

General Comments

- G1** The Report mainly covers the natural environment but environmental issues and knowledge gaps are also to be covered in a SEA. Both environmental issues and knowledge gaps are commonly only discussed in a broad manner in a SEA, putatively with the understanding that in the event of oil discovery and potential production at a specific site, a comprehensive Environmental Impact Statement (EIS) must be submitted to the C-NLOPB. (In the case of the Gulf of St Lawrence, an EIS may also be required for exploratory drilling). It is considered important that an EIS focus on potential risks to microbial communities, invertebrates, fish and fisheries in much greater detail than found in SEA reports such as the present one. Perspective on the actual magnitude of risks and recovery associated with oil spills and potential discharges of produced waters and drilling muds is all important. Understandably, provision of such a perspective requires review and interpretation of a considerable literature base.
- G2** There is presently no drilling in the Gulf but seismic surveys are slated for the near future. There is increasing stated caution and concern by agencies and scientists about the unknown effects of high sound pressures on fish and shellfish. For instance, in a review carried out by the Bureau of Ocean Management in the USA, note was especially made with respect to the major knowledge gap for crustaceans as well as fish. It follows that due to this major knowledge gap, it is not possible to provide informed scientific opinion on the degree of any potential risks of seismic surveys. Thus it is very important that this knowledge gap be addressed.
- G3** Science reiterates that future EAs must take into account the possibility of cumulative effects from multiple concurrent projects, or additive impacts from a sequence of multiple projects. It is premature at the SEA stage to conclude that there will be no cumulative impacts when the authors themselves repeatedly state that more in-depth analyses will be undertaken in subsequent, project-specific EAs.
- G4** Off-shore oil and gas activities may result in the contamination of aquatic country foods (also known as traditional foods, which are trapped, fished, hunted, harvested or grown for subsistence of medicinal purposes or are collected from recreational activities). On-shore to off-shore drilling and hydraulic fracturing activities, depending on their location(s) and proximity to human receptors, may impact human health through air quality effects, noise, contamination of drinking/recreational water supplies, and/or contamination of country foods (terrestrial and aquatic flora and fauna).
- G5** With respect to hydraulic fracturing activities in particular, human health concerns that have been expressed include the contamination of groundwater and drinking water supplies with fracking chemicals, exposure to waste fracking fluids (including naturally occurring radioactive materials [NORMs] from the subsurface) during their containment and subsequent disposal following recovery, on-going subsurface contamination from waste fracking fluids that are not recovered, noise from operations including increased truck traffic, air quality concerns related to operational activities and off-gassing of well-

heads, and the potential for contamination of country foods from fracking fluids and/or hydrocarbon leaks.

- G6 Onshore vs. Offshore activity:** Given that there is considerable interest in onshore-to-offshore oil exploration in the SEA update area, there is a need for greater care and consistency throughout the document when referring to offshore activities, onshore activities, and activities that may occur both onshore and offshore. In particular, in many instances onshore activities are often not included or mentioned when they are in fact relevant. For example:
- - Page 8 - bullet 2;
 - - Page 400, paragraph 2, line 1;
 - - Page 402, line 1;
 - - Page 428, first line of last paragraph;
 - - Page 429, Paragraph 4, line 2;
 - - Page 431, Paragraph 3, line 4;
 - - Page 432, Paragraph 1, line 1; etc.
- G7 Regulatory process:** The C-NLOPB’s regulatory process is presented at various points throughout the document. Much of this is redundant, so unless specifically required elsewhere this information should be presented once in section 3.1. For example much of this same information is repeated on page 431.
- G8 Name of Gros Morne National Park:** in many places Gros Morne National Park is referred to simply as “Gros Morne”; please refer to the park as “Gros Morne National Park” throughout. Also, in many places it would be useful to acknowledge the site’s world heritage status by referring to it as “Gros Morne National Park and UNESCO World Heritage Site”.
- G9 Cumulative Effects:** In section 5, discussion of cumulative effects on VECs should consider all potential stressors, not just those arising from oil and gas industry activity.
- G10** Ensure figures that have bathymetry on them have a numeric explanation on them (*i.e.* 100 m contour in the legend).
- G11** Ensure that all legislative and regulatory references (e.g. Acts, Regulations, and Guidelines) are cited correctly in the report. For example on page 41, the *Offshore Petroleum Drilling Regulations* should be the *Newfoundland Offshore Petroleum Drilling and Production Regulations*. Also, when referring to “Accord Acts”, it should be italicized.

Specific Comments

- S1.** **Section 1.0 Introduction, para 5, line 1, pg 1** - Replace “every five years and to update them as required,” with ”and update as required”.
- S2.** **Section 1.0 Introduction, para 5, line 3, pg 1** - Replace “have also been extended out to the boundary” with ”extended to the boundary”.
- S3.** **Section 1.0 Introduction, para 5, last sentence, pg 1** – “...as described further in a later section.” Identify the section.
- S4.** **Section 1.0 Introduction, para 6, pg 1** – the “any” preceding “...key potential environmental issues...” is not necessary.
- S5.** **§2.1 The SEA Update and the Associated “Strategic Decision”, para 2, line 5, pg 5** – Insert “regularly” after “also” and delete “every five years”.
- S6.** **§2.2 Spatial and Temporal Boundaries, para 1, line 2, pg 6** – Delete “with consideration of relevant administrative boundaries” and replace it with “the definition of Offshore Area in the Accord Acts.
- S7.** **§2.2 Spatial and Temporal Boundaries, para 4, #2, pg 6** – This Quebec SEA has been finalized.
- S8.** **§2.2 Spatial and Temporal Boundaries, para 5, line 3, pg 6** – Delete “ongoing”.
- S9.** **§2.2 Spatial and Temporal Boundaries, para 1, line 8, pg 7** – Delete “within a five year period”.
- S10.** **§2.2 Spatial and Temporal Boundaries, para 1, line 9, pg 7** – Delete “to inform any future licencing decisions and actions beyond that time” and replace with “regularly”.
- S11.** **§2.2 Spatial and Temporal Boundaries, Figure 2.1, pg 7** – Delete “Other Portions of the Gulf of St. Lawrence Covered In” in the title. The legend should include the Quebec SEAs.
- S12.** **§2.3 SEA Update: Scoping Document, para 3, line 1, pg 8** – Delete “eventually”.
- S13.** **§2.3 SEA Update: Scoping Document, para 4, line 1, pg 8** – Delete “include that it will” and replace with “are to”.
- S14** **Section 3 (throughout), pgs 24-76** - This section is supposed to identify the activities associated with the oil and gas industry, but in many of the sections potential effects are also discussed. To avoid confusion and reduce redundancy the effects of these activities should be presented in the effects section (Section 5).
- S15** **§3.1.2.3, para 5, pg 30** - There should also be a description of the CEAA S.67 requirements for projects that take place on federal lands (which include water).

- S16 §3.1.3 Environmental Assessment, para 2, pg 31** – Please update the information on EAs in progress.
- S17 §3.2.1.2 Seismic Survey Equipment and Methods, para 2, last sentence, pg 34** – Units are missing from “...of up to approximately 5,...”
- S18 §3.2.2.1 Offshore Drilling Installations, pg 37** – Add mobile offshore drilling unit (MODU) to 1) *Semi-Submersible Drilling Units*.
- S19 §3.2.2.2 Offshore Drilling Activities, para 2, line 3, pg 41** – The *Offshore Petroleum Drilling Regulations* should be the *Newfoundland and Labrador Offshore Petroleum Drilling and Production Regulations*.
- S20 §3.2.2.2 Offshore Drilling Activities, para 2, line 4, pg 41** – The *Collision Regulations* under the *Canada Shipping Act* addresses the safety zone beyond the boundaries of the anchor pattern of the vessel.
- S21 §3.2.2.3 Potential Environmental Emissions Associated with Offshore Drilling Activities, para 2, 1st sentence, pg 43** – Remove “Western” as chemicals to be used in all of the NL Offshore are to be screened.
- S22 §3.2.2.3 Potential Environmental Emissions Associated with Offshore Drilling Activities, para 3, pg 43** – Carbon dioxide is not a criteria air contaminant, see <http://www.ec.gc.ca/air/default.asp?lang=En&n=7C43740B-1>
- S23 §3.2.3 Onshore to Offshore Drilling, pg 45** - Potential effects will need to include potential impacts on water and wildlife. However, these really should not be in this section, but rather in the effects section of the SEA (Section 5).
- S24 §3.2.4 Hydraulic Fracturing Activities, para 2, pg 47** - This information needs to be in the effects section (Section 5) followed by associated mitigations.
- S25 §3.2.4 Hydraulic Fracturing Activities, para 3, pg 47** – “...(in some cases pursuant to existing exploration licences).” Identify the exploration licences AND change to EL as exploration licences have already been discussed.
- S26 §3.2.5 Petroleum Production Activities, pg 47** - This section makes no mention of production activities related to onshore-to-offshore drilling, though these differ in many important ways from offshore production.

Similarly production activity involving fracking also deserves coverage, for example in terms of well proliferation (10s to 100s of times as many wells are typically required to exploit a play that requires fracking), the requirement to regularly re-frack production wells in many formations, the much larger volumes of fracking fluid used during production compared to exploration, etc.

- S27 §3.2.5 Petroleum Production Activities, 2nd bullet, pg 49** – Replace “glory hole” with “drill centre”. This applies throughout the document.
- S28 §3.2.5 Petroleum Production Activities, 2nd para, pg 49** – Delete the sentence “*Any attempt to do so at this point would be purely hypothetical and conjectural, and is therefore not likely to be particularly informative or meaningful at this stage.*”
- S29 §3.2.6, pg 50** - Near-surface failure of well casings has been an important cause of groundwater contamination from fracked wells in some areas. Thus it seems like well casing failures belong in this section too.
- S30 §3.2.6.2 Previous Spills in the NL Offshore Area, Oil Spill Fate and Behaviour, 2nd para, line 1, pg 64** – Provide the basis for the statement “Although the probability of a large-scale oil spill is low”.
- S31 §3.2.6.3 Oil Spill Prevention, pg 66** – “*Only after all of this documentation is presented to, and approved by, the Board may an Operator proceed with the proposed drilling activity.*” The reviewer suggests the following: “Only after all of this documentation is presented to, and approved by the Board, may an Operator proceed with the proposed drilling activity.”
- S32 §3.2.6.3 Oil Spill Prevention, 2nd para, pg 70** – Replace “*In particular, the C-NLOPB committed to complete a review of the spill response capability of operators under its jurisdiction (C-NLOPB 2013)*” with “*The C-NLOPB committed to completing its review of the producing operator’s assessment of their spill response capability. Although the review is complete the C-NLOPB endeavors to have operators improve oil spill response; including techniques and equipment for responding to a spill.*”
- S33 §3.3 Previous Oil and Gas Activity in the Western NL Offshore Area, para 2, 2nd sentence, pg 70** – This sentence implies that GSI executed the 148 line km of seismic data on EL 1105. This survey was conducted by Corridor Resources Inc.
- S34 §3.3 Previous Oil and Gas Activity in the Western NL Offshore Area, para 2, pg 75** – Details on the 2013 Call for Bids, announced on May 16, 2013, should be provided. It should be noted that the closing date for the call for bids (NL 13-03) shall be 120 days after the completion of the *Western Newfoundland and Labrador Offshore Area Strategic Environmental Assessment Update*.
- S35 Section 3.4 Potential Future Offshore Exploration and Production Activities, para 2, lines 6-8, pg 75** - The farmout agreement that Black Spruce Energy (BSE) signed with Shoal Point Energy (SPE; Jan 14, 2013) specifies that in order to earn the full 60% working interest in SPEs license holdings BSE has to drill 12 wells by 2015. Given that this is just for the near-shore portions of 3 of the 7 existing exploration licenses in the SEA area, we can reasonably expect many more than 4-6 exploration wells to be drilled in the SEA update area over the next 10 years. For details see:
http://www.cnsx.ca/cmsAssets/docs/Filings/2013/SHP_138730_news_release_14_january_2013.pdf

- S36 §4.1.2 Bathymetry, Figure 4.6, pg 97** – The contour intervals need a numeric value associated with them and is best located in the legend.
- S37 §4.1.3 Climatology, pg 98** – The use of only one MSC50 data point (6014618) does not represent the entire SEA Update Area. All of the MSC50 data points in the SEA Update Area need to be used to properly represent the wind and wave climatology for the entire SEA Update Area.
- S38 §4.1.3.1 Wind Conditions, pgs 98-105** - There is something wrong with the wind speed data presented in this section; it suggests that winds along the west coast of Newfoundland never exceed 26 m/s (93.6 km/h; see table 4.4), which is completely off the mark. In Gros Morne NP there are winter storms with winds exceeding 41.7 m/s (150 km/h) almost every year, and during spring 2013 there were 2 storms with winds exceeding 50 m/s (180 km/h) - twice the maximums reported here. Granted winds may be higher right along the coast due to Katabatic effects, but similar winds are a regular occurrence in many other areas along the west coast of Newfoundland (e.g. Wreckhouse), and since proposed activities include onshore-to-offshore and near-shore drilling this is directly relevant. These winds are extremely damaging – literally destroying buildings - so the risk to oil industry infrastructure is real and planning and preparedness is required.

It seems likely that the reason for this gross underestimation of extreme winds is because they are presenting a model-based wind speed dataset that is weighted towards predicting average conditions, not extremes. Presentation of real wind data from various locations along the west coast is required.

- S39 §4.1.3.1 Wind Conditions & 4.1.5 Extreme Events, pgs 98 & 121** - The SEA uses only one location to represent the wind conditions for the entire study area. The source of the wind data is model output only, that does not have the high temporal resolution available from coastal stations such as the Wreckhouse automatic weather station. High resolution local area model output is also available to delineate over-water areas subject to downslope mountain winds. The wind data presented in this study is insufficient in both spatial and temporal resolution to identify potential environmental issues and associated planning and mitigation considerations.

It is recommended that the SEA include a wider range (in location and type) of available wind data sources to show the range of conditions that could be experienced in different parts of the study area.

- S40 §4.1.3.3 Precipitation, pg 107** - The SEA used the ICOADS data for observations of the occurrence of precipitation. It is recommended that coastal station observations be used for description of the amounts of precipitation that can be expected over the study area.
- S41 §4.1.3.5 Wave Climate, pg 111** - Wave data from a single point from the MSC50 wind and wave hindcast/model output is presented. Given the size of the study area, spatial analysis of these data would be useful to show the wave climate over the area, for this SEA. MSC50 grid point data are freely available from Fisheries and Oceans Canada.

The Canadian Ice Centre has documented inter-annual variability and trends in ice cover in the Gulf in the last few decades. It is recommended that future project studies assess related variability in wave climate and other meteorological and oceanographic conditions.

S42 §4.1.5 Extreme Events, pg 121 - There is no description of the frequency and extent of extreme high water levels along the coast due to waves, wave run up, storm surge, in combination with high tide. Extreme water levels cause erosion and can effect project infrastructure near or on shore, as mentioned in the scoping document.

It is recommended that 4.1 include analysis of extreme water levels.

S43 §4.2.1.2 Plankton, subsection Phytoplankton, 3rd para, pg 140 – The units in the paragraph do not match those in Figure 4.28.

S44 §4.2.1.8 Other Identified Important Areas for Fish and Fish Habitat, Figure 4.53, pg 212 – Delete “Some” from title. Also remove orange dot identifying a Lobster Nursery/Spawning area off the south coast. This is outside the Update Area.

S45 §4.2.2.5 Bird Species at Risk, Bullet 6, pg 232 - COSEWIC has recently assessed Bank Swallow as threatened (May 2013) but it is not yet listed on schedule 1.

S46 §4.2.2.6 Locally Rare Species, para 1, lines 4-5, pg 236 - A few hundred pairs of Black-legged Kittiwakes also nest on Stearin and Belldown's Islands (Gros Morne National Park, near Cow Head).

S47 §4.2.3.2, Table 4.72 Overview of Harbour Porpoise, pg 257 – This species is on Schedule 2 and it should be noted in the table or removed from the report.

S48 §4.2.3.6 Marine Mammal and Sea Turtle Species at Risk, 1st para, pg 261 – The Harbour Porpoise – Northwest Atlantic Population is not a federally listed marine mammal species at risk. Refer to http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=147

S49 §4.2.3.6 Marine Mammal and Sea Turtle Species at Risk, Table 4.76, pg 263 – The harbour Porpoise should be removed from this table.

S50 §4.2.4.1 Protected Areas within the SEA Update Area, para 1, pg 270 - Why is Environment Canada being cited as the source of information on national parks?

S51 §4.2.4.1 Protected Areas within the SEA Update Area, para 2, line 3, pg 270 - This sentence should be changed to "...commemorate persons, places and events determined to be of national historic significance."

S52 §4.2.4.1 Protected Areas within the SEA Update Area, para 3, line 3, pg 270 - please replace with “*North of Gros Morne National Park, Port au Choix National Historic Site*”

protects and interprets the history of four ancient Aboriginal cultures that inhabited the site over the past 5,500 years and sheds light on our understanding of Aboriginal people in this part of the world”

- S53 §4.2.4.1 Protected Areas within the SEA Update Area, 3rd para, line 5, pg 270** – Delete “(extending to the normal low water mark)”.
- S54 §4.2.4.1 Protected Areas within the SEA Update Area , Table 4.79, Row 1, Column 3, pg 270** - Gros Morne National Park has been designated a UNESCO World Heritage Site for its “*exceptional natural beauty and outstanding examples of major stages in the earth’s geological evolution*”. Please revise the text accordingly.
- S55 §4.2.4.1 Protected Areas within the SEA Update Area, Table 4.79, Row 2, Column 3, pg 271** - Replace with: “*Protects and interprets the 5,500 year history of four ancient Aboriginal cultures that inhabited the site.*”
- Also, please add a bullet stating that Port au Choix NHS provides “*Habitat for several rare limestone barrens plant species including the endangered Fernald’s Braya, which is endemic to a small number of coastal sites on the Great Northern Peninsula.*”
- S56 §4.2.4.1 Protected Areas within the SEA Update Area, Table 4.79, pg 273** - Why does this table include several inland parks that have no obvious connection with offshore oil industry activity?
- S57 §4.2.4.2 Protected Areas Elsewhere in the Gulf of St. Lawrence, Table 4.82, Row 4, Column 3, pg 277** - The intertidal zone in Mingan National Park is an important fall stopover site for thousands of endangered Red Knots.
- S58 §4.3.5.2 Commercial Fisheries, subsection Sealing, 3rd para, 2nd sentence, pg 363** – “...in the 1970s to more than seven million *in 2013* (not today).”
- S59 §4.3.6.5 Tourism, pg 377** - This section gives insufficient consideration of the importance of the natural setting, especially that around Gros Morne National Park, to regional tourism.
- S60 §4.3.6.5 Tourism, para 4, pg 378** - While it is true that visitation is highest during the summer months, it should be noted that tourism is a year-round industry in Gros Morne and throughout the region. In particular some regionally important tourism activities, such as snowmobiling and skiing, are restricted to the winter months.
- S61 §4.3.6.5 Tourism, para 5, pg 378** - It is also noteworthy that most highways in the region follow the coast, and scenic coastal drives are a key element of the tourism experience in the region.
- S62 §5.1 Fish and Fish Habitat (including Species at Risk), pg 384 (also p. 64, 117)** - While “Several paragraphs have been added at the end of the ‘Previous Spills in the NL Offshore Area’ section... additional discussion of this issue has also been added to

Chapter 5 (under Fish and Fish Habitat, as it is the first relevant section)”, the response to the Science query about under-ice oil spills and fates remains a general response with only vague assurances that if the issue is new or important the C-NLOPB will consider implementing additional spill response technology. While it is understood that this is a SEA and that additional detail might be provided in project-specific Environmental Assessments (EAs), nonetheless the updated SEA does not provide an adequate discussion of the difficulties of under-ice oil detection and recovery which would then provide the background for more detailed project-specific EAs. Despite the Gulf having potentially less sea ice as a result of climate change, the ice that remains is dynamic and unpredictable due to factors such as storm winds. Mention of “on-going C-NLOPB reviews” does not clarify the issues given the lack of timelines and scope for these.

- S63 §5.1.1 Potential Environmental Interactions and Effects, 1st bullet, pg 384** – Delete “explosions or others”.
- S64 §5.1.1 Potential Environmental Interactions and Effects, Table 5.1, Row 2, Column 3, pg 391** - There is growing documentation of direct mortality of fish in freshwater systems as a result of discharges from well sites (e.g. of fracking fluid or produced water) or from groundwater contamination (e.g., resulting from well casing failure). Impacts on freshwater fish populations may be more pronounced than in marine systems because the smaller, contained water bodies reduce dilution of contaminants and also restrict the ability of fish to move away from a point source. For example see:
<http://www.fws.gov/southeast/news/2013/053.html#.Uh5lwKmMgJA.facebook>
- S65 §5.1.2 Environmental Mitigation Measures, 5th para, line 3, pg 395** – Delete the sentence “*As noted, the C-NLOPB...including the Sea Update Area (C-NLOPB 2013).*”
- S66 §5.1.3 Environmental Planning Considerations, Last para, Line 1, pg 395** - This should also refer to freshwater and diadromous fish, not just marine fish.
- S67 §5.1.3.2 Important Areas and Times for Fish and Fish Habitat, 6th bullet, pg 399** – Replace “Atlantic salmon that move through the both the Strait of Belle Isle and Cabot Strait in early summer into the Gulf and return in summer to spawn in freshwater” with “Atlantic salmon that move through both the Strait of Belle Isle and Cabot Strait in early summer into the Gulf to spawn in their native rivers and tributaries.”
- S68 §5.1.4 Cumulative Environmental Effects, para 3, lines 5-8, pg 400** - The suggestion that cumulative effects on fish are unlikely to occur (presumably over the next 10 years) is speculative, especially given that other stressors are not considered.
- S69 §5.2.1 Potential Environmental Interactions and Effects, Bullet 2, pg 402** - Does “containment structures” include onshore containment ponds? If not then these should also be included, as containment ponds have often been implicated in incidents of waterfowl mortality.
- S70 §5.2.1 Potential Environmental Interactions and Effects, Last para, pg 4.2** - When referring the reader to the original (2005) SEA for more detailed information on effects

on birds it should be made clear that the original SEA was not comprehensive as it did not consider birds associated with coastal and onshore habitats (e.g. shorebirds, coastal waterfowl and songbirds).

- S71 §5.2.1 Potential Environmental Interactions and Effects, Table 5.2, Row 4, pg 404 -** Flaring is potentially the most significant activity in this section and needs to be treated more thoroughly, probably as a separate activity. Under certain environmental conditions a single flare can kill thousands of birds in one night, and this applies to both onshore flares (songbirds, shorebirds and other landbirds) and offshore flares (seabirds as well as songbirds etc. during migration). Some examples:
<http://www.cbc.ca/news/canada/new-brunswick/probe-of-7-500-bird-deaths-at-gas-plant-continues-1.1859713> <http://play.psych.mun.ca/~mont/pubs/seabirds.pdf>
<http://www.ccwhc.ca/newsletters/newsletter14-1.pdf>

See also:

Montevecchi, W.A. 2006. Influences of artificial light on marine birds. Pages 94-113 in C. Rich and T. Longcore (editors). *Ecological Consequences of Artificial Night Lighting*. Island Press, Washington D.C.

Gauthreaux, S.A. and C.G. Belser 2006. Effects of artificial night lighting on migrating birds. Pages 67-93 in C. Rich and T. Longcore (editors). *Ecological Consequences of Artificial Night Lighting*. Island Press, Washington D.C.

In terms of mitigation, the conditions under which large bird kills occur are predictable (e.g., foggy weather, especially at night, and especially during the spring and fall migration periods, though for seabirds issues may not be restricted to this period), thus mitigation measures should be relatively easy to develop (i.e. no flaring during fogging weather in spring / fall migration periods), or (when technically feasible) by using a shielded flare.

- S72 §5.2.1 Potential Environmental Interactions and Effects, Table 5.2, pg 403 -** Mortality of birds in onshore containment ponds (usually waterfowl landing in these ponds) is a well known oil industry effect / activity that is not addressed in this table.
- S73 §5.2.2 Environmental Mitigation Measures, pg 408 –** The “*Leach’s Storm Petrel: General Information and Handling Instructions*” protocol has not been referenced. It should be added to this section.
- S74 §5.2.2 Environmental Mitigation Measures, 10th bullet, pg 408 –** Replace “*Offshore Chemical Screening Guidelines*” with “*Offshore Chemical Screening Guidelines for Drilling and Production Activities on Frontier Lands*”.
- S75 §5.2.2 Environmental Mitigation Measures, 11th bullet, pg 408 –** Is there a difference between “on-shore” and “on-land”?

- S76 §5.2.3.1 Water Bird Species at Risk, Red Knot, pg 410** – This paragraph requires a sentence on designation, refer to http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=980
- S77 §5.2.3.1 Water Bird Species at Risk, 1st bullet, pg 411** – Please review the status of the report expected in April 2013 and update accordingly.
- S78 §5.2.3.1 Water Bird Species at Risk, Bullet 1, pg 411** - It should be noted that these Bank Swallow colonies are found in banks created through coastal erosion, i.e. they occur within 10 m of the ocean in beach front habitat, so may be located in close proximity to onshore-to-offshore drilling sites.
- S79 §5.2.3.2 Important Areas and Times for Water Birds, para, line 5, pg 412** - In this paragraph it should be noted that one of the most important area for coastal birds in the area in and around Gros Morne National Park is St. Paul's Bay (the outer portion of St. Paul's Inlet). This bay contains some of the largest salt marshes in the province and is used by thousands of shorebirds and waterfowl during fall. However it should be made clear that this area is in a community enclave so falls outside Gros Morne National Park; inclusion here may still be appropriate given the context of this paragraph (the bay is surrounded by the park and is part of the same section of coast).
- S80 §5.2.3.2 Important Areas and Times for Water Birds, para 1, lines 4-5, pg 413** - Note that St. Paul's Bay is in an enclave surrounded by Gros Morne National Park, but is not included within the boundaries of the park (see previous comment)
- S81 §5.2.4 Cumulative Environmental Effects, para 1, lines 1-3, pg 414** - Onshore drilling sites can be problematic for the same reasons and should be mentioned here.
- S82 §5.3.1 Potential Environmental Interactions and Effects, 4th bullet, pg 415** – What type of underwater explosion is being implied? One from petroleum activities? Please elaborate or remove.
- S83 §5.3.1 Potential Environmental Interactions and Effects, last sentence, pg 416** – Not appropriate to say “and in other sources”. Also applicable to page 385.
- S84 §5.3.2 Environmental Mitigation Measures, pg 423** - Science is pleased that the SEA acknowledges the potential benefits of using trained observers and more clearly-described monitoring methods. Science reiterates the need to collect the number of hours of ON EFFORT duty needed to collect sightings data.
- S85 §5.3.2 Environmental Mitigation Measures, pg 424, 9th bullet** – Replace “are away from” with “have left”.
- S86 §5.4.1 Potential Environmental Interactions and Effects, para 3, pg 429** - It is not clear why this discussion of fracking is placed in this section on Protected and Sensitive Areas when it has the potential to affect multiple VECs.

- S87 §5.4.2 Environmental Mitigation Measures, last para, pg 429** - Again, it is not clear why this is in the Protected and Sensitive Areas section, as fracking can have impacts on several VECs. Further, the information provided here seems more like a literature review than mitigations.
Also, line 3 of this paragraph refers to “*perceived risks*” – this should be replaced with “*perceived and real risks*”.
- S88 §5.4.3 Environmental Planning Considerations, 2nd para, 1st sentence, pg 430** – List the several cases where the boundaries extend into the marine environment.
- S89 §5.4.3 Environmental Planning Considerations, 4th para, line 1, pg 431** – Delete “Again, the probability of such an event occurring is very low, with”.
- S90 §5.4.4 Cumulative Environmental Effects, para 1, lines 3-4, pg 432** - This sentence should be removed as there can easily be direct effects of industry activity on adjacent protected areas.
- S91 §5.4.4 Cumulative Environmental Effects, para 2, pg 432** - If exploration is done through fracking, a number of wells could easily be drilled in one area fairly quickly, so it is not accurate to say that the potential for a protected area to be affected by multiple petroleum projects is low.
- S92 §5.5.1 Potential Environmental Interactions and Effects, 3rd para, line 1, pg 433** – Delete “and elsewhere”.
- S93 §5.5.1 Potential Environmental Interactions and Effects, 4th para, line 1, pg 434** – Delete “most important”.
- S94 §5.5.2 Environmental Mitigation Measures, 1st para, line 3, pg 435** – Delete “important and”.
- S95 §5.5.2 Environmental Mitigation Measures, 2nd para, last sentence, pg 436** – Replace “*As noted, the C-NLOPB is also currently completing an overall review of the spill response capability of operators working in areas under its jurisdiction, including the SEA Update Area (C-NLOPB)*” with “*The C-NLOPB committed to completing its review of the producing operator’s assessment of their spill response capability. Although the review is complete the C-NLOPB endeavors to have operators improve oil spill response; including techniques and equipment for responding to a spill.*”
- S96 §5.5.2 Environmental Mitigation Measures, 3rd para, last line, pg 436** – Delete “and elsewhere”.
- S97 §5.5.4 Cumulative Environmental Effects, para 1, line 7, pg 437** – Delete “*and typically does not interfere greatly with fishing activity given the relatively small size of these zones*”.

S98 §5.6 Potential Effects of the Environment on Oil and Gas Activities, pg 438 - There was no discussion of the effects of extreme water levels or mountain wind events on coastal infrastructure that could be part of an offshore program. This was specified in the scoping document (5.2.5 Environment-Project Interactions).

It is recommended that the effects of these extreme environmental conditions be considered.

S99 Section 6 Strategic Environmental Assessment Update: Summary and Conclusions, pg 440 – Provide a summary of the key findings, including: potential issues, sensitive areas (include a figure with all sensitive areas); data gaps; addressing data gaps; planning considerations; and mitigation measures.

S100 Section 7 References, pg 441 – A separate list of personal communications referenced throughout the report should be included.

Editorial Comments

- E1** The document could use a thorough spelling and grammar check. Some examples are provided. There are sections/paragraphs/sentences that are not easy to read because of run on sentences, improper verb conjugation and mixture of tense (*i.e.* past, present and future).
- E2** “SEA update” should be “SEA Update”
- E3** If “e.g.” is used in the text to provide a list of examples then “etc” should not be included.
- E4** The term “oil and gas activities” should be used consistently throughout the report. “Petroleum activities” is frequently used.
- E5** There is a need for consistency throughout the document when referring to onshore activities and on-land activities.
- E6** There is a need for consistency throughout the document when referring to inshore activities and nearshore activities.
- E7** **Section 1.0 Introduction, para 6, pg 1** – Please review the four line sentence. Does one sentence warrant its own paragraph?
- E8** **§2.1 The SEA Update and the Associated “Strategic Decision”, para 4, line 5, pg 5** – Insert “in” after “decisions”.
- E9** **§2.4.5.1 Environmental and Human Setting, pg 14** – This section needs to be rewritten as there are numerous grammatical errors. Write in bullet-form or in paragraph-form.
- E10** **§2.4.5.2 Environmental Considerations and Possible Mitigation, pg 15** – This section needs to be rewritten as there are numerous grammatical errors. Write in bullet-form or in paragraph-form.
- E11** **§3.2.1.3 Sound Propagation During Offshore Seismic Surveys, para 3, 2nd sentence, pg 36** – This is not a sentence, please rewrite.
- E12** **§3.2.2.3 Potential Environmental Emissions Associated with Offshore Drilling Activities, para 4, pg 43** – Is “atomization” supposed to be atomized?
- E13** **§3.2.3 Onshore to Offshore Drilling, line 3, PG 46** – Delete “and others”.
- E14** **§3.2.4 Hydraulic Fracturing Activities, pg 46** – The bullet list should be consistent in format with the others in the document, use of semi-colons.
- E15** **§3.2.4 Hydraulic Fracturing Activities, pg 47, 1st para, last sentence** – Hydraulic is misspelled.
- E16** **§3.2.6.2 Previous Spills in the NL Offshore Area, Oil Spill Fate and Behaviour, 2nd para, pg 64** – Change “extend” to extent.

- E17** §4.2.1.3 Coastal Habitats and Benthos, subsection Corals, 1st para, 1st sentence, pg 153 – “Deep-sea corals are *an* important component...”
- E18** §4.3.5.4 Recreational Marine Fisheries, 2nd para, 2nd sentence, pg 366 – Replace “take” with “takes”
- E19** §4.3.6.1 Marine Shipping and Transportation, 1st para, 1st sentence, pg 372 – Replace “though” with “through.”
- E20** §5.2.5 Information Availability and Requirements, pg 414, para 3 and 4 – Paragraphs need to be separated by a hard return.
- E21** §5.4.3 Environmental Planning Considerations, pg 431, 4th para, line 2 – Replace “being” with “is”.
- E22** §5.4.4 Cumulative Environmental Effects, pg 432, 2nd para, last sentence – Pluralize “Protected area...”
- E23** §5.5.2 Environmental Mitigation Measures, pg 435, 2nd para, 4th sentence – Pluralize “...to operator...”
- E24** §5.5.2 Environmental Mitigation Measures, pg 435, 4th para, 3rd sentence – Change “though” with “through”

Public Comments

Margo Sheppard

Today, the International Panel on Climate Change (IPCC) released its 5th Assessment Report on global climate change, citing a 95% certainty that the phenomenon is caused by human activity, in particular, the burning of fossil fuels. While the SEA Update acknowledges negative “interactions” (consultants’ word) with marine wildlife and water quality, where is the section on air quality? Why are greenhouse gas emissions expected from the project’s production, and subsequent burning, of hydrocarbons not even mentioned in this report?

Even the section on “cumulative effects” ignores air quality consequences of the undertaking. Somehow cumulative effects have been narrowly defined as “potential effects that may result from oil and gas activities in combination with each other and with other projects and activities in the area” (emphasis added). Global climate change itself exemplifies the impact of cumulative effects. Are we to understand that the many millions of barrels of petroleum produced by activities in the Gulf will not add to the cumulative effect of climate change?

For your reference, IPCC Working Group Co-Chair Thomas Stocker, said in a press release today that “Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions,” http://www.ipcc.ch/news_and_events/docs/ar5/press_release_ar5_wgi_en.pdf . It appears AMEC is either overlooking a key body of evidence on emissions and climate change, or is, itself, in denial.

Colin Jeffrey

The SEA Update report provides a clear picture of the current offshore oil and gas industry in Newfoundland/ Labrador and some of the potential impacts of an expansion in offshore drilling along Newfoundland’s west coast. However, this report continuously downplays the actual risks of offshore drilling in the Gulf of Saint Lawrence and contains several omissions including no discussion of the environmental impacts of dispersants or the impacts of sea ice and high winds on oil spill response effectiveness. Regarding the environmental impacts of chemical dispersants, particularly Corexit, the SEA Update report does not discuss these despite its claim to do so and despite the fact that new research suggests when Corexit becomes mixed with oil the toxicity of the mixture increases up to 52-fold (see http://www.huffingtonpost.com/2013/04/23/corexit-oil-spill-gulf_n_3134963.html).

Regarding responses to large and small spills of oil and other contaminants in the Gulf of Saint Lawrence, the SEA Update report does not discuss factors limiting these responses including seasonal high winds, waves and sea ice. In particular, the unusual obstacle of seasonal sea ice to offshore spill clean-up activities is not addressed. Research on the effectiveness of oil spill clean-up activities suggests that under even under ideal weather conditions only a small percentage of the spilled oil can actually be removed from the water. With this caveat in mind it is by no means clear that offshore operators have the means to effectively clean up an oil spill when high winds or sea ice are present. The failure of the SEA Update report to address this issue is a large oversight and should be rectified.

Public comments in the SEA Update report are not clearly presented, obscuring the fact that public concerns around offshore development in the Gulf are widespread. Of the 516 comments from the consultation sessions in the draft Consultation Report (Appendix A), only eight (8) could be considered to be supportive of offshore development in the Gulf. Surprisingly, this lack of social license to drill in the Gulf is not addressed and does not appear to be taken into consideration in the draft SEA Update report.

Hugh McCormack

The AMEC draft SEA identifies many areas and species of environmental significance within the assessment area. There are individual maps that illustrate the general locations of some of these but there is no single map that illustrates all of these areas on one page. This is a weakness in information presentation because it tends to make the individual significant areas look insignificant in size when compared to the overall area of the SEA study area.

I am also concerned about the amount and quality of data and the analysis of the data collected by AMEC in the production of the report. One example that stood out to me was the table on page 379 that refers to cruise ship visits within the study area. It provides data for only one year (2012) and indicates that Corner Brook is the port receiving the greatest number of ship visits. While the ship visit numbers are not at issue what is not apparent from the data is that several of the ships visiting at Corner Brook offer bus trips to the Bonne Bay/ Gros Morne area. Thus the importance of Corner Brook as a destination that the data implies, is not actually a true representation of the situation that we experience here in the Bonne Bay area.

Sue Rendell

I do not think that an accurate economic picture of the current tourism industry was presented nor was there adequate information and research regarding the potential impacts the oil and gas sector development (and hydraulic fracturing) could have on the current tourism industry.

Jerome Marche

The draft report says that the efficiency of proposed mitigation measures is not proven.

AMEC's report is weak in many respects and is not adequate to serve as a decision tool for the C-NLOPB because comments and briefs presented by the public in the Fall of 2012 were not correctly addressed and integrated in the draft report. Impacts and risks of offshore oil and gas activities as well as hydraulic fracturing have been minimized throughout the report. The economic importance of fisheries and tourism are greater than shown in the draft report. Mitigation measures proposed by AMEC are weak and intervention capacity in the case of oil spills is clearly inadequate.

Barb Daniell

Important comments and briefs presented by the public in the fall of 2012 have not been sufficiently addressed, or made part of, the report.

Ellie Reddin

Consultation report:

Throughout the draft report, references to feedback from the consultation sessions refer to wide-ranging and diverse comments, but do not indicate that comments urging protection of the Gulf of St. Lawrence from oil and gas exploration and development were much more frequent than those promoting such activity. Of 81 written submissions included on the C-NLOPB website, only seven were in favour of exploration and development. In addition, I counted 516 comments from the consultation sessions in the draft Consultation Report (Appendix A). Only eight of these comments were in support of oil and gas exploration and development in the Gulf and two of those eight comments included caveats regarding environmental issues. If one were to read the draft report without reading the detailed consultation results, one would be led to believe pro-development comments were as frequent as cautionary comments. That is simply not the case. The final report should more accurately reflect the fact that the great preponderance of comments opposed oil and gas exploration and development in the Gulf.

Oil spills:

The draft report repeatedly states that accidental oil spills and blowouts are “unlikely” or “rare”. This repetition serves to downplay the eventuality of spills.

One of the studies noted in the draft report (p. 57) estimated blowout frequency during exploration drilling at 1 in 267 wells, based on US data from 1980-2010. A second estimate (1 in 6,250), also mentioned on page 57, is said to be “based on more recent data”, but it covers 1988-2009 so it is not based on more recent data, just a shorter time period. Also, it is clear that the 1 in 267 wells estimate is based on approximately 12,000 US offshore exploration wells, but no information is provided about the number, type or location of wells included in the lower estimate.

The above-noted estimates are for blowouts only. Spills not constituting blowouts are much more common.

In the NL Offshore Area, using C-NLOPB data, the draft report (pp. 58-59) indicates there were 238 spills greater than one liter in sixteen years with a total spill volume (including smaller spills) of 469,144 liters and an average of 29,322 liters of oil spilled per year. Spills have occurred in every year. Clearly, spills are not “unlikely”. The statistical probability of catastrophic blowouts might be low, but minor spills are apparently inevitable.

Given the much longer history of oil and gas exploration and development off the east coast of Newfoundland, one would assume that the spill data is from that area, although that is not explicitly stated in the draft report. The cumulative effects over time of minor spills in the sensitive, semi-enclosed Gulf of St. Lawrence ecosystem would be much more serious than in the Atlantic Ocean and the effect of even one large spill or blowout could be devastating. The final report should avoid minimizing the serious risks posed by oil spills in the Gulf by removing the frequently repeated statements that they are unlikely.

Use of Dispersants:

In Table 2.2 (p. 19) it is stated that the topic of “use of oil dispersants and their potential effects” is addressed in Sections 3.1, 3.2, 5.1, 5.2, 5.3, 5.4, and 5.5, but in fact this issue is not addressed at all. I

could find no information in the draft report about the use of dispersants, in particular Corexit, to clean up oil spills. Recent research from the Georgia Institute of Technology and Universidad Autonoma de Aguascalientes (UAA), Mexico, found that mixing Corexit with oil increased toxicity of the mixture up to 52-fold over the oil alone. See <http://phys.org/news/2012-11-gulf-mexico-clean-up-times-toxic.html> and http://www.huffingtonpost.com/2013/04/23/corexit-oil-spill-gulf_n_3134963.html , as well as the video link in the next paragraph. The final report should indicate whether dispersants are being used in the NL Offshore and, if so, should discuss the potential harm caused by dispersants and recommend alternative methods for dealing with oil spills.

Long-term Impact of the 2010 Gulf of Mexico Blowout:

Table 5.1 on page 392 includes the following statement regarding the Gulf of Mexico blowout: “There is no clear picture yet concerning short-and-long-term effects on habitats and marine organisms.” This 37 minute video documents some of the short-term and long-term impacts:

https://www.youtube.com/watch?feature=player_embedded&v=yduv3APYawA .

Hydraulic Fracturing:

On pp. 429-430, the draft report mentions some research on the possible contamination of drinking water arising from hydraulic fracturing. The following article discusses a study which found contamination of drinking water with methane, ethane and propane near shale gas wells in Pennsylvania: <http://phys.org/news/2013-06-stray-gases-wells-shale-gas.html> .

Use of Acronyms:

Acronyms are used throughout the draft report and it is difficult for the reader to always remember what they represent. All acronyms used and the full titles they represent should be listed at the front of the final report for reference. This is a minor point, but it would make the report easier to read.

Edward Butt

In your draft Western SEA you reported only population of Bank Swallows was located in the Parsons Pond. I would like to bring to your attention of significant population of Bank Swallows breeding on the coastal headlands from the Highlands area to St. Theresa in Bay St George South. This area contains the highest population of Bank Swallows in NL. This is an ideal breeding area that has numerous natural and Agricultural coastal meadows ideal for Bank Swallows foraging for insects. Most of their burrows are located in sandy banks facing the bay.

COSEWIC should be informed of this.

The location of this massive Bank Swallows burrows would not interfere with Oil and Gas exploration and development.

Public Comments (Organizations)

Gros Morne Co-operating Association

We are quite concerned that our statements and unanswered questions mentioned at the “consultation” meeting and sent in our letter have been presented in this report under some general statements that we simply had some “questions and comments”. The lack of details reported perhaps indicates a lack of attention or proper reporting.

That being said, we will try to correct this by offering our comments in a point form format and to remain focused, based on our mandate, on areas that could affect the Gros Morne National Park region.

Hydraulic fracturing

The segment on hydraulic fracturing appears to be missing the important aspect of possible impact and effects of this activity on human and animal health as well as on communities.

The draft report does not reflect the fact that there is an absence of regulatory framework or regulations specific to hydraulic fracturing (from an on-shore to off-shore operation) in the province. This is important within the context of liability, due diligence and adequate governing procedures.

It would have been useful to include an overview of other Canadian jurisdictions as to their respective position on hydraulic fracturing (e.g. moratorium, under review, ban, etc). This could perhaps encourage an engagement of the five Atlantic provinces into, an **Inter-Provincial Integrated Comprehensive Environmental Assessment for the Gulf of St. Lawrence**, whereby governments, communities, researchers, industry and other stakeholders would collaborate to evaluate all aspects of oil exploration in the Gulf.

In order to bring another perspective and perhaps truth to what is now known as the “**myth of the 200,000 wells**”, whereby the industry and the companies (Shoal Point Energy Ltd. and Black Spruce Exploration Corp.) operating on the west coast claim, that “200,000 wells have been fracked in western Canada without one single incident of contaminated water”, we offer the well researched / fact-based, 93-page report of June 2013 from Jessica Ernst Brief Review of Threats to Canada’s Groundwater from the Oil and Gas Industry’s Methane Migration and Hydraulic Fracturing (see attached). This report, with its 434 references, clearly dismissed this industry’s myth.

Climate change

On September 17, 2012, NL Honorable Minister Terry French announced a good and well received campaign titled Turn Back The Tide (see Media Release attached). The logic behind it was and is, to reduce our carbon dioxide emission and make behavioural changes as individuals, as communities and as a province, in order to mitigate the impact on the environment (climate change). This was applauded province wide and was embraced by communities and groups with a series of local/community-based programs supporting the government’s forward-thinking action.

Our province works with all the Atlantic provinces, through the Atlantic Climate Change Adaptation Solutions, MUN and the Canadian Institute of Planners on addressing the effects of climate change through initiatives.

On the government website, designed to encourage concrete actions (www.turnbackthetide.ca), one can click on “Take Action in Your Community” to focus on simple and community-based actions / behavioural changes. Again communities in the province, on the west coast and in the Gros Morne region engaged in several, government and private funded initiatives and they feel they are making a contribution.

Today, we are confronted with a serious situation that contradicts this community-supported government plan. Indeed, a junior oil company (Shoal Point Energy Ltd- Black Spruce Exploration Corp.) intends to drill a series of exploratory wells, “one for every 10 kilometers on the west coast” of Newfoundland to quote the representative at a recent public meeting. For the Gros Morne region, the project registered at the CNLOPB focused on Sally’s Cove. However, based on an article in Earth Resources of August 2012 and on their literature, Shoal Point Energy President George Langdon indicated on the map provided in the article, a total of 4 sites for the immediate boundaries of Gros Morne (St. Paul’s, Sally’s Cove, Trout River and Chimney Cove).

These wells would be drilled through the controversial method of hydraulic fracturing (fracking). As we know, this method releases, through burning flares, a very large quantity of methane. Based on what one can learn at MUN and from the scientific community, methane, molecule for molecule, traps 20 to 25 times more heat in the atmosphere than does carbon dioxide. In other words, 25 X more potent than CO².

Furthermore, studies from independent sources and government reports in the U.S. and Europe indicate clearly that the use of hydraulic fracturing emits large quantities of greenhouse gases. To support this fact, it is reported that a coalition of 7 states (US) are in the process of registering a lawsuit vs the US Environmental Protection Agency (EPA) for failing to address methane emissions from the oil & natural gas industry.

The purpose of my point is not to offer you a detailed technical analysis of fracking but rather to point out that “fracked wells leak 40 to 60% more methane than conventional natural gas wells.” (Ref. Scientific American, Jan. 20, 2012).

Risks of surface water contamination, air quality and impact on tourism put aside, it does appear counter-productive and contradictory to say the least that serious efforts are being made by the government and the communities to mitigate CO₂ on one hand, while the same government would allow a commercial activity to greatly increase the CO₂ on the other.

It is therefore suggested that a more sustainable, cohesive and congruent plan be maintained by supporting the NL Turn Back The Tide campaign and not allowing the oil exploration to occur close to Gros Morne National Park.

In other words, we feel that the Turn Back The Tide campaign **has to be more than just a slogan.**

Gros Morne Co-operating Association (GMCA)
Position Regarding Oil Exploration in Western Newfoundland

GMCA advocates that the province of Newfoundland and Labrador put a hold on slick-water hydraulic fracturing in the province until:

1. A thorough public and science-based review of hydraulic fracturing (including an assessment of the environmental, social, health, economic, and policy issues and risks) is conducted; and
2. Based on this comprehensive assessment, appropriate regulations, policies, guidelines, and legislation are established and enacted.

Financial data (with references)
Gros Morne National Park region

-Home of the Memorial University Bonne Bay Marine Station (in Norris Point)

-Based on 2011 Parks Canada report –June to Sept, Gros Morne receives 185,000 tourists annually.

If we include the non-registered visitors by Parks Canada who come to Gros Morne to only attend festivals, arts and cultural events in the municipalities, we arrive at a total of over 200,000 visitors.

Over the last twenty years, partnerships with both levels (prov. and fed.) of government were established in order to create a sound, profitable, sustainable tourism industry in the Gros Morne region. These partnerships evolved into embracing a mutual vision for the area with major international, national and provincial stakeholders. Together, we have created the Gros Morne Institute for Sustainable Tourism (a training centre for Atlantic Canada’s tourism operators) and implemented Gatherings (conferences - marketing organization).

Stakeholders in the GM region are working in ensuring the success of the provincial Uncommon Potential 2020 tourism vision.

What we recognize in this region is the high degree of inter-dependence between environmental integrity, economic stability, and quality of life. This region has prospered economically and socially since the establishment of the national park. We have a diverse economic foundation of tourism, fisheries, arts, services and health care. This supports the needs of the 8 enclave communities within Gros Morne. We have stable employment and are buffered from the boom and bust cycles of single resource communities.

Gros Morne is the point of entry to a new tourism marketing strategy: **UNESCO World Heritage Coast of N&L** (Gros Morne, L’Anse aux Meadows, Red Bay -Basque Whaling Station, Labrador).

Investments

A total of over **\$301.5 million** has been invested by government and private businesses (salary dollars and job creation excluded) in the Gros Morne region since 1993.

Ref. New Economics Foundation, Social Return on Investment: Gros Morne Co-operating Association, London, England, 2013

For example, through organizations such as the Gros Morne Co-operating Association (GMCA), the park region is currently benefiting from the development and implementation of Creative Gros Morne, a strategic cultural plan supported by a **\$15 million long-term investment in cultural tourism** (2012-20).

Ref. ACOA-Tourism NL-GMCA internal budget projection

A 2013 independent study published by New Economics Foundation (England) indicates that the GMCA Social Return on Investment in the Gros Morne region for our government partners and private investors ranges from: 1\$ invested for a 5\$ return on small projects, to **1\$ invested for \$10 return** on large initiatives.

Since 2006, the NL provincial tourism investment has been over **\$96M** (including a substantial allowance in the Gros Morne region).

On a larger scale, the park is a tourism icon for Canada, and accounts for 1 in 4 non-resident visitors to the province.

Therefore it is a considerable source of yearly revenue for the province:

-\$110 million is spent in the province by travelers to Gros Morne (within the context of over **\$229 million** spent by travelers on the Western region of Newfoundland in 2011).

The expenditures of GM specific-visitors was estimated at \$107.7 M+ in 2009, which represents 13% of the total tourist expenditures in the province as a whole. One-third of the expenses in NL by visitors to GM were made directly in the GMNP area

Ref.

1. 2010 Gros Morne National Park Economic Impact Analysis, Gros Morne Cultural Blueprint report, ACOA, August 2011
2. Go Western NL Annual Report 2011
3. Statistics Canada TSRC Survey 2011

-Research and reports support the fact, that direct employment related to tourism is 766 positions (community level and Parks Canada) yearly for the park region.

Ref. New Economics Foundation, Social Return on Investment: Gros Morne Co-operating Association, London, England, 2013

-In addition, the fisheries' contribution (Trout River to St. Barbe) accounts for another \$35 million in the regional economy

Ref. Red Ochre Regional Economic Board annual report 2011

-In the context of diversification of our provincial economy, we would like to highlight the following considerations and facts:

a) Gros Morne is one of the prime elements of the NL Find Yourself Here tourism advertising campaign (with up to 173 awards globally).

-NL Minister of Tourism and Recreation Terry French stated recently “We’re knocking at the door (in NL) of tourism becoming a billion-dollar industry” (with Gros Morne being a major contributor).

Impact

In 2005, Gros Morne tied for second place among 55 North American parks in National Geographic Traveller magazine’s survey of sustainable tourism, destination quality and park management. “A model of collaboration between local communities and park management.... Authentic and unspoiled, and given the approach to management, is likely to stay so.” We are constantly working towards that goal. This positive image is greatly due to the fact that Gros Morne is a UNESCO World Heritage Site.

For discerning travellers choosing a destination, perception is everything. We are very concerned that oil exploration and development, while being presented as an economic boom, has underlying risks and assumptions that have not been disclosed nor shared with the communities most affected.

As one out-of-province tourist wrote recently, “It is difficult enough to get to Gros Morne – distance, ferry, bad reputation about the seal hunt. Please don’t add burning flares from fracking with this industrial activity. The reasons we visit Gros Morne are that we want to see a pristine environment and get away from industrial sites....we want to see what is on the NL promotional videos and not oil and gas exploration beside the park”.

Oil exploration would not be consistent with what one can expect from a UNESCO World Heritage Site and an iconic national park.

We are very concerned that the values for which this area has been chosen by the people of Canada as a national park, and by UNESCO as a World Heritage Site be given priority in planning for any future development.

We feel that the introduction of oil exploration into the immediate Gros Morne region would undermine and put at risk the efforts and financial investments that individuals, local, provincial and federal governments have made in the past.

In actual fact, UNESCO is now requesting that a **buffer zone** be included and part of all new World Heritage Sites. This was the case for Red Bay, Labrador and will be when their “Monitoring Mission” will visit Gros Morne in the near future. In short, it is anticipated that the “buffer / protected zone” concept and requirement be included for Gros Morne as it is now a UNESCO WHS standard practice in order to address “the threat from extractive industries”. Ref. UNESCO, World Heritage Committee, State of Conservation of World Heritage Properties. WHC-13/37.com/7B.ADD,p.8

In his address to the delegates of the World Tourism and Travel Conference (Apr'13), former US President Bill Clinton said “I am fundamentally optimistic about the power of tourism to change the world. As the leaders of this industry, you have a great deal of responsibility to use this power. I predict that over the next 20 years the travel and tourism industry will lead a re-examination of our energy industry policies”.

For his part, United Nations World Tourism Organization Secretary- General Taleb Rifai was quoted to say that “Tourism is the oil that never runs out. While other economic sectors generate short and medium-term gains, tourism, when sustainably planned and managed, has proven to stimulate economies over the long-term.”

References

To better support our concerns pertaining to the communities, we attached to this report references, research information, discussion papers and reports. (Attachment 1)

The references provided focus on the effects of hydraulic fracturing on communities, real estate, insurance, jobs and human health.

No list of references on this matter would be complete without the inclusion of the *Office of the Auditor General of Canada Scott Vaughan 2012 Fall Report of the Commissioner of the Environment and Sustainable Development*.

For additional information and references, we also refer the reader to the following Facebook and Wordpress websites:

1. (Facebook) Save Gros Morne and our West Coast
2. (Wordpress) savewestcoastnl.wordpress.com/

These sources of references and the ones attached to this letter, would complement the “References” section provided in this draft report and offer the decision-makers well-researched documents on various elements of hydraulic fracturing.

It is interesting to note that not one independently researched tourism report, survey, media report, or article can be found to support the claim [by industry] that tourism increases after oil exploration has been introduced in an area. Actually, the contrary appears to be the norm.

Hospitality Newfoundland & Labrador

The potential environmental interactions and effects between oil and gas activities and the surrounding environment were identified in the report as well as the resulting decrease in the real or perceived integrity and value of such areas. However, we do not feel the true implications of such interactions on the tourism industry are accurately portrayed or fully understood. The surrounding environment encompasses one of the tourism industry’s biggest demand generators, which is a significant contributor to our provincial economy. As one of three UNESCO World Heritage Sites situated along a pristine corridor beginning in Western Newfoundland and leading

into Labrador, Gros Morne National Park is an essential asset to the tourism industry in our province with close to 25% of non-resident travelers visiting the Gros Morne Area each year.

Although referencing that the tourism industry is a key component of the NL economy, page 378 of the report inaccurately states that tourism generally occurs within a four month period in Western Newfoundland. Tourism across our province is growing with much emphasis and success being achieved through season extension projects outside the months of June to September. Many of these projects, such as the highly successful *Trails, Tales & Tunes* Festival and many winter tourism initiatives, have achieved great success as evidenced by continued growth in visitation and participation in all four seasons of the year. Furthermore, the services infrastructure of the tourism industry, namely accommodations and restaurants, are vital to the growth and development of other business sectors. Business travellers avail of these tourism services all year long, not just in the peak “tourist” season.

The perception of tourism as anything other than a vital component of the future development, growth and support of communities throughout NL is further evidence of a lack of understanding of the contribution and potential of our industry to the people and economy of Newfoundland and Labrador. A thorough understanding of tourism reveals that it is one of the most stable, revenue generating industries in Newfoundland and Labrador with steady growth in annual contributions to the provincial economy.

St. Lawrence Coalition

The list of sections that apparently discuss the use of oil spill dispersants and their potential effects (ss. 3.1, 3.2, 5.1, 5.2, 5.3, 5.4, 5.5) is misleading, as most of these sections refer simply to “accidental” spills of oil and other substances, and only peripherally to the deliberate application of dispersants. Dispersants are not deployed “accidentally” but also should not be considered as a routine or unremarkable part of oil spill cleanup operations.

Conseil des Innu de Ekuanitshit

The draft update report states that the North Atlantic Right Whale is “considered to be the most endangered large whale in the world with approximately 300-350 individuals remaining”: Table 4.60. However, it does not add an important point with respect to oil and gas exploration, which is that this marine mammal is particularly vulnerable to collisions with ships: EES2, p. 222.

Your draft update report also does not list the “relevant data gaps,” as the EES2 did, though a review of the contents reveals over two dozen such gaps, which we have attempted to enumerate.

Data gaps identified in the draft SEA update

- uncertainty “about seismic activity, associated sound levels, and effects on fish distributions and potential longer-term effects on fish populations and fisheries... due to noted variation in local observations and also within the scientific research”: 2.4.5.2
- “the commercial resource potential of the area is unknown”: 3.2.5
- “the likelihood, characteristics, location and timing of any possible oil and gas development (production) activity in the region is unknown and cannot currently be predicted or defined”: 3.4
- “For the Estuary and Gulf of St. Lawrence (EGSL), analyses leading to the identification of the ten potential EBSAs [ecologically and biologically significant areas] were based on the best scientific data available. However, several data sets were not available at the time of the analysis (because of lack of georeferencing or suitable electronic versions) and several large areas of the Gulf were poorly sampled, leaving data gaps. So, at least for the EGSL, the EBSAs do not necessarily cover all the areas or species that contribute in a significant way to the system.”: 4.2.1.1
- for the Cusk finfish, “Reproductive biology not widely known for the northwest Atlantic”: Table 4.3.8
- for the Atlantic argentine, “little information on the time of spawning on the North American side of the Atlantic Ocean”: Table 4.3.8

- for the Atlantic sturgeon, “Little is known of the spawning grounds or breeding behaviour in Canadian waters”: Table 4.3.9
- “Little is known about wolffish spawning in the Gulf ”: Table 4.40
- “Alligatorfish are a species for which very little is known about their ecology, including the population that is found within the SEA Update Area”: p. 185
- for the North Atlantic Right Whale, the “gestation period is unknown”: Table 4.60
- “the number of Kemp's Ridley Turtles that visit the SEA Update Area is unknown”: 4.2.3.5
- “insufficient data to estimate Sabine ’s Gull population trends”: Table 4.50
- “complex oceanographic processes have made it difficult to determine the current and future distribution of spilled and dispersant materials from the surface to the sea floor and the duration of their persistence in the marine environment”: Table 5.1
- “Information on the specific nature and spatial and temporal distribution of potential offshore exploration (seismic and drilling) activities and possible production projects in the SEA Update Area and their environmental effects is not currently available”: 5.1.4
- “Other important marine taxa, such as deep sea corals and Atlantic salmon, have unique life histories and occupy habitats that often make their study somewhat challenging, leading to relatively less available information and understanding”: 5.1.5
- “the life history and spawning times of the three wolffish species in the Gulf remain somewhat unclear”: 5.1.5
- “there is limited information on the distribution of some important fish and invertebrate eggs and larvae”: 5.1.5
- “There are several areas within the Gulf in which there is limited information on critical elements of the food chain such as zooplankton (Locke 2002 DFO 2007). There is also a lack of research on the bacterioplankton community, despite the fact that in some areas the heterotrophic food web is largely based on bacterial production”: 5.1.5
- “A lack of specific information and knowledge regarding the distribution and behaviours of some species (in the Gulf of St. Lawrence and in general)”: 5.1.5

- “an incomplete understanding of the specific effects of certain activities and disturbances (such as seismic energy) on marine animals”: 5.1.5
- “There is relatively little research that has investigated the effects of seismic activity on water birds”: Table 5.2
- “the nature, degree, timing and extent of any associated mortality” for the association of birds with oil platforms “is generally unknown”: Table 5.2
- “detailed information on the occurrence, abundance and distribution of Water Birds and particular species is not available for all locations and times throughout the SEA Update Area”: 5.2.5
- “there continues to be a relatively limited amount of specific and up to date information available on the number and spatial and temporal distribution of avifauna offshore Newfoundland and Labrador and elsewhere in Eastern Canada. This is particularly the case for Western Newfoundland, where much of the available data... may... not always represent the current conditions of species distribution, abundance and seasonality”: 5.2.5
- “A lack of specific information and knowledge regarding biologically essential behaviour for marine mammals (in the Gulf of St. Lawrence and in general) and associated areas and times”: 5.3.5
- “an incomplete understanding of the specific effects of certain activities and disturbances (such as seismic energy)” on marine mammals: 5.3.5
- a need for “the effectiveness of all such mitigation measures” on marine mammals “to be further evaluated and documented”: 5.3.5
- “a need for further consultation and discussion with interested and potentially affected communities, individuals and organizations regarding hydraulic fracturing and its potential (and perceived) effects”: 5.4.2

Port au Port/Bay St. George Fracking Awareness Group

Information below found at: http://www.heritage.nf.ca/society/oil_environment.html

Immediate Effects on Fishing

Scientific research on the Dutch Continental Shelf during the 1990s found that seismic shooting significantly reduced trawl and longline catches of cod and haddock within 18 nautical miles of the testing area. Catch rates did not return to normal until five days after the shooting ended. Whales, seals, and other marine mammals are also sensitive to sounds generated during seismic surveys.

Oil Industry Affects the Marine Environment

Besides introducing oil and other chemicals into the seawater, drill cuttings may smother or interfere with life on the ocean floor. Scientists have expressed concerns that the habitual dumping of cuttings into the ocean may have a more negative effect on marine life than is currently known, especially if the cumulative impacts of the province's three oilfields – Hibernia, White Rose, and Terra Nova – are taken into account.

CPAWS

Gros Morne National Park and World Heritage Site

Table 4.79 (page 270) describes the key characteristics and features of Gros Morne. The report states that Gros Morne's World Heritage status is based on its geological history. However, this is incomplete information. Gros Morne's designation as a UNESCO World Heritage Site is in fact based on two criteria:

- *Criterion (vii)*: Gros Morne National Park, an outstanding wilderness environment of spectacular landlocked, freshwater fjords and glacier-scoured headlands in an ocean setting, is an area of exceptional natural beauty.
- *Criterion (viii)*: The rocks of Gros Morne National Park collectively present an internationally significant illustration of the process of continental drift along the eastern coast of North America and contribute greatly to the body of knowledge and understanding of plate tectonics and the geological evolution of ancient mountain belts. In glacier-scoured highlands and spectacular fjords, glaciation has made visible the park's many geological features. (<http://whc.unesco.org/en/list/419>).

Table 4.79 of the SEA should be amended to accurately include both criteria vii and viii for which Gros Morne was designated a UNESCO World Heritage Site.

CPAWS Special Marine Areas

On page 286 there is section dedicated to a CPAWS NL Chapter report on special marine areas (http://cpaws.org/uploads/pubs/report_nlmarineguide.pdf). While we are pleased to see the results of this report incorporated into the SEA, there are a few statements in the section that are misleading or could be misinterpreted.

We would like to emphasize that this report was prepared to start to identify marine areas of significance in NL in order to raise awareness and contribute to policy and planning discussions related to marine conservation and protection in NL. The areas were identified based on input from governments, First Nations, academics, non-governmental organizations and community members, as well as data from academic, government and community literature.

The statement in the draft SEA that CPAWS has no regulatory authority is unnecessary. There is no attempt in the report or elsewhere to claim any regulatory authority – this is clearly not our role as an NGO.

The statement that we do not propose protection boundaries is misleading. While this report does not propose protection boundaries, CPAWS frequently proposes boundaries for protected areas.

Amend the statement that we do not propose protection boundaries to be clear that this report does not propose specific boundaries for protected areas.

CPAWS – Dr. Evan Edinger

1. The report offers a thorough environmental background document for the region, which has been appropriately updated to include recent additions to our scientific knowledge of the area. For example, the section on corals (my expertise) references and maps recently published coral occurrences based on both scientific surveys and interviews with local fishermen. While minor spelling errors were found in the section on corals, the basic scientific content was correct and fairly complete. One item the report could have highlighted more is the importance of benthic structure-forming biota (such as sea pens) for fisheries. Similarly, the summaries of bedrock and surficial geology, oceanography, climate, fishery species, sensitive habitats, EBSA's etc. appear to be both correct and fairly complete.
2. The report includes maps showing the locations of existing terrestrial and existing and proposed marine protected areas in the region, as well as important bird areas (IBA's) and marine mammal and marine reptile sightings. The report should mention areas that are recommended for protection in the provinces draft terrestrial natural areas system plan, although this plan has not yet been publicly released by the government.
3. The report emphasizes the importance of natural hydrocarbon seeps to total flux of hydrocarbons to the marine environment. While these seeps may be locally important, as the report points out, and may even be used as exploration guides (as the report also points out), they cannot readily be compared to catastrophic oil spills (or chronic sea-surface oil sources such as ship-based bilge oil) on land or at sea, because they are longstanding components of the local environment to which biota will have already reacted ecologically or biogeographically. The emphasis in the report on the nature and distribution of catastrophic and chronic anthropogenic releases of hydrocarbons is much more useful. In particular, the catalog of the number and volume of different spills in the NL region is useful as a guide to the frequency and intensity of spills the Western Newfoundland region will likely experience should additional exploration and production drilling occur in the region.
4. The report includes a thorough analysis of the marine fishing activities in the region, including both aggregate landings and total landed value. These economic values are indicated in the summary report.
5. The report a summary of tourism activities, especially marine and coastal tourism, in the region, and a general statement of the high economic value associated with tourism in the region. This economic value is not mentioned in the summary report. It might improve the full report to more fully document the economic value of coastal and marine tourism activities in the region. The economic value of nature-based tourism in the region is important to emphasize as an economic activity that could be negatively affected by offshore oil and gas development and the associated onshore activities, whether or not an accidental spill occurs.

6. In considering the potential environmental impacts of offshore oil and gas exploration and production in the region, the report considers both the planned activities and the possibility of accidental spills. The report mentions the potential for increased vehicular traffic associated with onshore drilling sites that could be used to access offshore petroleum resources via directional drilling and hydraulic fracturing. This increase in vehicular traffic is a known and immediate potential impact of exploration on protected areas and wilderness values in the region. Such impacts are of great concern to CPAWS for protecting the ecological integrity of existing and recommended parks and wilderness areas, especially Gros Morne National Park, the parks around the Port-au-Port peninsula, Codroy Valley and Codroy estuary, and area surrounding Humber Arm.

7. Other potential auxiliary impacts of offshore oil and gas development not related to accidental spills or gas flaring should be considered, in addition to vehicular traffic. A particular concern is integrity of existing groundwater supplies if hydraulic fracturing is used. The report maps municipal groundwater wells in the region, and describes the importance of groundwater to domestic water supplies.

Concerned Citizens of Bonne Bay South

The geology of western Newfoundland is not that of the Bakken in Saskatchewan. A quick examination of the geology of western Newfoundland reveals that they are Paleozoic sediments dominated by limestones and shales that were affected by the Taconic orogeny. In some places these sediments were transported during the Taconic. Because of this event the sediments are broken by vertical and subvertical faulting with surface expression, some faults are major, others less so. As well the body of sediments of interest are cut by sub-horizontal thrust faults of the Taconic orogeny. The GSC and the NL Dept. of Geology has mapped faults cutting through these sediments being exposed either on land or off shore under a shallow marine cover (less than = 60 m)¹.

The paleozoic sediments seen on shore as well as inland range from vertical to steeply inclined to folded to gently tilted beds, often bounded and offset by faults, most of them tending NW-SE in direction. Near Sally's Cove, at the Green Point International Geological Stratotype site the beds are overturned. In the northern part of the area, north of the Bay of Islands, the body of paleozoic sediments were transported during the Taconic and sometimes are only found floating within a chaotic melange of sediments above it and below it. Faults bound these bodies and cut through them.

Mapping is weak offshore, but one can only assume that these faults, vertical and folded sediments, melanges and other breaks in the sediments continue offshore, under the waters of the Gulf of St. Lawrence. In the Gulf itself strong NE-SW trending faults are found running parallel. Some geologists believe these are failed rifting event faults and that their expression descends into the crystalline basement.

The GSC¹ has mapped vertical and subvertical faults on a transect ending at the Port au Port (figure 4.2, Bell and Howie). They mapped a subvertical fault cutting the Green Point Shales extending from ~ 3 km to a surface expression. Off shore they have mapped vertical faults from the basement to the top of the sediments. These major vertical faults have only a thin

sand/gravel/mud veneer of cover over them. Further north GSC Map MR 54 have faults mapped in the sediments near Sally's Cove.

GSC MR-54 indicates a slump of 1 billion cubic meters of unsupported rock at the mouth of Bonne Bay, located about equidistant between the Sally's Cove and Trout River proposed drill targets. Earthquakes have been known to be triggered by hydraulic fracturing.

Of major concern is the negligible to thin veneer of sands and gravel that cover the bedrock in the Gulf of St. Lawrence. Glaciation removed cover material near shore and left behind either bare rock or thin sands and gravels near shore. This is not a material that would protect the waters of the Gulf of St. Lawrence from the possibility of fluids leaking up structures due to high pressure fracturing of the paleozoic sediments.

Glaciation formed the landscape of western Newfoundland, and in doing that removed the sedimentary cover. There is only the thinnest veneer of cover seen on land in western Newfoundland, a mix of glacial sands, tills, gravels and clays. Offshore, within the first 20 km at the Port au Port Bell and Howie map negligible cover, and the next 40 km there is less than 40 m of cover. The Geology of Canada, no. 2, maps the near shore sediment as sands and gravels. In the case of a leak due to hydraulic fracturing there is either no or very little cover to hold in leaking fluids that have risen vertically, and the ones that are there are very porous.

We worry that the local strongly overturned, subvertical bedding, folded bedding, and sedimentary beds that have faulting can cause leakage of hydraulically fractured oils, gases and fracking fluids into the Gulf of St. Lawrence, when the fracking is being done under the Gulf, and into local aquifers when it is being done on land. Because of this we have extremely concerns about the long term health of the pristine Gulf of St. Lawrence.

The whole Gulf, not just the area of immediate to the SEA area, represents a 1.2 billion dollar annual Gulf fishery covering the waters of five provinces. For all intensive purposes the waters of the Gulf are more like an inland sea, with currents flowing north from the Port au Basque area towards St. Barbs, turning southwest and following the coast of Quebec down towards the mouth of the St Lawrence River, were for all intensive purposes a good amount of the current swings north again towards Newfoundland. A spill or leak in the Gulf would recirculate and recirculate over the years, affecting all of the Gulf and impacting all of its cold water fishery. The experiment of a cold water oil spill on a pristine northern fishery has been run, and is still running in Alaska's Gulf of Valdez. The fishery has not returned from its famous spill decades ago.

Faulting and porous beds of sediments coupled with well failure represent a danger not only to the off-shore Gulf waters but to the on shore ground and surface waters of Newfoundland.

Besides the inherent weaknesses in the geology of western Newfoundland due to folding and faulting there is the issue of well leakage.

The gas industry itself show that about 6 percent of cement jobs in wells fail immediately upon installation, and recent experience in the Pennsylvania Marcellus shale has borne this out over

and over again. Pennsylvania's Department of Environmental Protection has found 6.2 percent of new gas wells were leaking in 2010, 6.2 percent in 2011 and 7.2 percent so far in 2012. In a report entitled "Well Integrity Failure Presentation," drilling service company Archer reports that nearly 20 percent of all oil and gas wells are leaking worldwide. A 2003 joint industry publication from Schlumberger, the world's No. 1 fracking company, and oil and gas giant ConocoPhillips, cites astronomical failure rates of 60 percent over a 30-year span.

When the cement fails, it opens a pathway for gas and other toxins involved in the drilling and fracking process to migrate into groundwater and to the surface, here, being the Gulf of St. Lawrence, a rich ecosystem that is source of many marine species that drive a 1.2 billion dollar annually fishery.

In our research we have looked for communities in the Marcellus with a hydraulic fracturing programs underway where there have been no contamination of ground water due to drilling and fracking and, among the hundreds of them, could not find one that didn't have (in many cases a significant) groundwater contamination problem resulting from drilling and fracking. Contamination due to well failure and leakage render homes and communities unfit for residential and agricultural use. What about failures in the Gulf? Unlike land, a current will keep moving the leaking fluids through the gulf, not only contaminating the immediate area, but that of the whole gulf, affecting the fisheries of five provinces.

A question to be addressed too, is who is responsible for the well after the firm shuts shop? Failure rates rise for old well. Is there a well 80 years old that has not failed. Who pays for the clean up and addressing the wide ranging environmental and health issues that rise from the abandonment of the wells?

Insurers will not insure houses in places where fracking contamination has occurred. Add that to the health issues who would want to live in western NL then? Who would want to visit?

The Colorado School of Public Health found a likelihood of moderate to severe health affects from drilling and fracking to residents living in the immediate area due to both water and air contamination. More than 75 % of the chemicals used for fracking have long term health affects and many of them are not immediately expressed (2). VOCs are another area of concern that can adversely affect human and animal populations as a result of drilling and fracking operations (2).

The impacts of leaking wells, leaking fracking fluids in fractured rock and up faults and strata would effect the fishery, agriculture, tourism and other industries in the region of western Newfoundland adversely.

The Gulf in Newfoundland waters is an important spawning ground for marine life, as well as being excellent fishing grounds. It is important too in regards to marine life and the fishery that all of the Newfoundland part of the Gulf could be labeled as important or sensitive.

- Huge sectors of importance for marine mammals (sect. 5.3.3.2)
- Sectors unique and essential for cod, redfish, plaice (spawning, juveniles, migration) (sect. 4.2.1.7)

- Unique winter refuges for herring and capelin (sect. 4.2.1.7)
- Important sites for lobster, krill, etc. (sect. 4.2.1.8)
- West Coast Atlas of sensitive zones show that the vast majority of the Newfoundland West Coast could be qualified as sensitive (sect. 4.2.1.1).

Unfortunately, no synthesis map of all the sensitive or biologically important zones is presented in the report. Such a map would have helped us realize that nearly all of the Western Newfoundland coast could be qualified as important or sensitive.

Tourism is a major industry to western Newfoundland, bringing \$129 million dollars annually to the communities from Port au Basque to St. Anthony. Hydraulic fracturing could adversely impact that.

In the SEA to be commented on Woody Point was listed as receiving only 1 cruise ship in 2012 when it in actuality it received 5 cruise ships over the season starting in June and running until October, with one visiting twice. All of these cruise ships offloaded visitors into the communities. In 2013 there were 6 cruise ships that off loaded, according the the Town communities. In 2013 there were 6 cruise ships that off loaded, according the the Town of Woody Point more than 1700 visitors. The ships came in between July and September, and unlike the SEA of AMEC did not only arrive in September. In 2012 and 2013 Woody Point also had cruise ship visitors who came to Bonne Bay south from the Cruise ships that tied up in Corner Brook. The community is already expecting 5 ships to land in Woody Point for 2014, over the course of the full summer.

Another element of the SEA by AMEC is the question of how well it expresses the concerns of the populations that were consulted. There is much worry and concern in the region. People understand that their livelihoods depend upon the pristine waters, air and land of the Gulf weather their work is in the fishery, tourism or forestry. Oil development can severely impact all of the above industries.

Oil exploration and hydraulic fracturing in the western Newfoundland waters and on shore can adversely affect all the rich marine waters of the Gulf, adversely impact a pristine ecosystem, and impact the a source of life and work for thousands of people in hundreds of communities along the shores of the Gulf of St. Lawrence in five provinces.

With this we wish to thank you and be aware there are serious concerns with both conventional oil exploration and hydraulic fracking for oil.

Sierra Club Atlantic

The draft report gives little concrete information on the critical importance of the tourism industry to this region, and the threat that oil and gas exploration and development represents to this industry. The value of fisheries in the region is identified in a more complete way, but the threat to fisheries is minimized. We recommend that the report be improved by including a complete assessment of the value of tourism and a more realistic evaluation of threats to fishing and tourism industries be performed.

Gros Morne Coastal Alliance

Onshore to Offshore Drilling and Fracking

Knowing that a number of proposals are for onshore to offshore drilling, for the SEA to fail to acknowledge the potential for onshore spills (during drilling as well as during transport and waste disposal) is incomplete.

2

We commend that hydraulic fracturing was included in the draft SEA (3.2.4). However, the report states that fracking has been conducted since the 1950s. It is misleading to not clarify this statement. For example:

- It should also be noted that the earliest stimulation was done on conventional wells (vertical, in porous reservoir rock, extending only a few feet from the borehole).¹
- The high-volume (or massive) slick-water fracturing of low-permeability shales that we speak of today arose recently, after several decades of low-volume hydraulic fracturing of permeable reservoir rocks.
- Horizontal wells were unusual until the 1980s.²
- It was as recently as 1996 that slick-water fracturing treatments, which involve adding chemicals to water, were introduced.³
- Fracking is still an emerging and changing technology, for example the length of horizontal wells and the number of wells per wellpad continues to increase. Also experimentation with fracking fluids based on propane or saltwater, as concern mounts about the massive consumption of freshwater used in the process.

The SEA omits that it is the recent combination of high-pressure fracking, directional drilling, and slick-water hydraulic treatments to release shale oil and gas from tight source rocks that has become controversial across North America, Europe, Australia and parts of Africa.

Geology - p. 98, section 4.1.1.2, 2nd paragraph. “The Humber Zone is part of a large **autochthonous** ...” should read “*allochthonous*”.

A few omissions: figure 4.108 Fishing locations by season - lobster (2011) – the fishing locations for April to June for the West Coast are incomplete. This entire coast has an active lobster fishery. In addition this coast has a spring fishery for herring and summer fishery for mackerel.

Importance of tourism

Tourism, which is worth \$1 billion annually in the province, \$229 million in Western Newfoundland and in Gros Morne alone is worth \$37 million annually, appears in a list of

¹ A.J.Stark,A.Settari,J.R.Jones,Analysis of Hydraulic Fracturing of High Permeability Gas Wells to Reduce Non-darcy Skin Effects, Petroleum Society of Canada, Annual Technical Meeting, Jun 8 -10, 1998, Calgary, Alberta.

² Robbins K. (2013). Awakening the Slumbering Giant: How Horizontal Drilling Technology Brought the Endangered Species Act to Bear on Hydraulic Fracturing. *Case Western Reserve Law Review*.

³ The Breakthrough Institute. Interview with Dan Steward, former Mitchell Energy Vice President. December 2011

activities AFTER military activities! While the SEA quotes all the pertinent figures (p. 377-381), this ordering of tourism at the very bottom of a list before “Others” tends to down-play the importance of an industry that rivals the fishery in economic value. (According to figures in the SEA, fisheries landed value for the province totaled nearly \$570 million in 2011, and for NAFO areas 4Rb, 4Rc and 4Rd of the West Coast, \$39.3 million).

Similar to the many different fisheries, the tourism industry is seasonal and employs over 19,000 people⁴. The peak of the tourism business occurs during a 4 month period, but the tourism “industry” operates year-round. There is cruise tourism, convention tourism, hunting tourism, winter tourism, culinary tourism, nature tourism, adventure tourism, festival tourism, visiting friends and family tourism, etc., and operators may specialize or diversify, just as fishermen do.

Responsible Energy Action

Despite the fact that numerous environmental mitigation measures are presented in Chapter 5 of the report, it is clearly stated that the effectiveness of particular proposed mitigation measures is not known (p. 427).

Save Our Sea and Shores Coalition

The other fatal weakness of this assessment is that it does not acknowledge or address ocean acidification and hypoxia in the Gulf of St. Lawrence, or deal with how fragile the Gulf’s productivity and health are at this point in time.

According to DFO’s *State of the Oceans* reports (2010 and 2012), in the Gulf of St. Lawrence: “Recent and historical data reveal that hypoxia is progressively worsening in the deep waters of the Gulf of St. Lawrence, especially at the heads of the Laurentian, Anticosti and Esquiman channels. The lowest levels of dissolved oxygen were recorded in the Laurentian Channel, where measurements have routinely been in the range of 20% saturation since the mid-1980s.”

What is Hypoxia?

“Around the world, marine hypoxia — a shortage of dissolved oxygen — is a growing problem that can have dramatic impacts on marine life and ecosystems. A decline in oxygen in seawater is now recognized as one of the likely consequences of global warming, because warmer water does not hold as much oxygen...”

According to DFO’s *Impacts of Emerging Climate Issues*:

“Low oxygen (hypoxia) has dramatic impacts on aquatic ecosystems, and the tolerance of marine fish and invertebrates to this condition is highly species dependent. At oxygen levels below 30 percent saturation, cod and other species that are intolerant of hypoxia either migrate to other geographic regions or die. Deoxygenation is now recognized as one of the likely consequences of climate change. The long term observations analyzed by DFO scientists have provided insight

⁴ <http://hnl.ca/resources/research/#reports>

into climate change over the decades and the growing knowledge and awareness of hypoxia (dead zones) in Canadian waters”.

We conclude that hypoxia has reduced the resilience of the Gulf and its inhabitants, compromising the ability of the ecosystem to cope with further degradation such as seismic blasting, chronic pollution from offshore rigs, and related marine traffic.

What is Ocean Acidification?

According to DFO's *Impacts of Emerging Climate Issues*:

“The earth's oceans are vast carbon sinks. In the 200 years since the industrial revolution began, the oceans have absorbed about 30% of the carbon dioxide (CO₂) released by the burning of fossil fuels. But this climatic benefit has come at a cost. Carbon dioxide dissolves in the surface water and forms carbonic acid, lowering the pH of ocean waters. The more CO₂ the ocean absorbs, the more acidic they will become. **There are serious concerns about the ability of marine ecosystems to adapt to acidification.** Organisms that form calcium carbonate skeletons and shells, such as coccolithophores and pteropods (food source for salmon), will be greatly limited in their ability to form their outer protective shells since a decline in pH decreases the saturation state of CaCO₃. **Commercial species such as lobster and shellfish are also vulnerable to this impact.**”

According to DFO's *State of the Oceans* report:

“**Ocean acidification is a global threat with potential impacts on marine food webs, ecosystem productivity, commercial fisheries and global food security.** This threat has prompted the international scientific community, including Fisheries and Oceans Canada, to investigate the implications of this significant international governance issue.

Each year, about one third of the carbon dioxide (CO₂) in fossil fuel emissions dissolves in ocean surface waters, forming carbonic acid and increasing ocean acidity. Over the next century or so, acidification will be intensified near the surface where much of the marine life that humans depend upon live.

The ocean surface is becoming more acidic with increasing atmospheric CO₂, and acidity has increased by about 30% since the beginning of the industrial revolution. Estimates of future carbon dioxide levels, based on "business as usual" CO₂ emission scenarios, indicate that by the end of this century, the surface waters of the ocean could be nearly 150% more acidic, resulting in a pH (a measure of acidity) that the oceans haven't experienced for more than 20-million years and raising serious concerns about the ability of marine organisms to adapt. This scenario is based on information provided by the **U.S. National Oceanic and Atmospheric Administration** (NOAA).

Monitoring ocean acidification and assessing its potential impacts are essential to the development of an ecosystem approach to managing the marine resources that are likely to be affected by this global threat.”

While ocean acidity levels are increasing by 30% globally, DFO estimates that ocean acidity levels have increased by 50 – 90% in the Gulf of St. Lawrence. There is scant knowledge about how reduced oxygen and increasing acidity interact with increased loading of

petroleum products and other persistent organic pollutants. Additionally, ultraviolet light, which enhances the toxicity of pollutants in the marine environment, has increased owing to the depletion of atmospheric ozone in recent decades, and it is clear that the Gulf requires protection from any further assault. Rather, its vulnerability calls for immediate restorative action.

Agence Mamu Innu Kaikusseht

See Attachment 2

Mi'kmaq Maliseet Aboriginal Fisheries Management Association (MMAFMA)

See Attachment 3

Magdalen Islands ZIP Committee

The report also appears to contain some misinformation with regard to the types of fish present in the Gulf. Page 12 of the summary report mentions red drum fish, a Caribbean species which, to our knowledge, is not found in the Gulf of St. Lawrence. In addition, the bottom of page 12 is incomprehensible. Little information is available on the importance of western Newfoundland in the migration corridors of commercial fish such as Greenland halibut.

Attachment 1
(Gros Morne Co-operating Association)

Attachment 2
(Agence Mamu Innu Kaikusseht)

Attachment 3
(Mikmaq Maliseet Aboriginal Fisheries Management Association
(MMAFMA))