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2013 Environmental Assessment Update Hibernia Drill Centres Construction and Operations Program

Prepared for:

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Revised Final Report

File No. 121511159

Date: July 31, 2013

Table of Contents

LIST OF APPENDICES

LIST OF FIGURES

1.0 INTRODUCTION

1.1 Background

This is an environmental assessment update for construction and operation activities proposed for 2013 and is intended to reflect an update to Sections 2.1.2 (drilling), 2.1.3 (vertical seismic profile (VSP)) and 2.1.4 (subsea equipment installation) of the Hibernia Drill Centres Construction and Operations Program, Hibernia Management and Development Company (HMDC) (Jacques Whitford 2009; Stantec 2011) (CEAR No. 08-01-42279). These activities were generally described in the Hibernia Drill Centres Construction and Operations Environmental Assessment (CEAR No. 08-01-42279).

In addition to updating the project description and verifying that the scope and assessment predictions of the Hibernia Drill Centres Construction and Operations Program Environmental Assessment are still accurate and valid, the information on the Valued Environmental Components (VECs) commercial fisheries and species at risk has also been updated (information current to May 24, 2013).

1.2 2013 Activities and Year Assessed

The following proposed 2013 activities for the Hibernia offshore drilling and production facility were previously assessed in the 2009 environmental assessment or the original 1985 Environmental Impact Assessment:

- Mobilization of the Mobile Offshore Drilling Unit (MODU) to the offshore excavated drill centre (EDC) location (assessed in 2009)
- Deployment of MODU anchors and anchor chains (assessed in 2009)
- Drilling from the Hibernia platform and MODU (and associated releases to sea) (assessed in 2009)
- Running a VSP during MODU drilling (assessed in 2009)
- Installation / placement of subsea equipment (assessed in 2009)
- Installation of rock berm and concrete mattressing (assessed in 2009)
- Hibernia Platform operations installations associated with the 2013 Hibernia Southern Extension (HSE) activities (assessed in 2009)
- 4D Seismic Survey (separate environmental assessment completed (LGL 2013)).

All activities will be conducted within the original project area (see Figure 1-1).

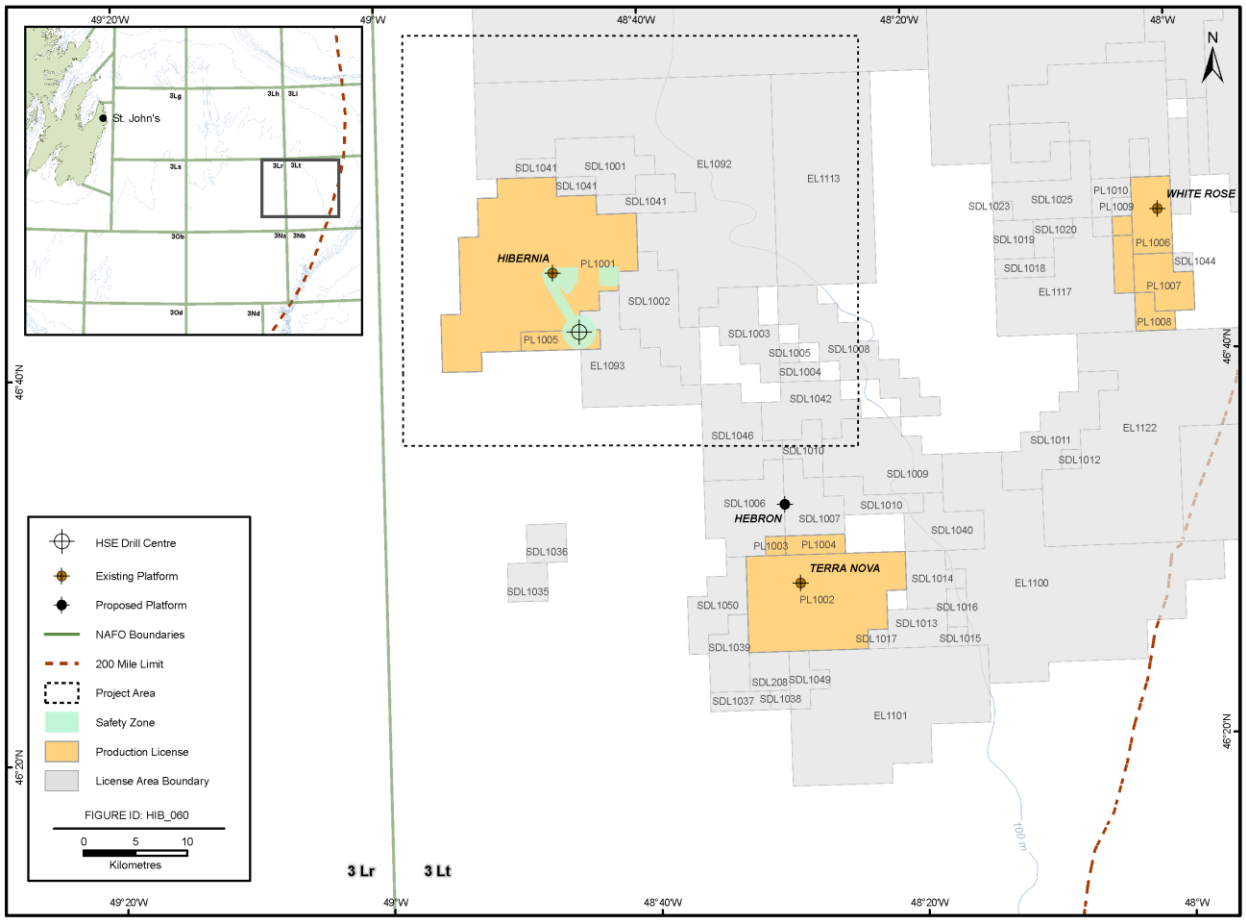

Figure 1-1 2013 Activities Project Area

Drilling from the Hibernia platform is a continuous activity. Beginning in late 2013 (October or November), Hibernia will start drilling four to six water injectors in the HSE Excavated Drill Centre (EDC). These wells will be drilled consecutively with Seadrill's *West Aquarius* harsh environment semi-submersible (MODU). The drilling of these wells will involve running eight anchors, with associated chain, on the seabed (Fall 2013). First well be be spud around mid-October. Drill cuttings will be processed through a cuttings dryer system to reduce Synthetic Oil Cuttings (SOCs) to within dischargeable limits. All other effluents and waste from the *West Aquarius* will be managed as per the Hibernia Environmental Protection Plan. MI Swaco, the existing HMDC drill fluids supplier, will also supply fluids for the MODU drilling program therefore few changes are expected. MODU-related activities, including drilling (and associated releases to sea) and anchors and anchor chains were previously assessed in the 2009 environmental assessment.

SeismicVISION, Schlumberger's seismic-while-drilling service, acquires time-depth-velocity information in real time without disrupting drilling operations. The real-time waveform resolution and sufficient length allows look-ahead VSP processing. Continuous transmission of data allows quality control, update of the target locations, and process look-ahead VSPs while drilling. The system consists of a 3.5 m downhole receiver and dual surface air guns coordinated through

accurate synchronized clocks. Data are acquired either at connections during drilling operations or while tripping out of hole over both open and cased hole sections. VSP may be done during late 2013, but probably will not be completed until early 2014. VSP was previously assessed in the 2009 environmental assessment.

The installation / placement of subsea equipment will occur in the HSE EDC in August / September 2013 using the *Deep Pioneer* installation vessel. A subsea flowline (i.e., pipeline), an umbilical and a high pressure stimulation line will be installed from the HSE EDC back to the Hibernia Platform. This infield installation work will require approximately 45 in-field and operational days. No divers will be required for the 2013 work. A remotely operated vehicle (ROV) will be used to support the subsea installation work. In addition both a multi-beam echo sounder (MBES) and side scan sonar will be used for inspecting and mapping the flowlines and rock berm. These installation activities were previously assessed in the 2009 environmental assessment.

A rock berm will also be placed over the umbilical and pipeline/flowline for stability. The rock berm has also been approved as fish habitat compensation (DFO 2012). Rock berm installation/concrete mattressing will occur along the flowline/pipeline from the HSE EDC to the Hibernia Platform in August / September 2013. The *MV Flintstone*, a dynamically-positioned fall pipe vessel will be used to install the rock. The project anticipates that it will take approximately 28 days (seven round trips; four days / trip) to place approximately 130,000 tons of rock material over the installed subsea umbilical and flowline. An ROV, MBES and side scan sonar will be used by the *Flintstone* to confirm integrity of the pipeline / flowline and proper placement of rock cover. Rock berm construction was previously assessed in the 2009 environmental assessment. Utilization of MBES and side scan sonar were covered off as geohazard and engineering geophysical surveys of wellsite and EDC in the 2009 Environmental Assessment, generally assessed for pipeline/flowline in 2009 Environmental Assessment, and specifically assessed for pipelines in the 2010 Environmental Update.

Hibernia Platform operations associated with the HSE installation and construction activity include:

- Winch and sheave installation
- Pull in of water injection
- Pull in of umbilical
- Pressure testing
- Pressure monitoring
- Installation of hang-off clamps
- Installation of topsides umbilical termination assembly.

The above activities were previously assessed in the 2009 environmental assessment. In addition, as part of the 2013 flowline installation and pressure testing activities, HMDC sought and obtained an amendment to Hibernia Operations Authorization No. 22020-020-OA02 for Hibernia Southern Extension (HSE) flowline installation discharges. Both the HMDC Operations Authorization and the Environmental Protection Plan under this Operations Authorization were

amended to include the use and subsequent discharge of seawater treated with of corrosion inhibitor, X-Cide 450 bactericide and fluorescein dye to treat seawater (Letter from Scott Tessier to Jamie Long dated July 23, 2013).

The 4D Seismic Monitoring Survey has been assessed under a separate environmental assessment (LGL 2013).

1.3 Consultation

HMDC met with the Fish, Food and Allied Workers (FFAW) Petroleum Industry Liaison, offshore fishers and One Ocean on March 28, 2013 to provide an overview of the 2013 activities and to discuss any questions or concerns that these organizations may have with the upcoming programs.

The attendees did not express any concerns with the project area and activities proposed for 2013. The key topic of the Hibernia presentation was the new Safety Zone illustrated around the pipeline from the HSE EDC to the Hibernia Platform and how that having that type of information digitally would be very useful to fishers transiting the area. Hibernia indicated that there would be a large closest point of approach (CPA) around Hibernia during the critical period of pulling the pipelines into the J-tubes on the Hibernia GBS that would apply to all vessels and helicopters. The only other point of discussion was a query about drilling at the HSE EDC.

HMDC has notified seafood processors (Groundfish Enterprise Allocation Council, Association of Seafood Producers, Clearwater Seafoods, Ocean Choice International and Icewater Seafoods) of the survey start and completion dates. No comments or concerns have been expressed to date.

1.4 Mitigations

These activities were previously assessed under the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009). Mitigation measures proposed in the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009) to reduce the potential for adverse environmental effects remain unchanged. Mitigation measures for the 4D seismic surveys are also provided in LGL (2013).

2.0 BIOLOGICAL ENVIRONMENT UPDATES

As noted in Section 1.0, in addition to updates to Section 2.1.3 of the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009), the commercial fisheries and species at risk information has been updated to reflect the most current information (as of May 24, 2013). These updates are contained within Appendices A and B, respectively.

2.1 Commercial Fisheries

Fisheries activities within the Study Area identified in Hibernia Drill Centres Construction and Operations Program, Hibernia Management and Development Company (HMDC) (Jacques Whitford 2009) are little changed since the environmental assessment report was accepted in 2009. The key fishery for the Northwest Atlantic Fisheries Organization (NAFO) Unit area 3Lt remains snow crab (*Chioocetes opilio*). However, it should be noted that for 2011, there were no snow crab or northern shrimp catches from within the identified Project Area (see Figures 2.1, A.1 and A.2). Fisheries activities within the Study Area were reported and graphically depicted for 2005 to 2007 in the original environmental assessment (Jacques Whitford 2009) and graphically depicted 2008 to 2011 in the 2011 Update (Stantec 2011).

DFO Ottawa Statistical Division has a policy that prohibits the wholesale release of fisheries data in order to maintain privacy of individuals that could potentially be identified through detailed microdata. Spatial data are released at an aggregated 1/10th degree cell level only. No absolute values of weight and value are provided; the actual weight and value of a catch within each box are provided as a range

Therefore, the figures for 2011 data for snow crab and northern shrimp (see Figures A-1 and A-2; Appendix A) illustrate an average percentage of the weight percentage data provided by DFO. The weight percent for a specific cell has been summed and divided by the number of months that specific cell was fished (*i.e.*, when the cell was fished, x% of species A was caught in the boundaries).

Commercial fisheries data for 2012 for NAFO Division 3L from 2012 was requested from DFO, but validated data are not available at this time.

The 2012 post-season crab survey ran from August 29 to November 17. The 2013 post-season crab survey will collect samples from the same locations as the 2012 survey. As far as the DFO scientists are aware, the timing will also be similar to last year (D. Power, pers. comm.).

2.2 Species at Risk Updates

Since the submission of the environmental assessment for the Hibernia Drill Centres Construction and Operations Program (Jacques Whitford 2009) and the 2011 update (Stantec 2011), there have been seven additions or changes to the list of species included under the *Species at Risk Act* (SARA) or assessed as at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (SARA 2012).

Of the species previsouly described in either Jacques Whitford 2009 or Stantec 2011, the following have had a designation change:

- the white shark (*Carcharodon carcharias*) has been included under Schedule 1 of SARA (formerly no status under SARA);
- Sowerby's beaked whale has been included under Schedule 1 of SARA (formerly on Schedule 3);

- American eel (*Anguilla rostrata*) was upgraded to threatened status under COSEWIC (formerly special concern) due to continuing declines in abundance and degradation of habitat;
- Cusk (*Brosme brosme*) was upgraded to endangered status under COSEWIC (formerly threatened) due to continuing declines in abundance and degradation of habitat.

The following species were not previously described in either Jacques Whitford (2009) or Stantec (2011):

- COSEWIC assessed spiny dogfish (*Squalus acanthias*) as a species of special concern;
- COSEWIC assessed smooth skate (*Malacoraja senta*) (Funk Island Deep population) as endangered; and
- COSEWIC assessed thorny skate (*Amblyraja radiata*) as a species of special concern (this species was included in the original environmental assessment (Jacques Whitford 2009), but was discussed under the fish and fish habitat chapter, not species at risk).

None of these three species have status under SARA.

Updates to Section 4.5 of the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009) and 2011 Environmental Assessment Review Hibernia Drill Centres Construction and Operations Program (Stantec 2011) are provided in Appendix B.

None of the new/updated SARA/COSEWIC species have final recovery strategies, action plans or associated critical habitat identified. None of the recovery or action plans that are available for the SARA species affect the mitigation measures committed to by HMDC in Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009).

3.0 ENVIRONMENTAL EFFECTS ASSESSMENT

The environmental effects predictions and significance determinations cited in Jacques Whitford (2009) are valid for the planned 2013 and beyond project activities. The mitigations for the activities planned to be carried out under the scope assessed in the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009) are still appropriate and HMDC reaffirms its commitment to the mitigation measures cited in the assessment and the associated Screening Report (C-NLOPB 2009). Those activities related to 4D seismic activities are being assessed under a separate environmental assessment (LGL 2013).

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Johnson, N., Statistical Analyst, Statistical Services, DFO, Ottawa, ON.

Power, D., Project Manager/Programmer, DFO, St. John's, NL.

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APPENDIX A

Commercial Fisheries

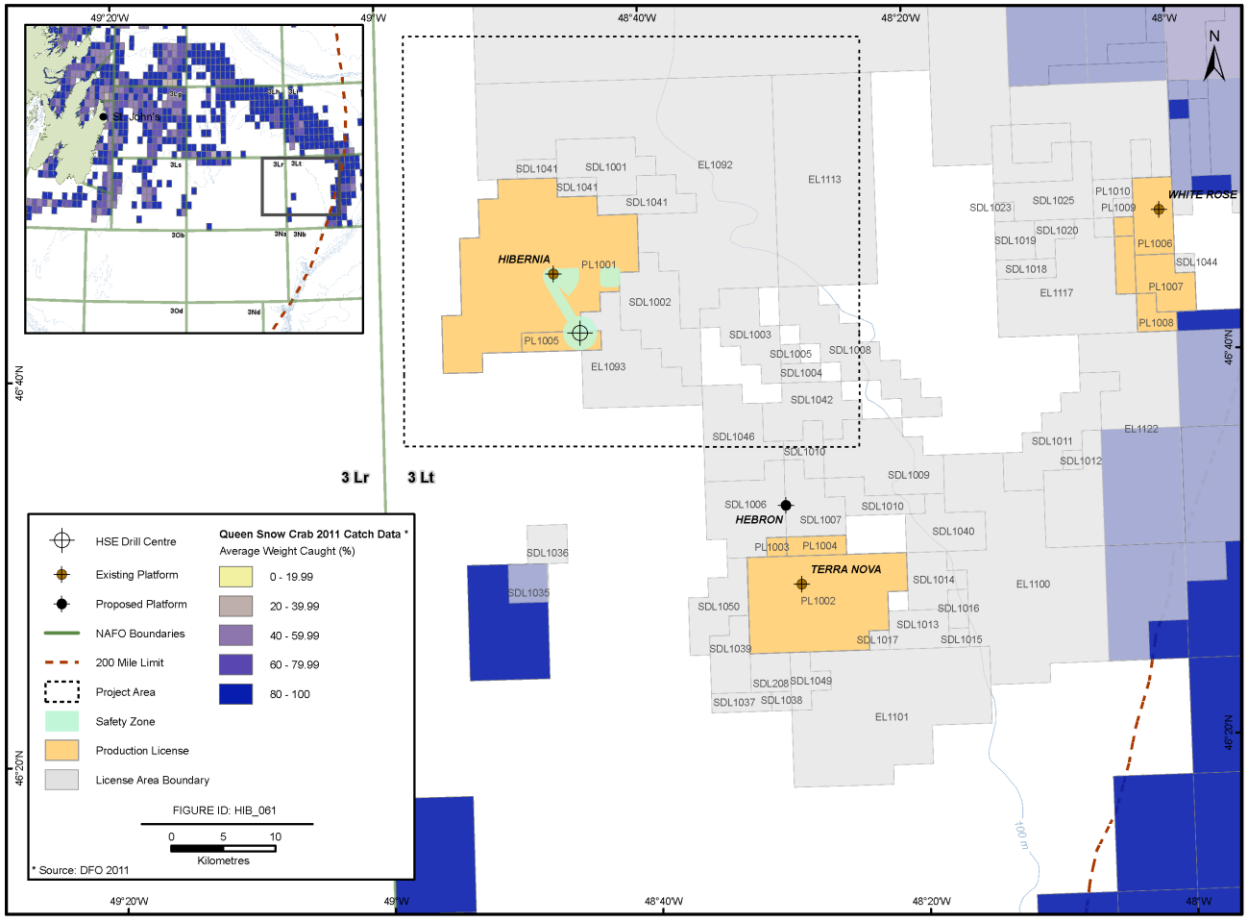

Figure A.1 Snow Crab Harvesting Locations (2011)

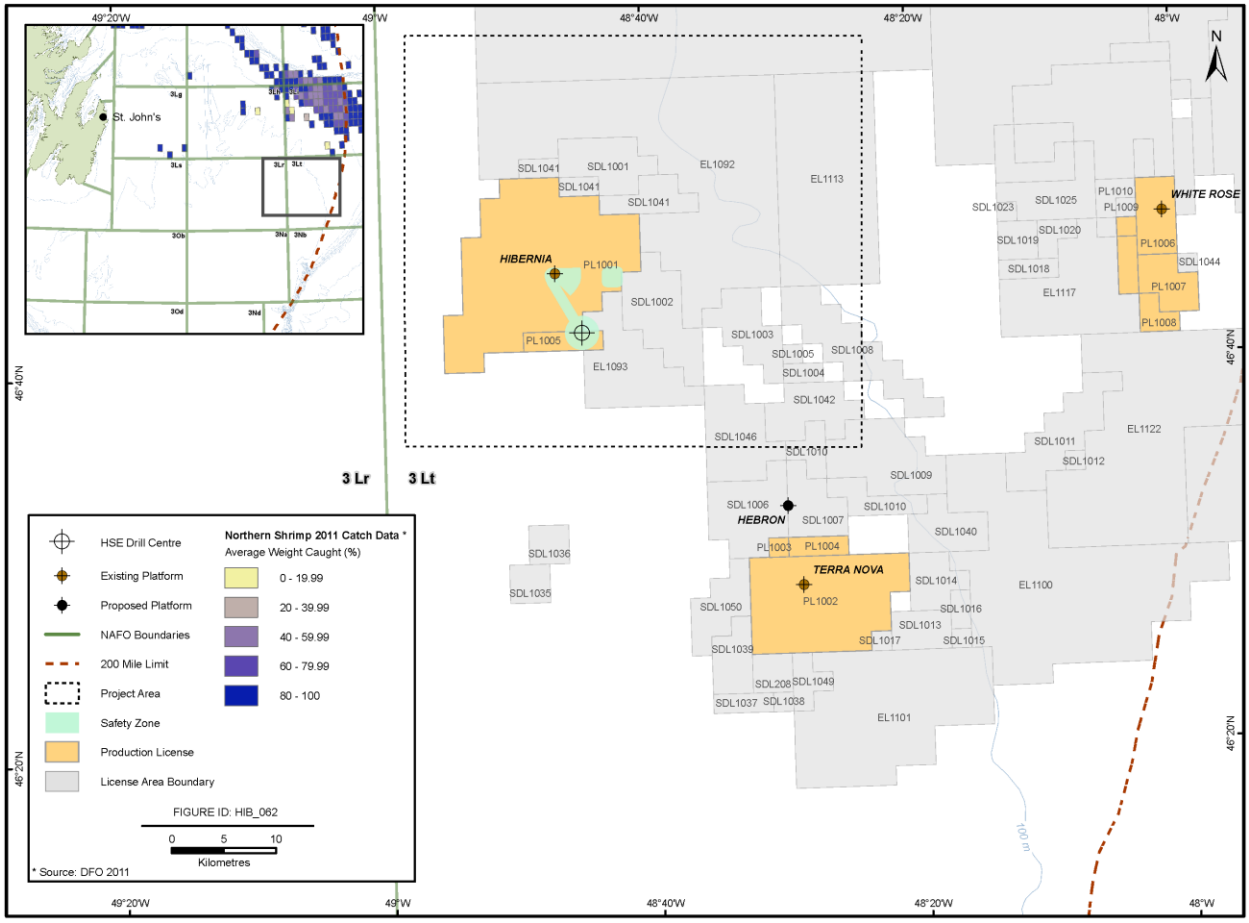

Figure A.2 Northern Shrimp Harvesting Locations (2011)

APPENDIX B

Species at Risk

B Species at Risk

The following information is provided as an update to Section 4.5 of the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009) and Appendix B of 2011 Environmental Assessment Review Hibernia Drill Centres Construction and Operations Program (Stantec 2011). The information contained within this section is current as of May 24, 2013. Table B.1 is an updated Table B.1 from Stantec 2011 and has three species added to the list and four species that have had a change to their SARA status or COSEWIC designation. A brief description of each of the **added** species **not** previously described in Jacques Whitford (2009) or Stantec (2011) is provided after Table B.1 (note that thorny skate were included in the original environmental assessment (Jacques Whitford 2009), but was discussed under the fish and fish habitat chapter, not species at risk).

Table B.1 Occurrence of Species at Risk within the Study Area

SPECIES		SARA Status	COSEWIC Status	Occurrence in the Study Area
Common Name	**Scientific Name**			
Birds				
Ivory Gull	*Pagophila eburnea*	Schedule 1 – Special Concern	Endangered	May occur but area is not known to be critical habitat for the species
Marine Mammals				
Blue Whale	*Balenoptera musculus*	Schedule 1 - Endangered	Endangered	Occurs but area is not known to be critical habitat for the species
North Atlantic Right Whale	*Eubalaena glacialis*	Schedule 1 - Endangered	Endangered	Occurs but area is not known to be critical habitat for the species
Fin Whale	*Balenoptera physalus*	Schedule 1 – Special Concern	Special Concern	Occurs but area is not known to be critical habitat for the species
Sowerby's Beaked Whale	*Mesoplodon bidens*	***Schedule 1*** – Special Concern	Special Concern	May occur in small numbers but area is not known to be critical habitat for the species
Killer Whale	*Orcinus orca*	No Schedule – No Status	Special Concern	May occur in small numbers but area is not known to be critical habitat for the species
Harbour Porpoise	*Phocoena phocoena*	Schedule 2 – Threatened	Special Concern	Occurs but area is not known to be critical habitat for the species
Northern Bottlenose Whale (Davis Strait-Baffin Bay-Labrador Sea pop)	*Hyperoodon ampullatus*	No Schedule – No Status	Special Concern	May occur in small numbers but area is not known to be critical habitat for the species
Fish				
Atlantic Cod (NL Pop)	*Gadus morhua*	No Schedule – No Status	Endangered	Occurs but area is not known to be critical habitat for the species
Atlantic Wolffish	*Anarhichas lupus*	Schedule 1 – Special Concern	Special Concern	Occurs but area is not known to be critical habitat for the species
American Plaice (NL Pop)	*Hippoglossoides platessoides*	No Schedule – No Status	Threatened	Occurs but area is not known to be critical habitat for the species
American Eel	*Anguilla rostrata*	No Schedule – No Status	***Threatened***	Occurs but area is not known to be critical habitat for the species
Blue Shark	*Prionace glauca*	No Schedule – No Status	Special Concern	Not likely to occur

SPECIES		SARA Status	COSEWIC Status	Occurrence in the Study Area
Common Name	**Scientific Name**			
Roughhead Grenadier	*Macrourus berglax*	No Schedule – No Status	Special Concern	Occurs but area is not known to be critical habitat for the species
Roundnose Grenadier	*Coryphaenoides rupestris*	No Schedule – No Status	Endangered	Occurs but area is not known to be critical habitat for the species
Basking Shark	*Cetorhinus maximus*	No Schedule – No Status	Special Concern	May occur in small numbers but area is not known to be critical habitat for the species
Northern Wolffish	*Anarhichas denticulatus*	Schedule 1 - Threatened	Threatened	Occurs but area is not known to be critical habitat for the species
Porbeagle Shark	*Lamna nasus*	No Schedule – No Status	Endangered	Occurs but area is not known to be critical habitat for the species
Shortfin Mako	*Isurus oxyrinchus*	No Schedule – No Status	Threatened	Not likely to occur
Spotted Wolffish	*Anarhichas minor*	Schedule 1 - Threatened	Threatened	Occurs but area is not known to be critical habitat for the species
Cusk	*Brosme brosme*	No Schedule – No Status	***Endangered***	Not likely to occur
White Shark	*Carcharodon carcharias*	***Schedule 1 - Endangered***	Endangered	Not likely to occur
Deepwater Redfish (northern population)	*Sebastes mentella*	No Schedule – No Status	Threatened	Occurs but area is not known to be critical habitat for the species
Acadian Redfish (Atlantic population)	*Sebastes fasciatus*	No Schedule – No Status	Threatened	May occur in small numbers but area is not known to be critical habitat for the species
Atlantic Salmon (South NL pop)	*Salmo salar*	No Schedule – No Status	Threatened	Not likely to occur
Atlantic Bluefin Tuna	*Thunnus thynnus*	No Schedule – No Status	Endangered	May occur in small numbers but area is not known to be critical habitat for the species
Smooth Skate (Funk Island Deep, NL population)	***Malacoraja senta***	**No Schedule – No Status**	**Endangered**	**Occurs but area is not known to be critical habitat for the species**
Thorny Skate	***Amblyraja radiata***	**No Schedule – No Status**	**Special Concern**	**Occurs but area is not known to be critical habitat for the species**
Spiny Dogfish	***Squalus acanthias***	**No Schedule – No Status**	**Special Concern**	**Occurs but area is not known to be critical habitat for the species**
Reptiles				
Leatherback Turtle	*Dermochelys coriacea*	Schedule 1 - Endangered	Endangered	Occurs but area is not known to be critical habitat for the species
Loggerhead Sea Turtle	*Caretta caretta*	No Schedule – No Status	Endangered	Occurs but area is not known to be critical habitat for the species
Update to Table B.1 (Stantec 2011) **Bolded** species are new to the table Changed status is ***bolded and italicized***				

Smooth Skate

Smooth skate is a small elasmobranch that occurs from the Labrador Shelf and Gulf of St. Lawrence as far south as South Carolina (Kulka et al. 1996, 2006; Simpson et al. 2012). Data from Atlantic Canadian waters indicate smooth skate occurs as several geographically distinct and persistent concentrations (Designatable Units) and is concentrated around Funk Island Deep, NL. This population was abundant until the early 1980s (NAFO Division 2J3K), but has shown steep declines since the 1990s (Simpson et al. 2012). Kulka et al. (1996) noted a southerly shift in distribution: it appeared to be more common on the southern Grand Bank during 1991 to 994 (collected during 1981 to 1994). This species occurs in 200 to 600 m water in the northern part of its range (NAFO Division 2HJ3K) and in shallower (50 to 500 m) in the southern part of its range (NAFO Division 3NOPs) and at 200 to 300 m in intermediate waters (NAFO Division 3LM (Simpson et al. 2011). McPhie and Campana (2009) reported length at 50 percent maturity was 10 years for females and 12 years for males.

Smooth skate (Funk Island Deep, NL population) was assessed by COSEWIC as endangered in May 2012 (COSEWIC website) due to steep declines in the abundance of juveniles and adults since the early 1980s (COSEWIC 2012). Mean catch rates for the Funk Island Deep Designatable Units peaked in 1978/1979 and then declined for both juveniles and adults until 1994. Catch rates remained consistently low but stable through to 2005. Slight increases have been observed since 2005 (Simpson et al. 2012); however, the overall abundance remains very low. Smooth skate will be considered for listing under SARA, but does not have any status at this time. It is vulnerable to increased mortality as it is long-lived, slow-growing and late maturing (Simpson et al. 2012). Smooth skate is taken as bycatch in other fisheries, although the amount of bycatch has been declining since the early 1980s (COSEWIC 2012). The period of decline also corresponds with the coldest water temperatures reported (Colbourne et al. 2006), and other factors may also be driving declines (Simpson et al. 2012).

Spiny Dogfish

The spiny dogfish (Atlantic population), was recently assessed as special concern by COSEWIC (2010), but is not yet listed under SARA. This small shark is widely distributed over the continental shelf of temperate and boreal regions, preferring waters 5°C to 15°C. The Atlantic population extends from Labrador to Cape Hatteras (TRAC 2010). The population remains relatively abundant in Canadian waters, and is most abundant in southwest Nova Scotia (COSEWIC 2010), with areas of concentration around Newfoundland and Labrador as well.

Like other elasmobranchs, dogfish are vulnerable to increased rates of mortality as it has an extremely long gestation period (18 to 24 months), long generation time (23 years), and low fecundity (average of six pups every two years), and is vulnerable to exploitation. Additionally, there is uncertainty about long-term trends in abundance, and particularly the abundance of mature females. This population is known to be broken into several well-defined ‘groups’, with concentrations in the southern Gulf of St. Lawrence, around Newfoundland, on the eastern and central Scotian Shelf, the Bay of Fundy, an southwest Nova Scotia, as well as in Massachusetts and North Carolina (COSEWIC 2010). These groups undertake seasonal migrations and it is not well understood how much mixing of these groups occurs. The distribution of spiny dogfish

is patchy. Dogfish can form dense aggregations, causing high variability in survey indices. The absence of young juveniles, as well as high variability in abundance estimates from surveys suggests that the early life history stages (pupping and juveniles) occur elsewhere.

Spiny dogfish are threatened by overfishing, as well as high discard rates. Large, sexually mature females are often targeted in commercial fisheries (COSEWIC 2010). Historically, the species has been caught for varied purposes including for its meat, for use as fertilizer, vitamins, fishmeal, and in the shark fin trade, as well as killed for being a ‘pest’ in commercial fisheries.