What is your opinion of the methodology used by Downeast LNG to evaluate the impacts on salmon?

A. Downeast LNG has illogically discounted the need to evaluate impacts upon Atlantic salmon on the grounds that abundance is low. As I have indicated above, the proponent has failed to accurately state true salmon abundance in the region. The company has confined its attempts to evaluate environmental impacts on salmon to freshwater habitat, and has discounted the possibility of impacts in the marine environment.

I note that Downeast LNG did conduct field work on other natural resource issues, such as for salamander presence in wetlands or for Atlantic salmon habitats in fresh water. Downeast's conclusions regarding Atlantic salmon in the marine environment, therefore, are not verified by accurate scientific analysis. There are ways to conduct scientific analysis of the impacts of introducing totally abnormal stimuli—this project—into an environment. Downeast has not taken these steps to support its conclusion that the terminal, pipeline, and tanker traffic will not adversely impact endangered Atlantic salmon.

Q. What is your knowledge regarding the existence of Atlantic Salmon in the area of the Mill Cove terminal, the pipeline route, and the tanker transit route through Head Harbour Passage, through Western Passage, and to the beginning of the St. Croix River at Mill Cove?

A. We have evidence of salmon in the area. The Western Passage area is a major migration corridor for both smolts (juvenile salmon moving to sea for the first time), and for large salmon. We have evidence that salmon can become entrained in the tidal currents within the Western Passage and individuals have been documented remaining in

DAVID A. BARTLETT NOTARY PUBLIC NEW BRUNSWICK

the passage for up to 12 days. We have also used sonic telemetry to document the continued presence of cod, a salmon predator, along this migration route.

Q. Do you have an opinion regarding the impacts of an LNG terminal at Mill Cove would be on endangered Atlantic salmon? If so, what are your primary opinions?

A. My primary concern is about the lighting that will be required at the terminal site and how it is going to carry over the water. The terminals will require 24-hour lighting. Downeast LNG has asserted that it will mitigate the impacts of lighting by downwardly directing the lighting, but has not provided further details about that assertion, or about whether this action will attenuate the light sources sufficiently that it will not affect salmon migration behavior or predation risk. Based on what Downeast LNG has asserted, I cannot tell to what extent any animals will be put at risk by the lights and whether such mitigation will be sufficient to not further endanger the Atlantic salmon.

My organization has specific concerns that lighting of the salmon marine migration corridors by the proposed project could affect the behavior of salmon and possibly increase predation risk of salmon. As a scientist, I share this important concern. The pelagic smolts frequently migrate at night to avoid predators. The presence of artificial lighting at night could stop migration, or silhouette the smolts making them easy prey for fish attacking from below. The project proponent was notified in writing of these concerns in advance of the preparation of their impact evaluations, but they have not addressed these concerns either through literature reviews or field work.

Fred. N. f.

DAVID A. BARTLETT NOTARY PUBLIC NEW BRUNSWICK

F.s. W

Fred Whoriskey

Province of New Brunswick

Date: 01 June 2007

The foregoing instrument was acknowledged before me this 15th day of ~~May~~ June, 2007 by Fred Whoriskey.

DAVID A. BARTLETT NOTARY PUBLIC NEW BRUNSWICK

(signature)

DAVID A. BARTLETT
BARRISTER, SOLICITOR
Terrace Bay ESS 1S0

David A. Bartlett

(printed name)

Notary Public

My commission expires: when I cease to be a practising member of the Law Society of New Brunswick

CURRICULUM VITAE

Frederick G. Whoriskey, Jr.

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Fax: (506) 529-4985
email: asfres@nb.aibn.com

Born: 25 June, 1954, Cambridge, MA, USA

Marital Status: Married (Lise Paquin), three children (Sophie, Marc, and Kim)

Languages: Fluent English and French

Citizenship: Canadian and USA

Education:

Newton High School, Newton, MA, USA, 1969 - 1972

Brown University, Providence, RI, USA, 1972 - 1976, B.Sc. with Honours

University of Arizona at Tucson, Puerto Peñasco Field Station, Sonora, Mexico, Summer, 1975.

Laval University, Ste. Foy, Quebec, Canada, 1981 - 1984; Ph.D. Biology

Academic Appointments:

Adjunct Professor, McGill University, August 1995 - Present

Adjunct Professor, University of Guelph, April 1999 - 2004
Adjunct Professor, University of New Brunswick, May 1995 - Present

Associate Professor, Department of Renewable Resources, McGill University, January 1993 to August 1995 (resigned).

Assistant Professor, Department of Renewable Resources, McGill University, Montreal, Quebec, Canada, January 1986 to December 1992.
NATO postdoctoral fellow, Department of Zoology, University College of Wales, Aberystwyth, Wales, UK, January - December 1985.

Manager and Research Assistant, Woods Hole Oceanographic Institution, Matamek Research Station, Sept-Iles, Quebec, 1977 - 1981.

Research Assistant, United States Antarctic Research Program, McMurdo Station, Antarctica, October - December, 1978

Research Assistant (aquaculture), Environmental Systems Laboratory, Woods Hole, MA, USA, 1976 - 1977

Teaching Experience - University Courses Taught:

Assessing Environmental Impacts
Advanced Fish Ecology
Advanced Wildlife Ecology
Animal Ecology
Community Ecology
Fisheries and Wildlife Management
Ichthyology
Teaching Assistant - Physiology, Laval University, 1982 - 1984
Teaching Assistant - Vertebrate Zoology, Laval University, 1982
Teaching Assistant - Fish Biology, Brown University, 1976

Professional Appointments and Services:

Member, Aquaculture Collaborative Research & Development Program (ACRDP) Regional Management Committee, August 2006 –

Chairman, Board of Directors, Huntsman Marine Science Centre, December 2003 – Present

Vice President, Research & Environment, Atlantic Salmon Federation, January 1997 – Present

Member, Ocean Technology Innovation Strategy East Coast Committee. June 2002 – present.

Board Member, AquaNet, 2001 to October 2003 - present

Chairman, AquaNet Environmental Committee, September, 2002 to October 2003

Board Member, Huntsman Marine Science Centre,

Chairman, HMSC Users Committee, July 2002 to December 2003

Board Member, Atlantic Salmon Broodstock Development Program, 1999 to present
Natural Resource Scientist, Atlantic Salmon Federation, August 1996 - December 1996

Advisor to the Canadian Public Health Service task force inquiring into the effects of low level fighter aircraft activities on the people of Goose Bay, Labrador; January-June, 1986.

Vice-President, Société Québecoise pour l'Etude Biologique du Comportment; October, 1987 - November, 1988.

Councillor, Wildlife Biology Section, Canadian Society of Zoologists; October, 1986 - December, 1990.

Consultant to the International Development Research Center on Nile Perch in Lake Victoria, East Africa; 1988 - 1992.

Chairman, Wildlife Biology Section, Canadian Society of Zoologists; May, 1988 - December, 1990.

Consultant to Canada-Egypt-McGill Agricultural Response Program on aquaculture; 1988 to 1990.

Organizer, joint meeting of la Société Québecoise pour l'Etude Biologique du Comportment and the North East Regional Animal Behaviour Society; November 4-6, 1988, Macdonald Campus of McGill University.

Consultant to Lavalin Environment. Evaluation of the Lac St. Jean monitoring program; 1988.

Consultant to the Town of Ste. Anne-de-Bellevue. Environmental impacts of the town marina extension; 1990.

Steering Committee, Food Systems Development Project, McGill University, University of the Philippines and the Visayas-Université de Québec à Rimouski; 1990 - present.

Member, FCAR Comité d'évaluation du programme des bourses; 1991 - 1993; Comité 02A Sciences biologiques.

Secretary, Ecology, Evolution and Ethology Section, Canadian Society of Zoologists; 1991 - 1992.

Consultant to Moose River James Bay Coalition on the impacts of hydroelectric dams on fish; 1992 - 1993.

Editor, Canadian Society of Zoology Bulletin; 1992 - 1995.

Consultant to the Grand Council of the Cree on impacts of hydroelectric development on fisheries, and on the ecological surveillance networks; 1992.
Consultant on teacher training, Lake Champlain Basin Program; 1992 - 1993.

Member, Board of Governors, St. Lawrence Valley Natural History Society Ecomuseum; 1992 - present.

Head, Atlantic Salmon Federation Intervenor Team, Sainte Marguerite River Diversion hearings; 1993.

Head, Atlantic Salmon Federation Intervenor Team, Northwest River (Newfoundland) Hydroelectric Project; 1995

Chair, FCAR/SORDAC Aquaculture Grants Panel; 1995

External Reviewer, Dept. of Fisheries & Oceans Gulf Region Anadromous Fishes Stock Assessment; 1995 to present

Councillor, Canadian Society of Zoologists; 1996-1999

Chair, Cameron Award Committee, Canadian Society of Zoologists; 1996

Member, International Council for the Exploration of the Seas Working Group for North Atlantic Salmon; 1996 to present

Member, Governor's (Maine) Penobscot River Salmon Technical Working Group; 1996

Member, Board, Applied Breeding Technology; 1997 to present

Member, Board, Huntsman Marine Science Centre; 1998 to present

Member, Advisory Committee, Charlo Salmonid Enhancement Centre Inc., 2000

Professional Memberships:

American Fisheries Society
Animal Behavior Society
Asian Fisheries Society

Canadian Aquaculture Association
Canadian Society of Zoologists
Sigma Xi
St. Lawrence Valley Natural History Society

Awards:

Natural Sciences and Engineering Research Council of Canada, Postgraduate Scholarship, 1982 - 1984

Antarctic Service Medal, National Science Foundation, 1980

National Honour Society (USA), 1971

Refereed Publications:

PRUSCH, R. AND F. WHORISKEY. 1976. Maintenance of fluid volume in the starfish water vascular system. Nature (London) 262:577-578.

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ANDERSON, J.M., F.G. WHORISKEY AND ANDREW GOODE 2000. Atlantic Salmon on the Brink. Endangered Species UPDATE 17(1):15-21.

WHORISKEY, F.G. AND J.W. CARR. 2001. Returns of transplanted adult, escaped, cultured Atlantic salmon to the Magaguadavic River, New Brunswick. ICES J. Mar. Sci. 58:504-509.

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CARR, J., F. WHORISKEY AND P. O'REILLY. 2004. Efficacy of releasing captive reared broodstock into an imperiled wild Atlantic salmon population as a recovery strategy. J. Fish Biol. 65 (Supp. A):38-54

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RICCIARDI, A. and F. G. WHORISKEY. 2004. Exotic species replacement: shifting dominance of dreissenid mussels in the Soulanges Canal, upper St. Lawrence River. J. N.A. Benth. Soc. 23(3). 8pp.

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COURTEMANCHE, D., F.G. WHORISKEY, V. BUJOLD and R.A. CURRY. 2005. A nonlethal approach using strontium in scales to distinguish periods of marine and freshwater residency of anadromous species. Can. J. Fish. Aquat. Sci. 62: 2443-2449.

COURTEMANCHE, D.A., R.A. CURRY, F.G. WHORISKEY. 2005. Assessing anadromy of brook charr *Salvelinus fontinalis* using Sr/Ca in scales. Can. J. Fish. Aquat. Sci. 63:995-1006.

WHORISKEY, F., P. BROOKING, G. DOUCETTE, S. TINKER and J. CARR. 2006. Movements and survival of sonically tagged farmed Atlantic salmon released in Cobscook Bay, Maine, USA. ICES J. Mar. Sci. 63: 1218-1223.

BROOKING, P., G. DOUCETTE, S. TINKER and F. WHORISKEY. 2006. Sonic tracking of wild cod, *Gadus morhua*, in an inshore region of the Bay of Fundy: a contribution to understanding the impact of cod farming for wild cod and endangered salmon populations. ICES J. Mar. Sci. 63: 1364-1371.

CARR, J.W. and F.G. WHORISKEY. 2006. The escape of juvenile Atlantic salmon from hatcheries into freshwater streams in New Brunswick, Canada. ICES J. Mar.Sci. 63: 1263-1268.

VAN DE SANDE, J., A. CURRY AND F. WHORISKEY. 2006. Temporal and spatial habitats of anadromous brook charr in the Laval River and its estuary. Env. Biol. Fish. 76:361-370.

O'REILLY, P.T., J.W. CARR, F.G. WHORISKEY, E. VERSPOOR. 2006. Detection of European ancestry in escaped farmed Atlantic salmon, *Salmo salar* L., in the Magaguadavic River and Chamcook Stream, New Brunswick, Canada. ICES J. Mar. Sci. 63:1256-1262.

Book Chapters and other Publications:

FITZGERALD, G.J. AND F.G. WHORISKEY. 1992. Cannibalism in fish. IN: Cannibalism: Ecological and evolutionary implications, pp. 238-255. M.A. Elgar and B.J. Crespi (eds.). Oxford: Oxford University Press.

WHORISKEY, F.G. AND G.J. FITZGERALD. 1994. Ecology of the threespine stickleback on the breeding grounds. IN: Evolution of the threespine stickleback, pp. 188-206. M.A. Bell and S.A. Foster (eds.). Oxford: Oxford University Press.

WHORISKEY, F. 2003. Wild Atlantic salmon in North America: status and perspectives. In: The World Summit on Salmon Proceedings. P. Gallaugher, L. Wood (eds.). pp.53-61.

WHORISKEY, F.G. 2004. Optimizing wild salmon production. In: Salmon at the Edge. Workshop proceedings. Derek Mills (Ed.) pp. 222-231.

CARR, J., F. WHORISKEY, D. COURTEMANCHE. 2004. Landlocked Atlantic salmon: movements to sea by a putative freshwater life history form. Aquatic telemetry: advances

and applications. Pp. 141-150. M.T. Spedicato, G. Lembo, G. Marmulla (eds).

Books:

WHORISKEY, F.G., R.D. TITMAN AND D.T. BROWN (Editors). 1990. Behavioural strategies for coping with winter. Société québécoise pour l'étude biologique du comportement publication No. 1.

WHORISKEY, F.G. AND K. E. WHELAN (Editors). 2000. Managing Wild Atlantic Salmon: New Challenges, New Techniques.

NOTE: A LIST OF TECHNICAL REPORTS AND CONFERENCE PRESENTATIONS CAN BE PROVIDED UPON REQUEST.

SUMMARY OF POTENTIAL ECONOMIC AND FISCAL IMPACTS ON THE PASSAMAQUODDY BAY REGION OF AN LNG IMPORT TERMINAL

Prepared by Yellow Wood Associates, Inc.
May 2007

Q. What is your name?

A. Shanna Ratner. I am an agricultural economist and principal of Yellow Wood Associates. A copy of my CV is attached.

Q. Have you studied the impacts of the proposed LNG facilities on Passamaquoddy Bay and its economic and fiscal effects on local communities including resource-related costs and activities?

A. Yes, I am lead author of the Report on Potential Economic and Fiscal Impacts of LNG Terminals on the Whole Passamaquoddy Bay (Jan. 2006). A copy is attached and incorporated as sworn testimony and as my opinion.

Q. Is it possible to limit the economic and fiscal environmental costs of an LNG import terminal to a single town?

A. The natural environment, including the biological resources that support diverse fisheries in Passamaquoddy Bay, does not recognize political boundaries. A change in the character or quality of the environment in one community in this currently homogeneous region will affect others. It is not possible to limit the economic and fiscal impacts of an LNG import terminal to a single town at any site in the United States portion of the Passamaquoddy Bay region. Impacts will be felt by towns in the United States, Canada, and the Passamaquoddy Nation. This is due to a combination of the region's geography and the infrastructure requirements and risk factors associated with LNG. Any town's decision to become a host community for an LNG import terminal will have significant economic and fiscal consequences throughout the region because of shipping routes and piers, pipelines, changes to regional character, and risk factors.

The shipping route for LNG will pass through Canadian as well as American waters. The two mile radius of concern around shipping lanes due to the hazardous nature of LNG will affect more than one town in the United States and Canada, even if the facility were located at the southernmost proposed site. The shipping route for facilities further north will impact even more towns, parishes, and villages, as well as create further disruptions in access to fishing grounds. Piers larger than any that currently exist on Maine's coast will result in narrowed shipping channels that will affect all traffic in the Western Passage, regardless of its origin or destination. Pipelines will have to run through more

than one town to connect the shoreline receiving facility with the inland Maritimes and Northeast natural gas pipeline The facilities associated with an LNG terminal, specifically the pier, the vessels, and the storage tanks, are far larger than other built structures in the region today. Large scale structures used to support heavy industry will be visible beyond the boundaries of a single town and will change the rural character of the region, even if introduced in a single location. Costs of addressing security issues associated with LNG shipping, import terminal(s) and additional pipelines will be spread throughout the region since communities along the entire transit route will need to be able to communicate with each other and respond effectively in the event of an emergency.

Q. What would an LNG import terminal in the Passamaquoddy Bay region likely mean in terms of added costs for the host community and communities in the region required to prevent or respond to environmental degradation and lost existing uses?

A. Communities in the Passamaquoddy Bay region will require significant infrastructural improvements to mitigate the potential for environmental degradation caused by an LNG import terminal, pipeline construction, LNG tanker shipping and a substantial increase in population during the construction phase of the project. Additional infrastructure and personnel will be required to ensure the capacity for an effective response to an environmental crisis such as an LNG fire, a collision at sea, or an oil spill.

Potential host communities in the Passamaquoddy Bay region all have populations under 4,000 and most have populations under 1,000 with the limited town, fire, police, and emergency response staff and taxing capacities typical of small rural communities.

Any of the small rural communities in the Passamaquoddy Bay region that hosts an LNG import terminal will face increased costs of local emergency planning and related infrastructure (notification systems, shelters, emergency kits, drills), police protection (on land and water), fire protection (for land and marine fires), and emergency medical services. The cost of an Emergency Medical Services base for a LNG host community has been estimated at $700,000. The local cost of public safety for LNG tanker arrivals and departures is estimated at $12,500 for every tanker and $1.76 million for 141 ships per year. Communities without police boats will have to invest in them.

At least five schools on the U.S. side and two schools on the Canadian side are within two miles of a potential terminal site or LNG vessel route. Towns will want to consider relocating schools and fire stations to ensure public safety in the event of an accident or attack on LNG facilities or vessels.

A town that hosts an LNG facility will experience a significant increase in both revenues and costs which will require additional staff to manage. Staffing requirements are likely to include a finance director, assessor, emergency planner, police protection and overtime pay for maintaining security during construction and shipping, full-time firefighters and emergency medical technicians trained and equipped to deal with LNG and related substances. Smaller communities that currently lack town managers may need to add this

position as well. Previous studies and the experiences of other LNG terminal host communities suggest these costs will run around $3-$5 million. Approximately $1.5 million will be annual recurring staff-related costs. In some communities, these costs alone would more than double annual municipal expenditures. Generally towns that experience an increase in industrial development also experience an increase in population with a net result of increases in tax rates despite a larger tax base. For example, with the exception of Calais, Pleasant Point, Eastport, and Lubec, most Passamaquoddy Bay communities in the U.S. do not have centralized water and sewer systems. These systems may be required to accommodate construction workers who choose to live locally during the construction period.

In Passamaquoddy Bay, an effective local response will depend on well-developed regional resources. Areas that will require substantial additional regional investment include: county emergency planning and bi-national emergency planning including Maine, New Brunswick, Charlotte and Washington Counties, and towns, villages, and parishes. A coordinated marine-based firefighting capacity, including equipment and training, would have to be developed virtually from scratch, though some of the pieces exist.

Effective response systems depend on effective communications systems. The cost of achieving the capacity for secure emergency communications in real time between two countries, two counties and multiple towns' police, fire and emergency services personnel may be in the millions of dollars. The backbone for a network for the State of Maine is expected to cost $50 million with additional spending by counties and localities, and this does not take the international dimension into consideration. A reliable estimate of costs will only come if and when the relevant agencies and partners have undergone a planning process specific to LNG. The process itself will cost everyone involved. Without effective communication, the natural environment itself, as well as the people who live in it, is at increased risk.

Police protection will also need to expand during construction when hundreds of additional people will arrive. Additional police will be needed to provide protection for ships on land and on water. The annual cost for additional police protection is estimated at $655,200 to $2.6 million. Additional professional firefighters will cost the region an estimated $378,000 to $793,000 a year (salary and benefits), while 4-6 new fire trucks will run $900,000 to $1.35 million. Training will cost at least $25,000 and will need to be repeated periodically. This does not include the cost of relocating the seven fire departments currently located on or near the shore in the path of LNG shipping. Costs for school and/or fire station relocation and increased road maintenance will also be imposed on surrounding communities.

Many towns have pre-existing conditions including inadequate town office space or space in disrepair; additional staff needs; inadequate roads, water systems, storm drainage systems; limited waterfront access, etc. that will be exacerbated by the influx of workers. Damage to the environment will result if growth occurs with inadequate improvements to infrastructure. Unless and until there is a signed contractual agreement with a developer

specifying exactly what costs the developer will cover and under what conditions, towns should not assume that developers will "pay for everything." In particular, developers are not likely to pay for any costs associated with pre-existing conditions, nor are they likely to pay the full cost of improvements that yield benefits beyond those required by LNG. Even once an agreement is in place, towns will need to set aside sufficient resources for effective enforcement of any agreement.

Cost increases in the host community may be partially offset by an increase in local property tax revenues; cost increases in other communities in the region will not. As costs go up, property tax burdens may rise, making it increasingly difficult to sustain traditional natural resource-based activities.

Q. Are there indirect or external costs to large-scale, non-resource related development of the Bay?

A. The likely impact of an LNG terminal on property values results from a combination of real and perceived damage to coastal resources and accessibility. For example, recreational boaters will be prevented from accessing the waterway during periods of LNG vessel transit which would occur 135-272 days of the year. Fishermen may lose timely access to docks and processing facilities, resulting in loss of revenues and property value. In the event of an accident related to LNG shipping or storage, environmental damage will further reduce the value of affected properties. The visual impact of LNG tankers and import facilities will affect the perceived character of the region, and reduce the appeal of shoreline properties in the sightline of the facility or its ships.

The value of property in Passamaquoddy Bay towns exceeds the value of buildings and is the principle fiscal asset of each town. Waterfront property is particularly valuable. Anything that threatens to diminish the value of property, particularly the most valuable property along the shore, threatens the long-term fiscal health of towns. LNG terminals are sited on the waterfront. Their presence is likely to reduce the value of adjoining lands and lands within a two mile radius. In addition, by decreasing perceived safety and real access to the waterfront and waterways, LNG terminals will reduce the value of shoreland along the shipping route. The value of inland properties crossed by natural gas pipelines may also be affected.

There are 186 properties in Calais that would be affected at an estimated reduction in property values between $480,000 and $1.26 million. There are 573 properties in Robbinston and Perry that would be affected at an estimated reduction in property values between $1.89 million and $4.86 million. There are 375 properties in Eastport that would be affected at an estimated reduction in property values of between $820,000 and $2.36 million. These figures are based on a 20-35% reduction in the value of properties right next to the site, a 10-25% reduction in the value of properties within a mile of the site, and a 5-15% reduction in the value of properties within two miles of the site.

The value of up to 1,912 U.S. properties would be affected by the shipping route for LNG tankers. That number falls to 1,428 properties if the LNG terminal is located near

Eastport instead of further north. Reductions in property value associated with the shipping route range from $3.9 million to $7.88 million for the northernmost site and from $2.87 million to $5.75 million for the southernmost site. Canadian properties within two miles of the shipping route will also experience similar effects.

Property owners whose property is crossed by a natural gas pipeline typically give up the use of a 50 foot right-of-way after construction. Municipalities that have experienced pipeline failures are instituting greater setback requirements. Property owners continue to pay taxes on property crossed by a natural gas pipeline despite restrictions on its use. We estimate that between 103 and 184 acres will be affected by pipeline-related land use restrictions, depending on the location of the LNG terminal.

Reductions in property value affect individuals as well as communities, since property is the most valuable financial asset in many households.

Q. How many jobs would an LNG terminal provide, to whom would they go, and would such jobs deflect the cost of lost jobs based on existing uses such as fishing?

A. In Louisiana, where there is a long history of LNG terminal construction and operation (Louisiana imports 230 billion cubic feet of LNG a year), Tulane-Entergy Energy Institute estimated that 63% of the spending needed to expand eight LNG projects would occur in-state. A study of LNG expansion in Maryland, with greater LNG capacity than Maine but far less than Louisiana, determined that only 3% of materials and labor would be procured in state. In contrast, the Margaret Chase Smith Center study commissioned by Downeast LNG, assumes 72% of spending on LNG construction and operations will occur in Maine. This is simply not realistic.

LNG facilities are generally built by large, highly experienced contractors who specialize in projects in the $500 million range. These firms are in the industrial classifications for heavy and civil engineering construction and specifically oil and gas pipeline and related structures. There is only one firm in the State of Maine listed in the oil and gas pipeline and related structures category of the North American Industrial Classification System (NAICS) construction category that has more than 20 employees. The largest project totals reported by the one heavy and civil engineering construction firm in Maine with dock and oil drilling rig construction experience was in the $70 million to $150 million range. This firm has no LNG terminal construction experience. Similarly, Maine firms experienced in dock and pier construction are mostly small firms with fewer than five workers. Only six firms employ between 20 and 49 workers.

Given these conditions, we estimate that $92 million will be spent to bring construction workers in from out of state, $24.2 million will be spent on workers within Maine but outside Washington County, $19.1 million on workers within Washington County but outside the study region, and $3.3 million ($1.1 million a year for three years) on workers within the study region. The construction jobs most likely to be available to local and regional firms will be in providing non-specialized electricity, heating, and plumbing to

support buildings and warehouses or in access or interior road construction or site preparation. Assuming local workers earn an average of $40,000 a year (including benefits) each LNG terminal could provide approximately 27 jobs per year to current residents. There were 471 unemployed people in the region in 2000. Given a year 2000 median household income of $24,149 for households in the U.S. portion of the region, this could represent a temporary boon to a limited number of households.

Large out-of-state construction firms are unlikely to hire local workers individually. They are far more likely to subcontract to a well-insured and incorporated in-state firm with its own labor force. There are very few, if any, firms in the study area that would meet the requirements for subcontracting on this scale. Therefore, even jobs that go to Maine-based firms will not necessarily employ local people.

As in construction, the skills required to operate an LNG import terminal are scientific, technical, and highly specialized. There is a global market for people with these skills, and they typically command high salaries. For example, an LNG tank engineer requires 15 years of experience as a mechanical engineer with tank design experience in the LNG industry and commands $110,000 plus a 50% bonus. Most of the approximately 40 permanent staff positions estimated for operation of a generic LNG import terminal with a $500 million construction budget will go to people who do not currently live in the Passamaquoddy Bay region. We estimate there will be approximately 8 jobs in administration, personnel, security and maintenance available for local residents at pay levels ranging from $30,000 to $40,000 a year (including benefits).In addition, there may be some jobs for local tug boat operators, once these operators receive specialized training required for piloting the type of tug boat used with LNG vessels. This number of jobs provided by an LNG terminal does not take into account jobs lost in other sectors such as fisheries and tourism.

Although approximately two-thirds of the population of the Passamaquoddy Bay region live in Canada, Canadians are unlikely to benefit from employment at an LNG terminal located in the United States during the construction or operation phase due to visa restrictions.

The estimated 27 construction and 8 operations jobs likely to be available to local people from a generic LNG terminal does not take into account jobs lost in other sectors such as fisheries, tourism, and real estate.

Q. How many jobs will be created for tug boat operators and crew?

A. If an LNG tanker is at dock or in transit between once every 2 ½ and 5 ½ days, as the Yellow Wood study indicates, it is highly unlikely that two full-time crews will be required for each tug. Instead, each boat will be also assisting other, non-LNG traffic during their shifts. Therefore, if we assume that two crews are needed and half of their time will be spent escorting LNG traffic, the equivalent number of full-time jobs that are created due to LNG traffic is approximately 3 jobs (2 crews of 3 working ½ time) per tug. Since there are already tugboats operating in the area, we assume existing maintenance

and dispatch staff will be adequate to handle a few more boats that may only be used intermittently. Likewise, we assume existing pilots will have additional work, but additional pilots will not be required to escort LNG tankers.

Q. How would the presence of one or more LNG terminals in the Passamaquoddy Bay region bolster or undermine other resource-related or existing use economic development options?

A. The economies of rural areas are not strictly sectoral. Many people hold more than one job and often work in both the formal and informal economies. Fishermen, for example, may rely on property management jobs in the off season. Forestry workers may supplement their livelihood through fishing or selling crafts to tourists. Wilderness guides may also be factory workers. Government workers may build boats. In this carefully balanced and precarious rural economy where many people piece a livelihood together from more than one source, economic downturns in a single sector may have much larger ripples than anticipated.

Experts on both sides of the international border identify the natural resource base of the Passamaquoddy Bay region as its greatest asset. Strategies to build on this asset include encouraging tourism, retirees and second home owners; small to medium scale manufacturers that add value to local resources, particularly fish and forest products; local businesses to support the local population; and developing indigenous energy resources.

Liquified natural gas is not a local natural resource. The purpose in bringing liquified natural gas into the Passamaquoddy Bay region is not primarily to foster economic development in the region but rather to export this non-indigenous resource out of the region to more populated areas and thereby capture highly lucrative markets for the owners of these facilities.

The infrastructure and operations required to import liquified natural gas into the Passamaquoddy Bay region and then export it to markets outside the region could undermine assets identified as keys to strengthening the local economy. For example, safety and security is one of the key attractions for retirees and second home owners. Due to the safety risks associated with liquid natural gas and natural gas pipelines, an LNG terminal in the region will reduce the perceived safety of the area, and make it more difficult to attract retiree/second home owners, their assets, and their disposable incomes.

It has been estimated that increased tourism could bring an additional $4.9 million annually into the Downeast region. Tourists are attracted by well-promoted, quaint, small-scale infrastructure with historic significance, the type that abounds in the Bay region. An LNG terminal is a large-scale industrial facility that will change the perceived rural character of the region and create areas on land and at sea that are no longer accessible to tourists. In addition, any degradation of the environment that may result from construction and operation of a large-scale industrial facility will undermine the region's appeal to tourists as well as residents. Increased traffic will create additional

hazards for bicyclists along the region's scenic roads. Shipping associated with an LNG import terminal will interfere with access to fishing grounds and aquaculture sites.

Natural gas is already available to industry through the Maritimes and Northeast pipeline. Thus far, the economics of its use have not proved favorable for local businesses, including Domtar. An LNG terminal will not, by itself, change that equation. It is quite possible that the region's energy needs may be met through a combination of conservation, wind energy, tidal power, and biomass, all of which are based on indigenous energy resources. By using indigenous resources to supply its energy needs, the Passamaquoddy Bay region has the opportunity to achieve energy independence.

The economic stimulus provided to the region by one or more LNG import terminals will be limited. Another study with resources to collect primary data on employment impacts in tourism, fisheries, real estate, and property management would be needed to determine the extent to which any economic gains that do result may be offset by damage to existing sectors and may create new obstacles to future economic diversification and sustainability. A study that asked this question regarding a single proposed LNG development in Harpswell, Maine revealed the strong likelihood of a net loss in local employment due to LNG. The communities of Passamaquoddy Bay are generally less prosperous than Harpswell. The environment of Passamaquoddy Bay is known to be unusually rich in biological resources. These resources support the tourism, second home, fisheries, forestry, and small-scale manufacturing that is the local economy. To the extent that the resource itself is damaged and/or access to it diminishes, the local economy will suffer.

Note: All dollar figures in this report are in United States dollars.

Date: 5/31/07

Shanna Rather SK

Signed and sworn to before me on May 31, 2007 in St. Albans, Vermont

Notary Public

My Commision expires on 2-10-11.

SHANNA RATNER

EDUCATION

Donella Meadows Fellowship in Systems Thinking, 2002-2004

Cornell University, Department of Agricultural Economics - Master of Science, Agricultural Economics, 1984

New College of Florida - Bachelor of Arts, Value Systems, 1975

EXPERIENCE: 1985-present

President and Principal, Yellow Wood Associates, Inc., St. Albans, Vermont

Selected Recent Projects

2007 * Designing an economic impact measurement tool for America's Scenic Byways

2007 * Evaluating Northeast Sustainable Research and Education program experience with outcome funding

2007 * Facilitated You Get What You Measure with Vermont Department of Education Secondary Learning Team

2006 *Managing Phase II of Green Community Technologies service commercialization through SBIR grant from USDA Rural Development.

2006 * External Evaluator, Advantage Valley Entrepreneurship Development Collaborative, West Virginia.

2006 * Primary Researcher, Deep Root Organic Vegetable Cooperative, organizational development and market opportunity study

2006 * Author of conceptual paper on wealth based development and sustainability for the Northern Forest Center investment initiative.

2006 * Researcher of the full range of economic benefits of public land for the Massachusetts Trust for Public Land

2005 * Project Manager for study of the economic and fiscal impacts of LNG terminals on Passamaquoddy Bay for Save Passamaquoddy Bay, a three nation alliance.

2005 * Worked with the Frederick County Dairy Processing Task Force to determine the feasibility of a venture focused on selling Maryland Dairy Products to Maryland consumers.

2005 *Worked with the Lake Champlain Walleye Association to determine potential fiscal and economic impacts of closing the Bald Hill Fish Culture Station.

2005 *Conducted a You Get What You Measure® in Use Workshop for CFED.

2004 * Conducted Becoming a Measurement Guide training for skilled facilitators in YWA's trademarked process You Get What You Measure®.

2004 * Conducted focus groups with employers of mobilized reservists in cooperation with CALLC on behalf of the Department of Defense, Office of the Secretary of Defense for Reserve Affairs.

2004 * Managed preliminary feasibility studies for both a fresh-cut produce processing facility and a retail public market for Madison, Wisconsin.

2003 * Directed pilot Green Community Technologies program in Richmond, Vermont providing information on applications of alternative technologies to municipal infrastructure.

2003 * Worked with two program areas of University of Minnesota Extension Service, Leadership & Civic Engagement and Business Retention and Expansion, to develop tools to measure social capital.

2003 * Provided training in use of You Get What You Measure, Yellow Wood's trademarked process for measuring progress toward shared goals, to staff of Northwest Area Foundation, Minnesota.

2002 * Conducted feasibility study for a shared commercial kitchen in Tioga County, New York.

2002 * Provided facilitation to Cooperative Forestry unit of the U.S. Forest Service in developing indicators and measures of progress across program areas for Cooperative Forestry as a whole.

2002 * Provided facilitation to four communities working with the Northwest Area foundation on community development strategies to reduce poverty.

2001 *Co-authored section on economic development for on-line planning course for Vermont municipal officials sponsored by The Orton Institute in collaboration with the Lincoln Land Institute.

2001 *Researched and co-authored text for guidebook on municipal investing for smart growth for Vermont Forum on Sprawl.

2001 *Represented Friends of Vermont's Way of Life in Vermont Environmental Board hearing regarding fiscal and economic impacts of a proposed Rutland Home Depot.

2000 *Directed implementation of See The Forest Phase II, including expanding to Connecticut, Massachusetts, and Rhode Island and ongoing marketing in Vermont.

2000 *Represented Vermont Natural Resources Council in Vermont Environmental Board hearing regarding fiscal and economic impacts of a proposed expansion of Stratton Mountain Resort.

2000 *Supervised research into the feasibility of starting a non-toxic cooperative cleaning business in the Chittenden County area on behalf of New Leaf Cooperative Enterprise Program

2000 *Provided training in You Get What You Measure [SM], Yellow Wood Associates' measurement process, to employees of Missouri Departments of Mental Health, Health, and Economic Development.

2000 *Initiated the National Community Forestry Center, Northern Forest Region as Principal Investigator. Leading the Center in the Northern Forest Region and serving on the National Executive Committee to coordinate the work of all four centers and the national office.

2000 * Provided training to USDA Rural Development staff from around the country in how to measure progress toward their goals.

2000 *Assisted the Conservation Law Foundation in preparing a document to explain economic and fiscal impact analysis and standards of service to residents of Shelburne, VT as they consider a sewer expansion .

2000 *Keynote and trainer at the Missouri Association of Community Task Forces annual conference for community change agents.

2000 *Working with the New Hampshire Charitable Foundation to develop a social capital assessment tool for use with grantees.

1999 *Provided training in business networks and measurement to grantees of the Ford Foundation Community Forestry Initiative.

1999 *Assisted the USDA Forest Service in design of national measurement training program to create regional mentors.

1999 *Worked with Vermont Agency of Natural Resources Environmental Assistance Division to create a strategic action plan.

1999 *Provided Vermont Sustainable Jobs Fund with a novel methodology and tool for evaluating the impact of the first two years of VSJF performance. The model permitted VSJF to test its operating assumptions and learn about how its efforts contribute to sustainability.

1999 *Developed an inventory and assessment of hiking and walking resources for the Lake Champlain Byways project. Created a data base and a series of maps that will be the basis for further development and planning of the Region's natural, recreational and cultural resources.

1999 *Provided written and oral testimony for the Conservation Law Foundation in the Act 250 review of the Town of Milton, Vermont in their proposal to expand sewer service along Route 7. The purpose of the evaluation was to review the adequacy and/or deficiencies of Milton's fiscal analysis under criteria 9A & 9H of Act 250 with emphasis on whether the costs of the project (and its secondary growth) will outweigh the public benefits.

1998 *Participated as a Trainer in the University of Tennessee Community Partnership Center's three-day workshop for Community Learning Teams, a national training to disseminate a model of citizen-based monitoring developed as part of the Empowerment Zone/Enterprise Community Learning Initiative of the University of Tennessee. Delivered training in the measurement process including what we need to learn and why, how we

find out, and who does what and when. Worked with John Gaventa of the Institute for Development Studies in Sussex, England.

1997 *Prepared a paper on the concept of learning communities for the Appalachian Regional Commission. The paper focuses on how to identify traits common to learning communities and how to foster the development of these community traits.

1997 *Invited by the World Bank to participate in a Bank workshop on "Indicators and Methods to Measure Participation, Demand Orientation, and Local Organizational Capacity in Community Driven Projects."

1996 *Presented workshops on "Making Indicators (That) Matter: Using Citizen Learning Teams to Keep Community Development Ongoing and On Track" and "Creating and Sustaining a Learning Community of Rural Development Practitioners" at the Cultivating Community Success: Strategic Lessons from Community Assessment conference of the Heartland Center for Leadership Development in Lincoln, Nebraska.

1994 *Surveyed members of the Aspen Institute's Capacity Building Learning Cluster to determine the variety of approaches being used to build rural community capacity. Prepared a concept paper on community capacity building.

SELECTED RECENT AND UPCOMING SPEAKING ENGAGEMENTS

2007 National Scenic Byways Annual Conference presentation on You Get What You Measure®

2007 EPA Community Involvement Conference, Jacksonville FL presentation on You Get What You Measure®

2007 Community Development Society Annual Conference, presentation on Green Community Technologies℠

2007 Adirondack Research Consortium Annual Meeting, presentation on Green Community Technologies℠

2006 EPA Community Involvement Conference, Appleton WI, presentation on You Get What You Measure®

2005 EPA Community Involvement Conference, Buffalo NY, presentation on You Get What You Measure®

2002 Vermont Rural Development Council presentation on wood products industry, February 2003.

2001 New Hampshire Rural Development Council Annual Meeting keynote on participatory research, December 2001.

2001 Center for Rural Pennsylvania's Rural Summit in the City panel on developing local leaders, November 2001.

1999 Wood Products Industry Conference. "Adding Value from Stump to Mill and Beyond". September 23-24, 1999.

1998 National Network of Forest Practitioners, 8th Annual Meeting. "Measuring Progress Toward Community Goals, A Training in Community Based Measurement". November 4-8, 1998.

1998 Cornell Cooperative Extension Statewide Conference. "Why Capacity Matters and What You Can Do About It." October 14-16, 1998.

1997 Northeast Sustainable Communities Project Annual Retreat. "Creating Learning Communities." November 1997.

1997 Keynote Speaker: New Mexico Rural Economic Development Forum. "Build Community Capacity: Tools for Vitalizing Our Rural Economies" forum. Spoke on the topic of "Creating Learning Communities." October 1997.

PROFESSIONAL MEMBERSHIPS

Donella Meadows Leadership Fellows Program participant
Chairman of the Board Opportunities Credit Union
Vice Chairman of the Board, Vermont Environmental Consortium
National Community Forestry Center Executive Committee member (past)
Northeast Region Sustainable Agriculture Research and Education Program (SARE), Administrative Council (past member)
National Network of Forest Practitioners, Executive Committee (past member)
Aspen Institute Rural Community Capacity Building Learning Cluster
Vermont Businesses for Social Responsibility

PERSONAL

Born February 3, 1954, U.S.A. International travel: France, West Africa, Jamaica, Mexico, Barbados, Greece, Israel, Scandinavia, Western Europe, Great Britain, Canada. Hobbies: house design, gardening, classical guitar, painting.