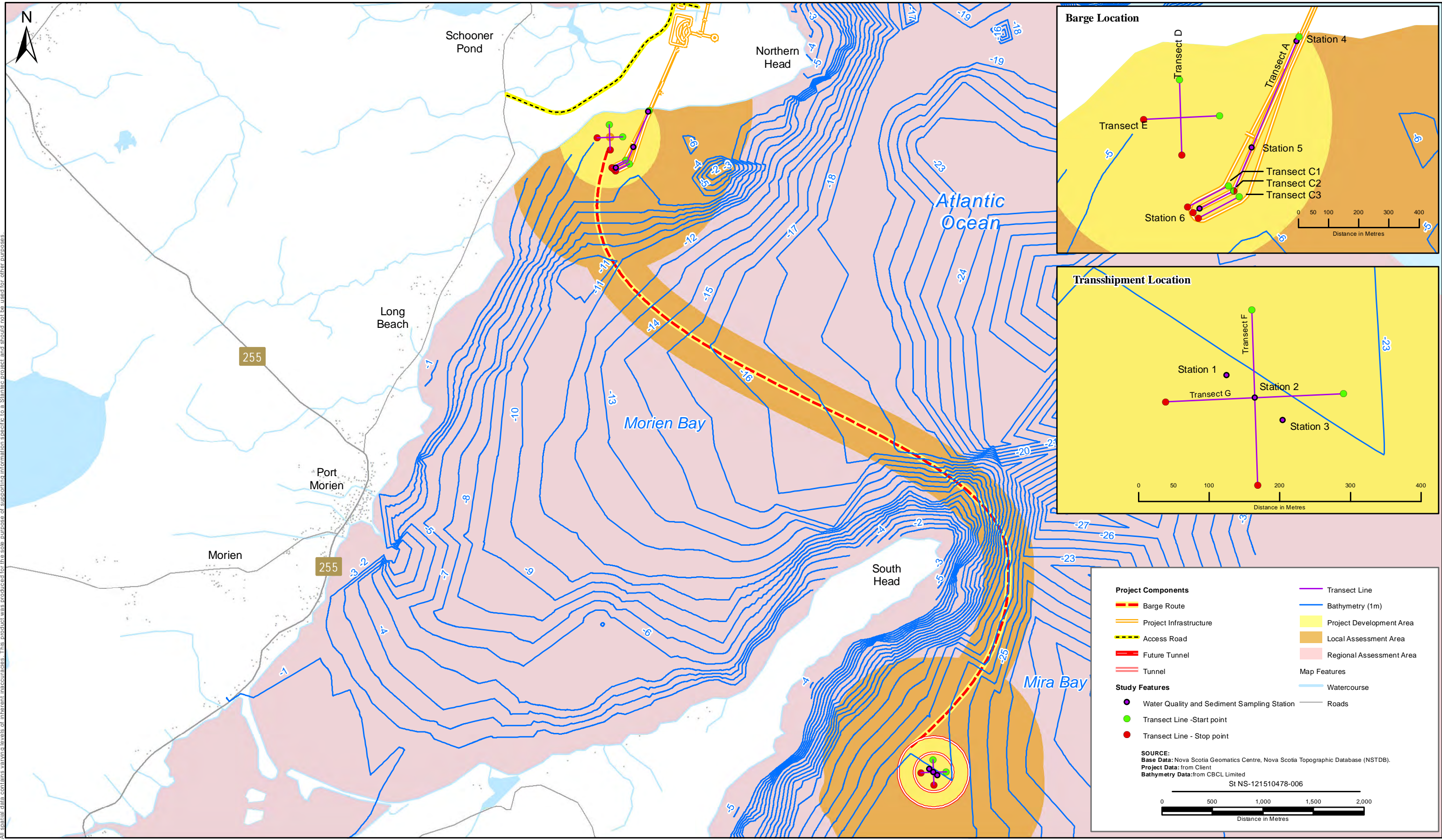


**APPENDIX M**  
**Marine Environment**



PREPARED BY:  
M. Huskins-Shupe

REVIEWED BY:  
M. Steeves

CLIENT:

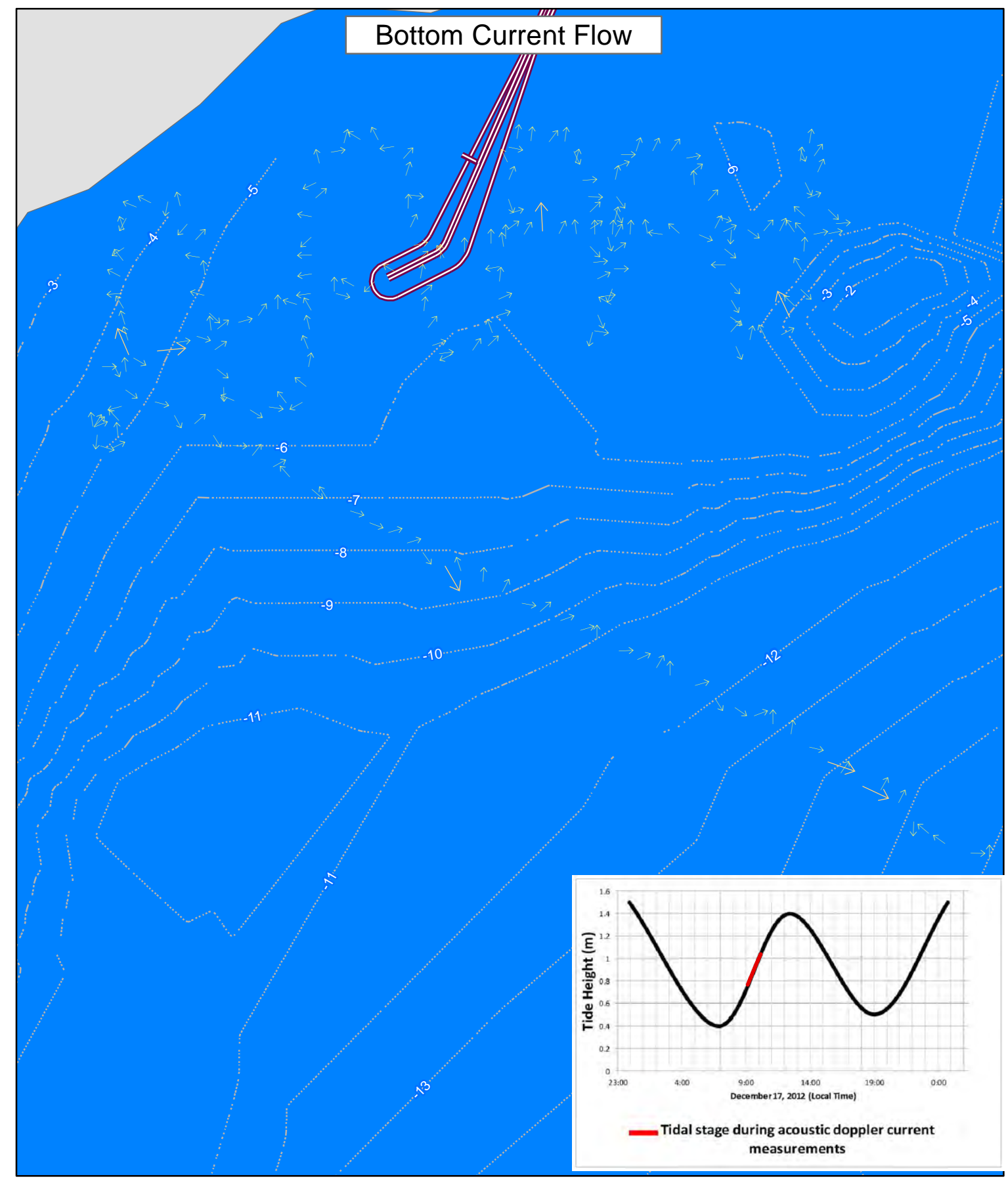
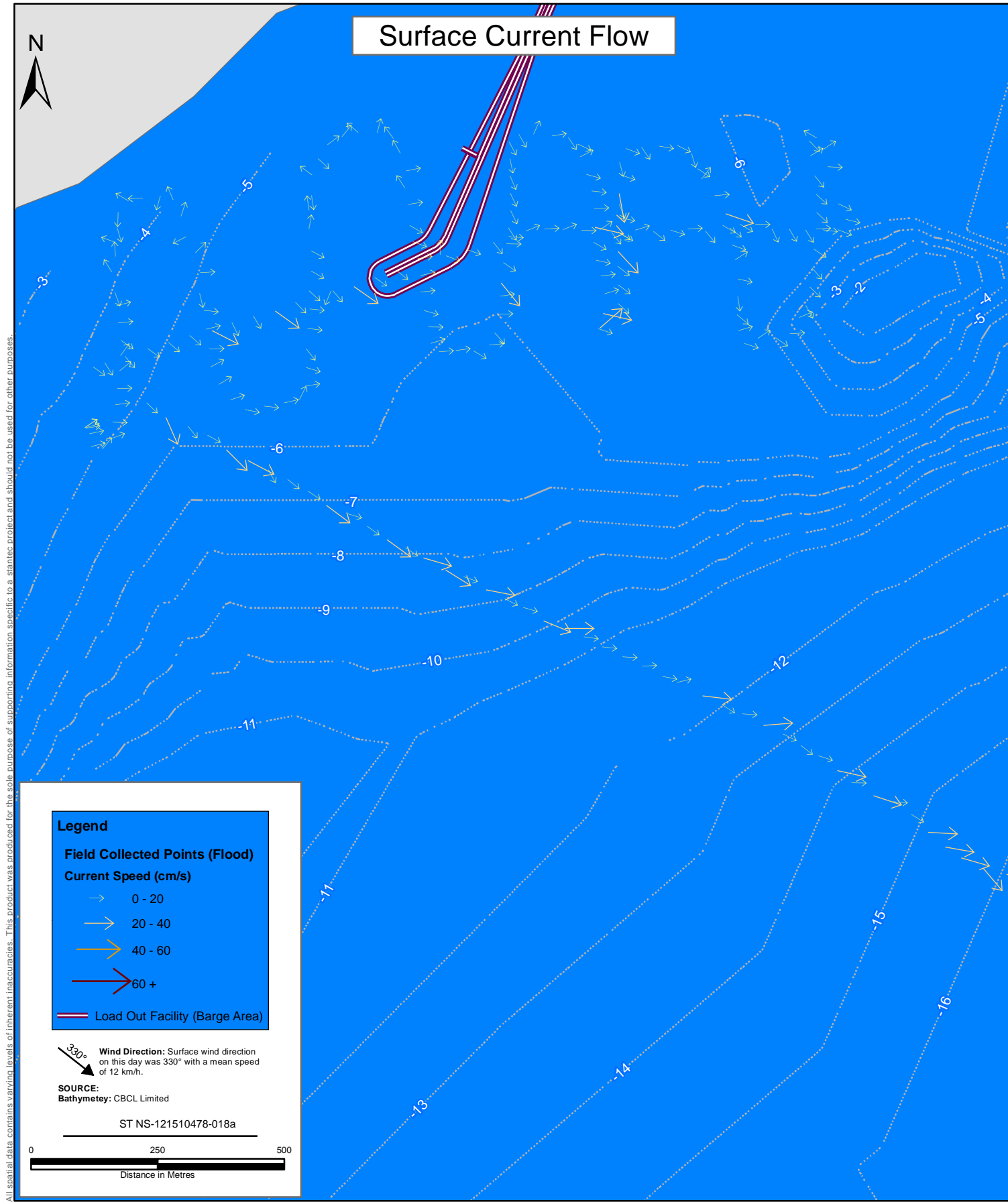
Donkin Export Coking Coal Project

**Location of Marine Sampling Stations and Surveys**

FIGURE NO.:  
1

DATE:  
Apr 26, 2012

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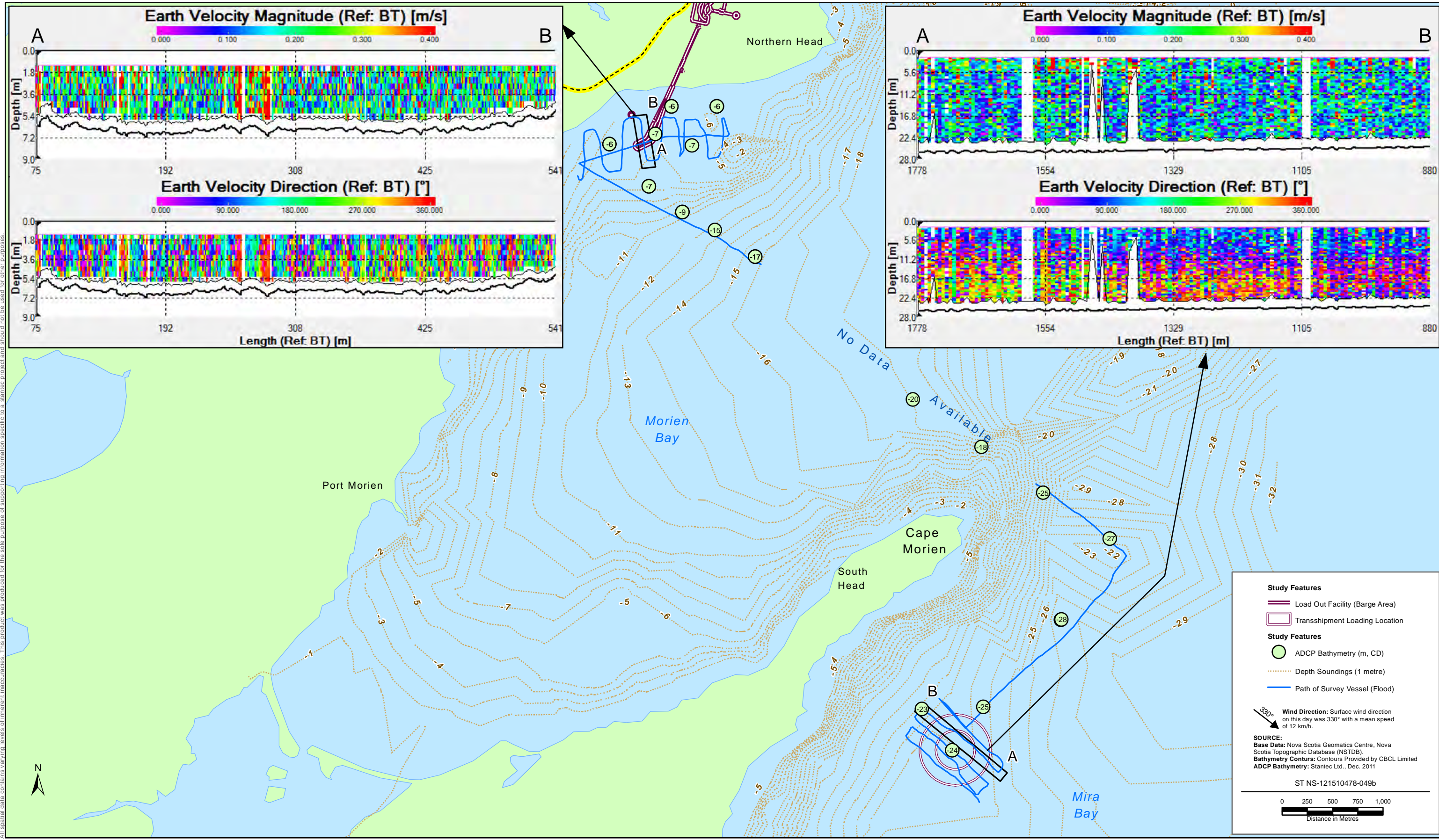
PREPARED BY:	R Sutcliffe
REVIEWED BY:	S Salley
CLIENT:	

Donkin Export Coking Coal Project

**Barge Load-out Area Marine Surface and Bottom Currents: Flood Tide**

FIGURE NO.:	2
DATE:	Apr 25, 2012





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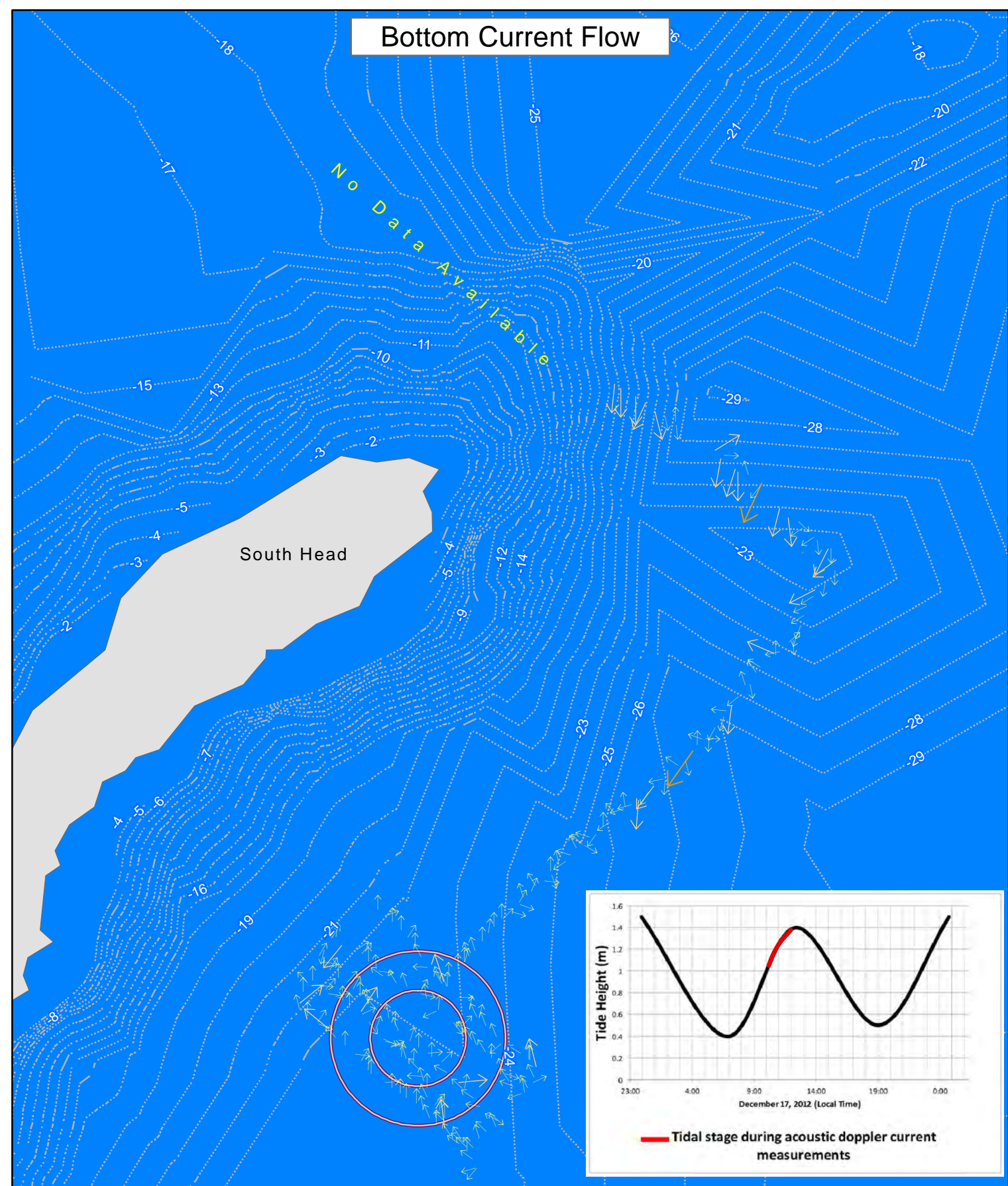
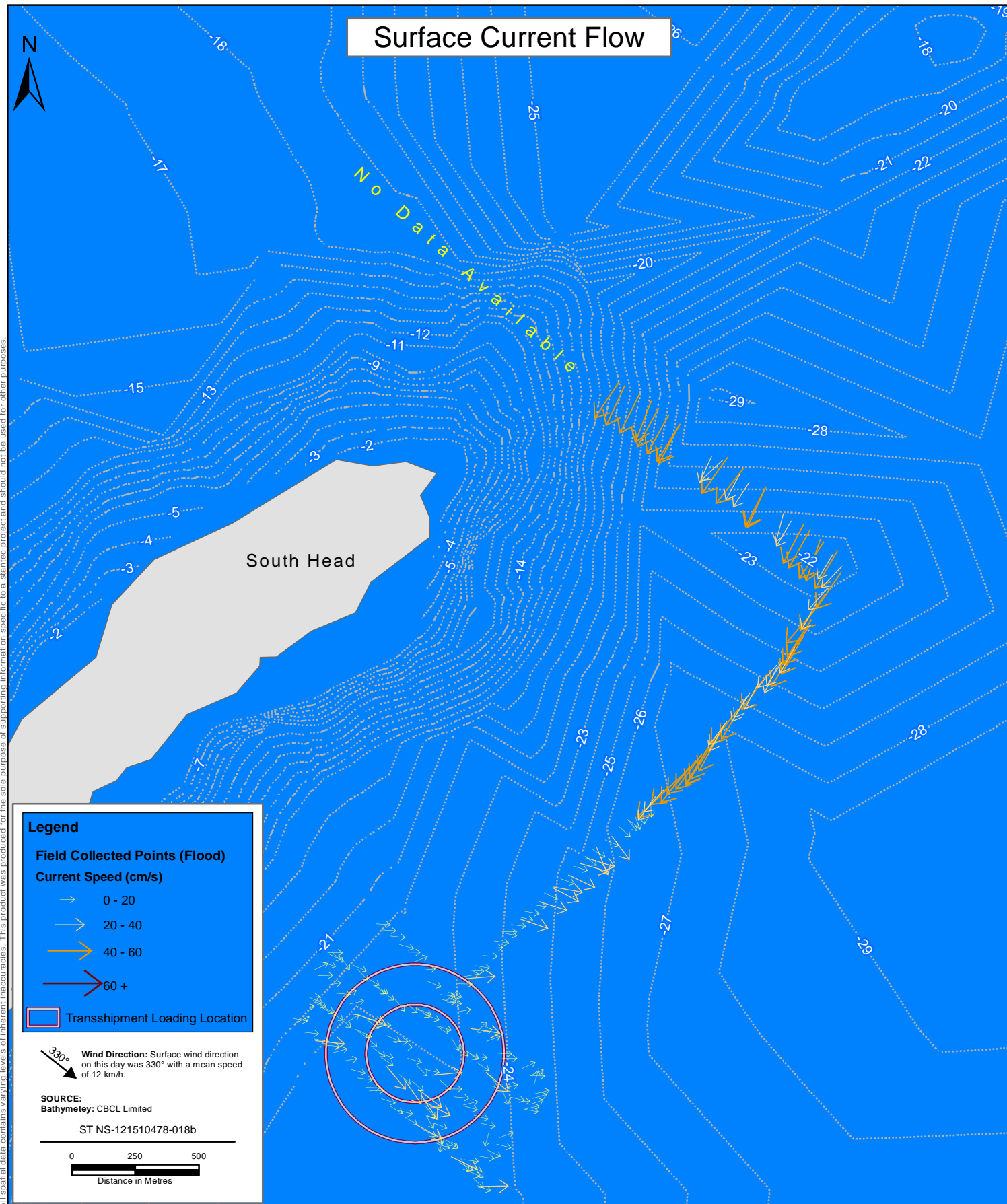
PREPARED BY:	R Sutcliffe
REVIEWED BY:	S Salley
CLIENT:	

Donkin Export Coking Coal Project

### Marine Current Profiles: Flood Tide

FIGURE NO.:	3
DATE:	Apr 25, 2012



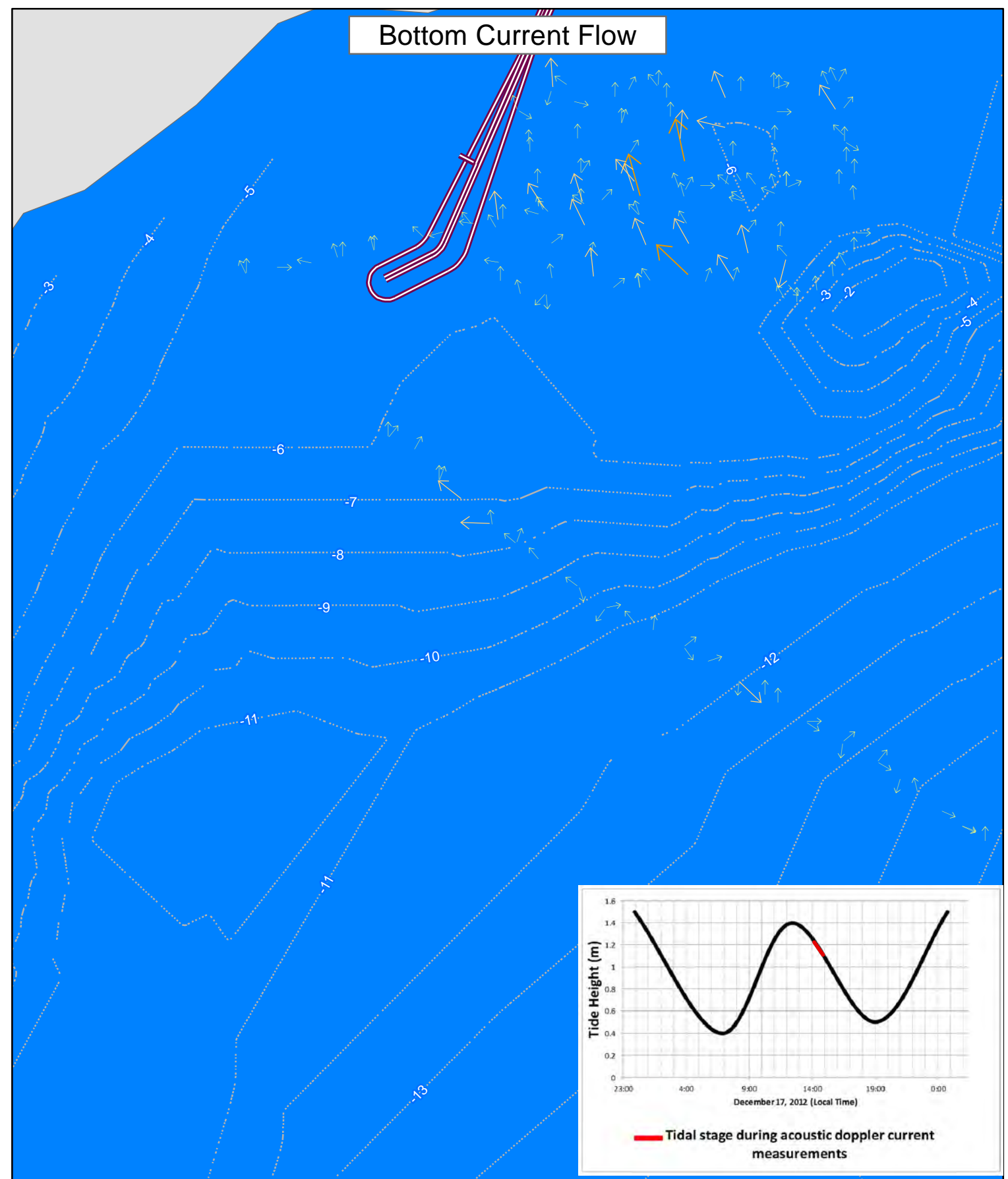
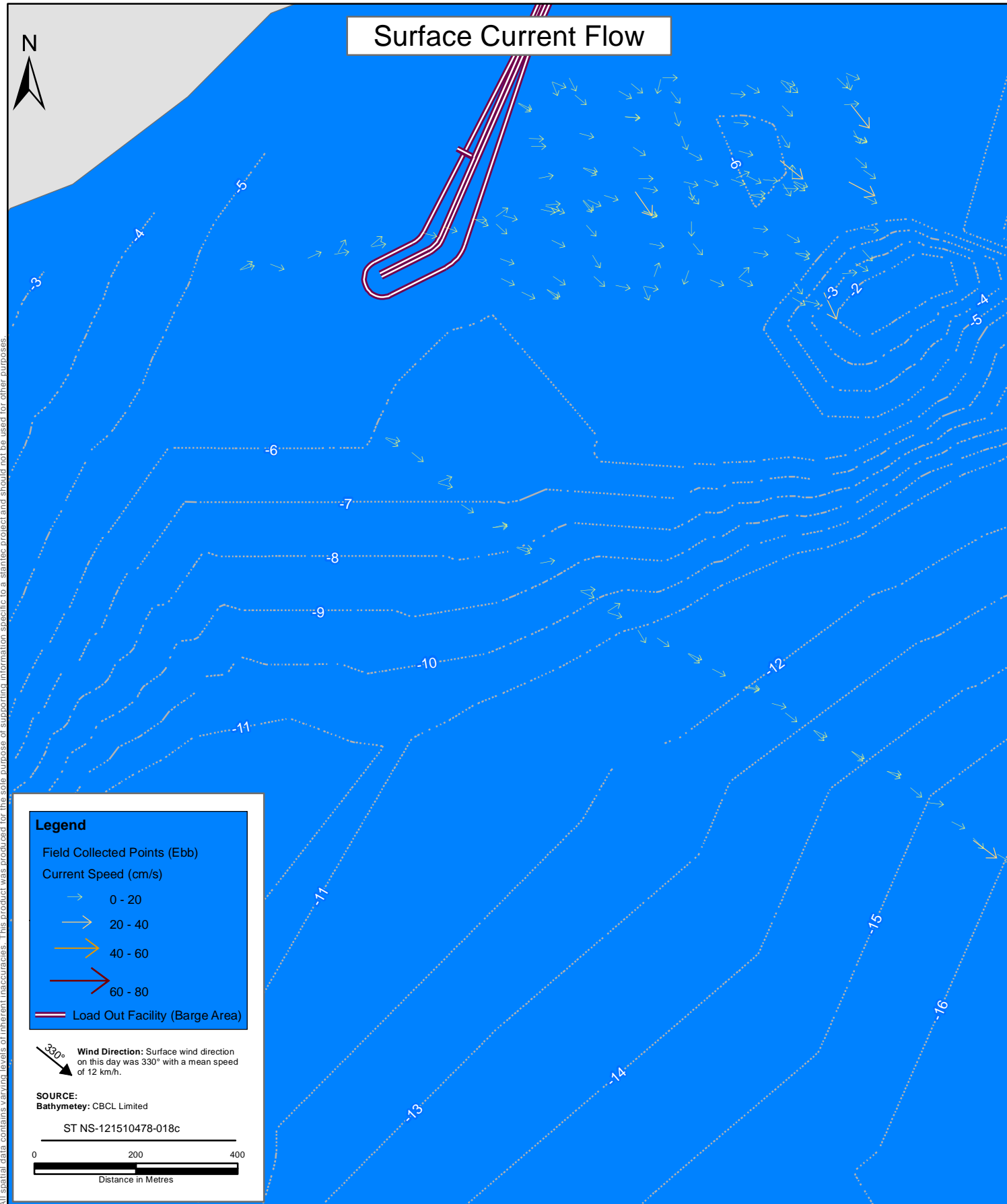


PREPARED BY:	R Sutcliffe
REVIEWED BY:	S Salley
CLIENT:	

Donkin Export Coking Coal Project

### Transshipment Area Marine Surface and Bottom Currents: Flood Tide

FIGURE NO.:	4
DATE:	Apr 25, 2012



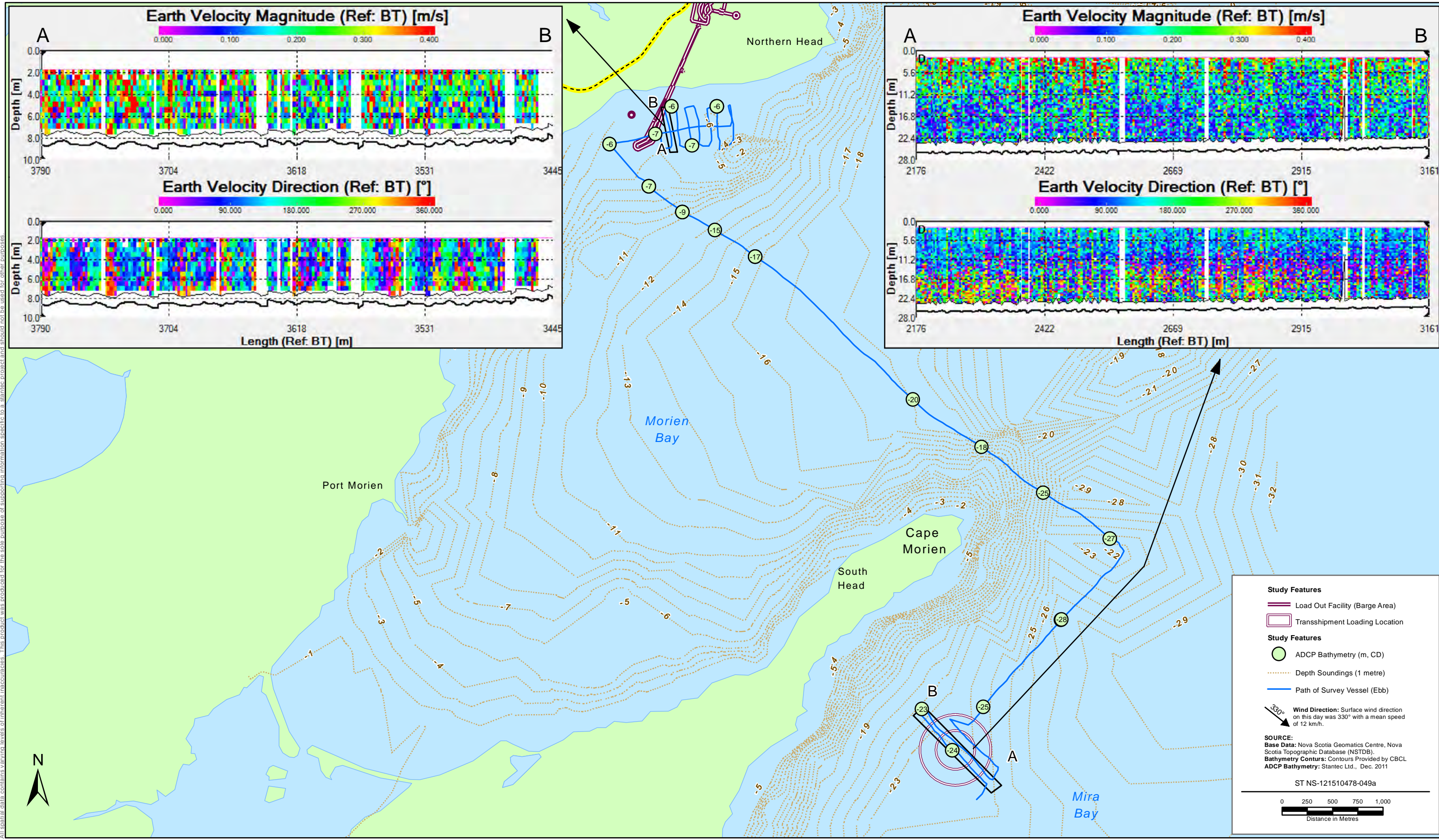
PREPARED BY:	R Sutcliffe
REVIEWED BY:	S Salley
CLIENT:	

Donkin Export Coking Coal Project

**Barge Load-out Area Marine Surface and Bottom Currents: Ebb Tide**

FIGURE NO.:	5
DATE:	Apr 25, 2012





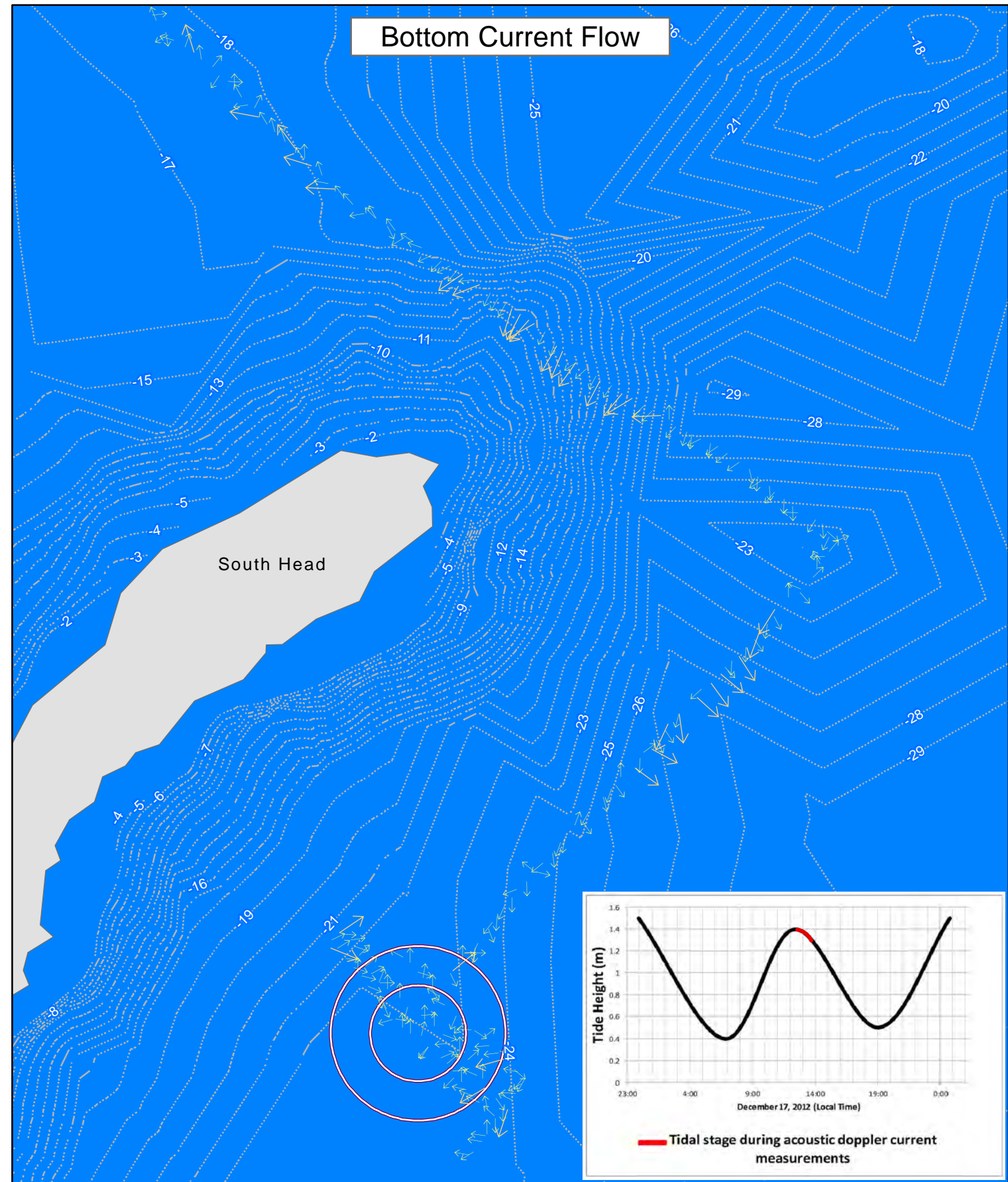
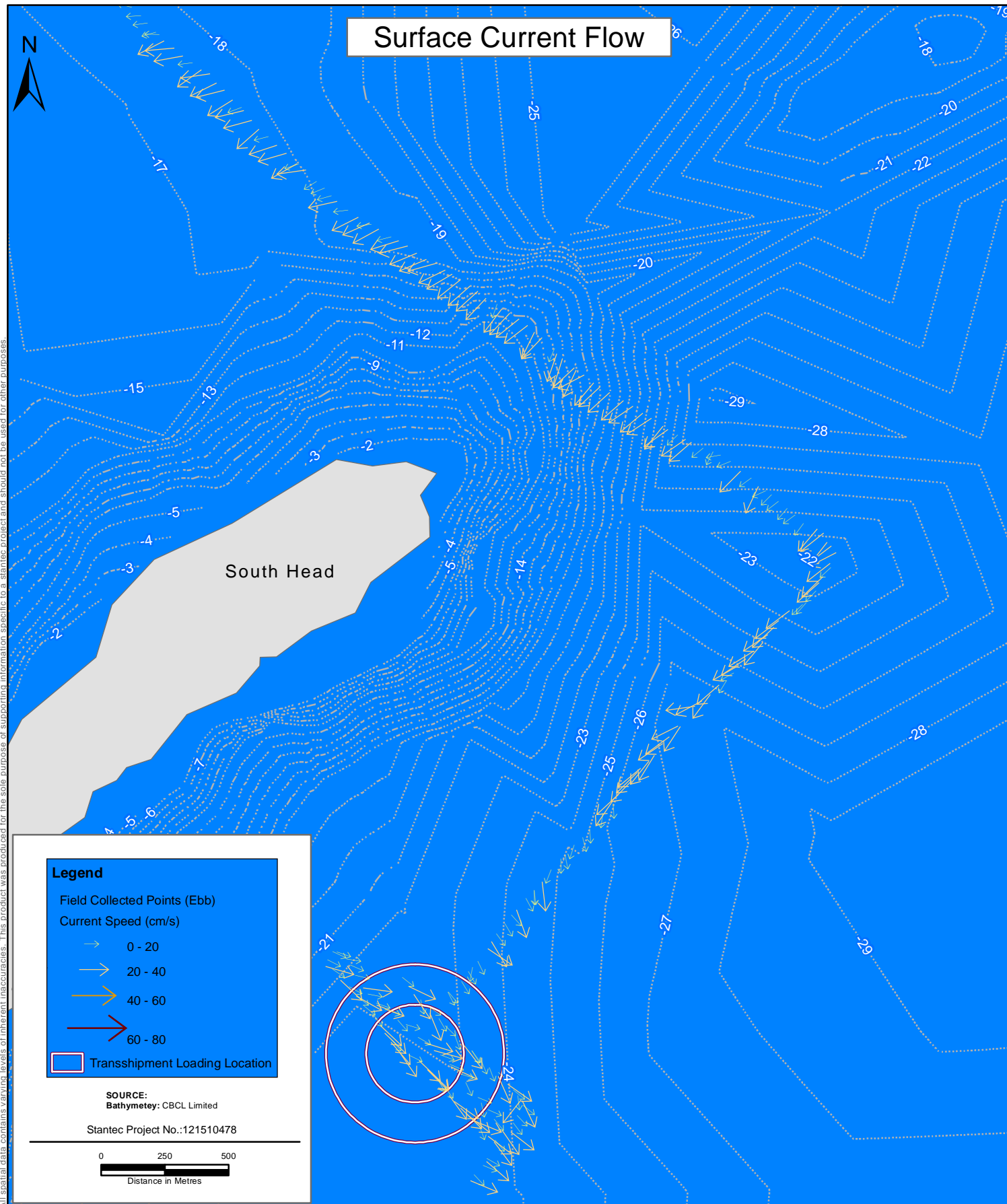
PREPARED BY: R Sutcliffe  
REVIEWED BY: S Salley  
CLIENT: xstrata coal

Donkin Export Coking Coal Project  
**Marine Current Profiles: Ebb Tide**

FIGURE NO.: 6  
DATE: Apr 25, 2012  
Stantec

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PREPARED BY:	R Sutcliffe
REVIEWED BY:	S Salley
CLIENT:	

Donkin Export Coking Coal Project

**Transshipment Area Marine Surface and Bottom Currents: Ebb Tide**

FIGURE NO.:	7
DATE:	Apr 04, 2012



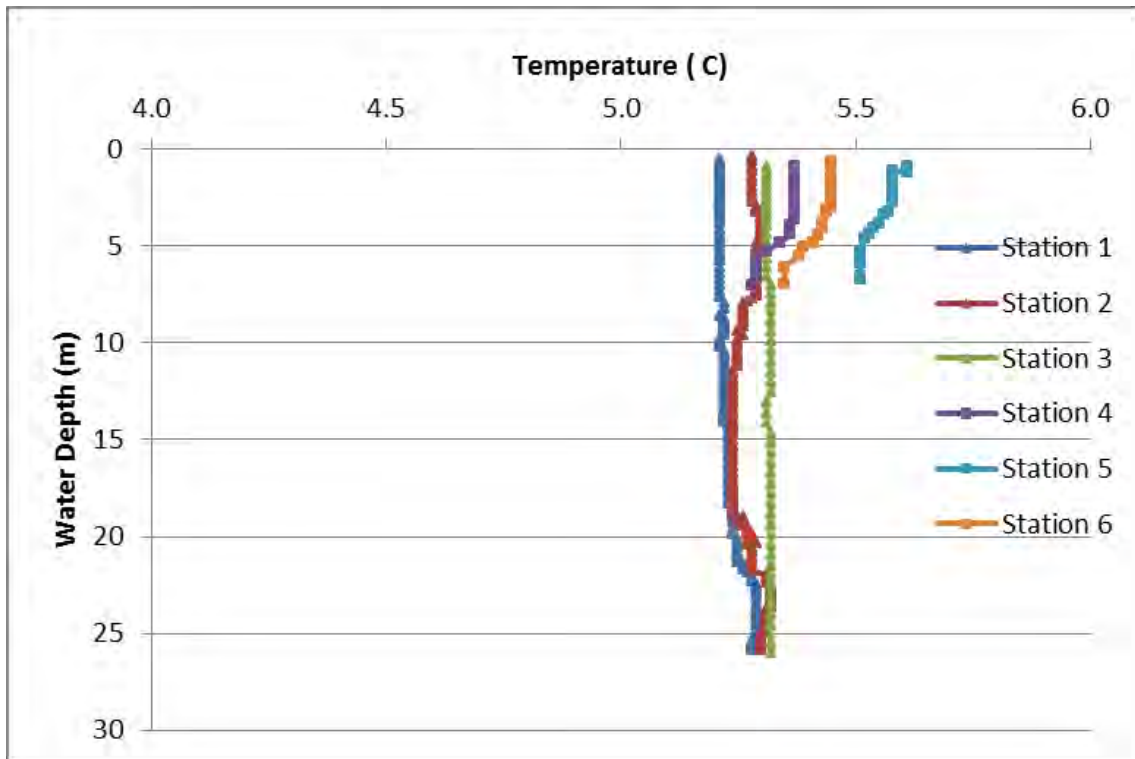


Figure 8: Temperature profile data within Morien and Mira Bays.

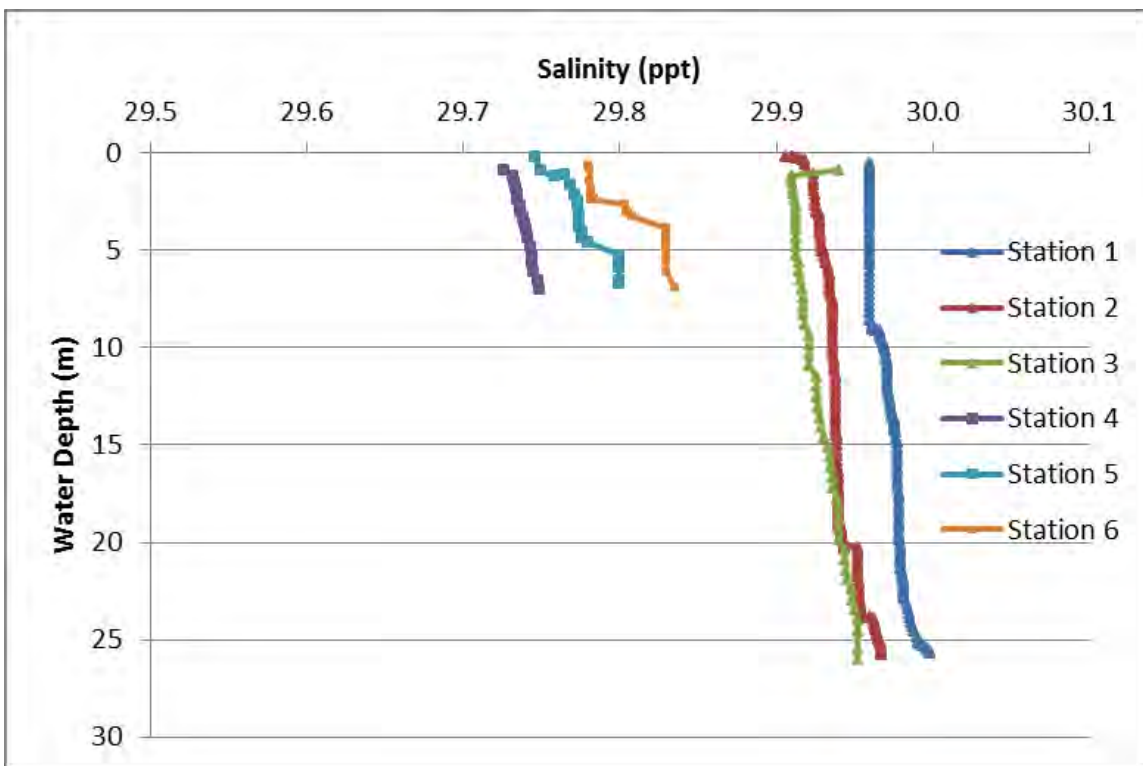


Figure 9: Salinity profile data within Morien and Mira Bays.

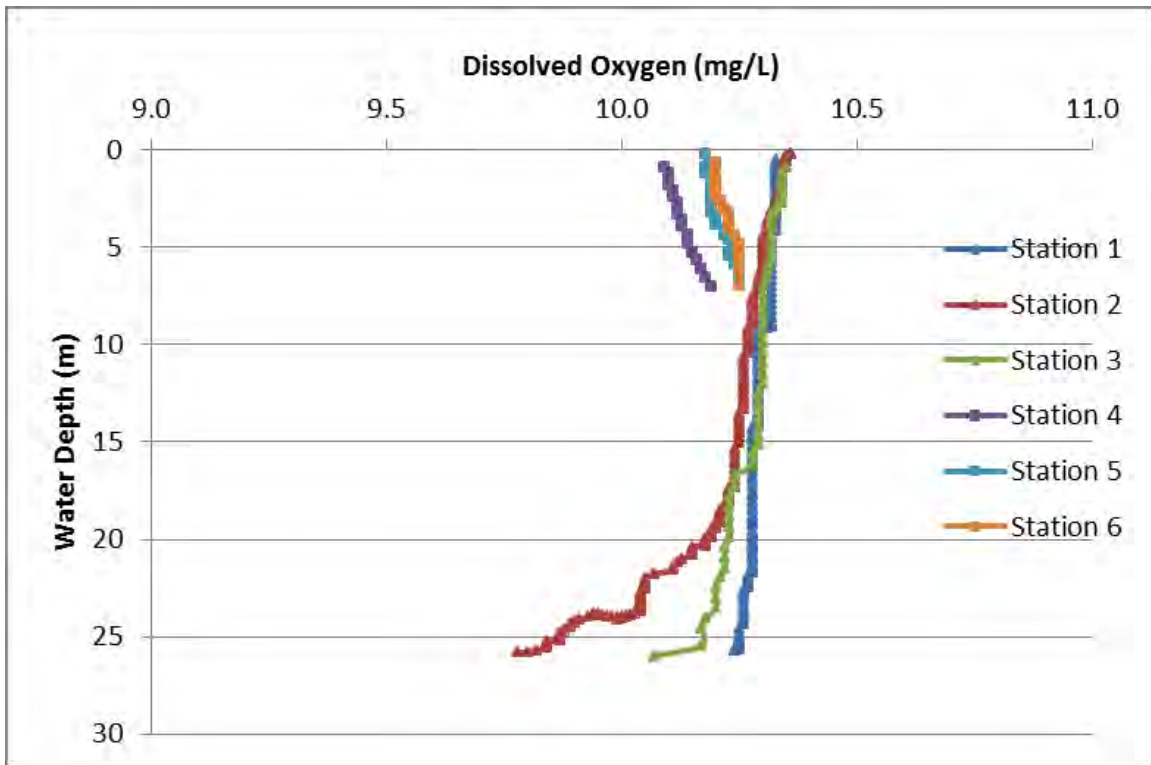


Figure 10: Oxygen profile within Morien and Mira Bays.

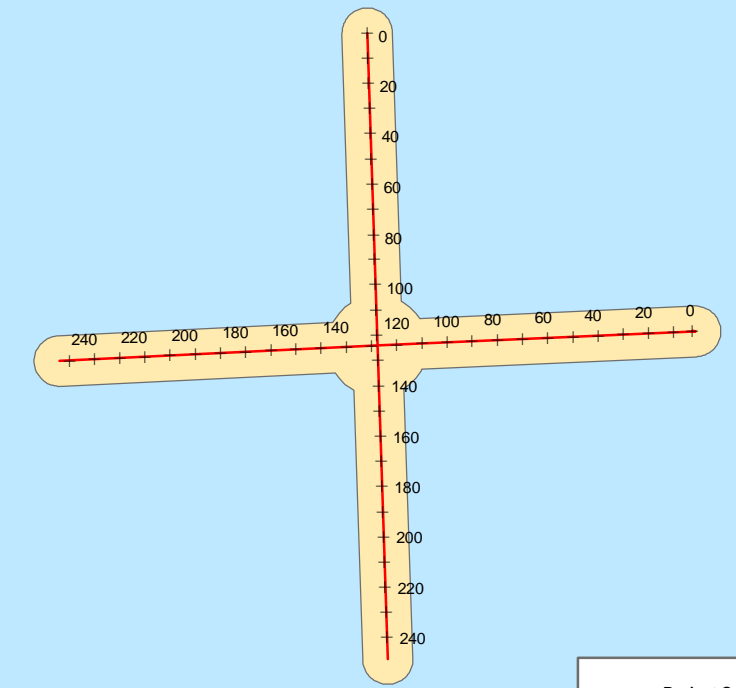
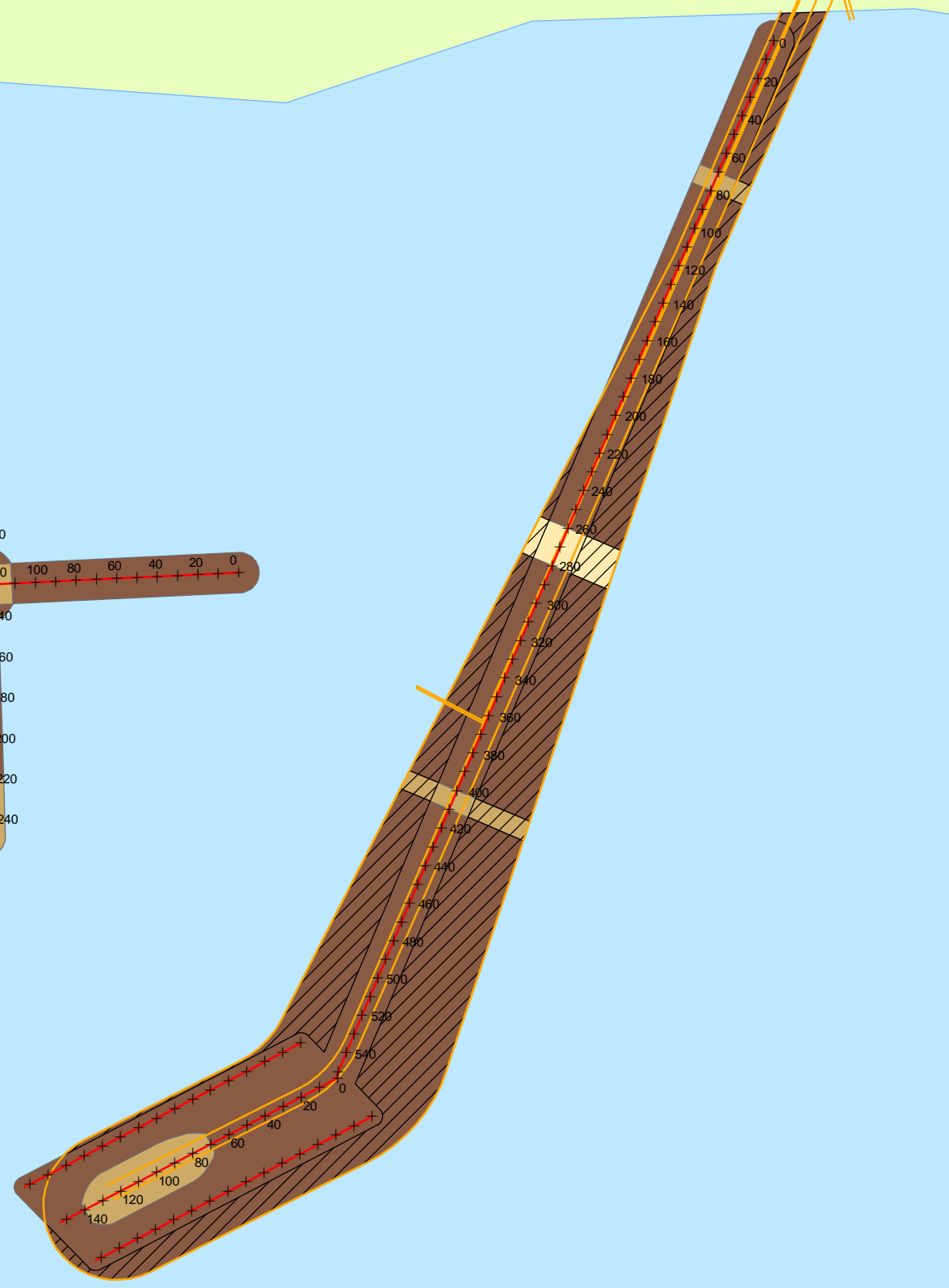
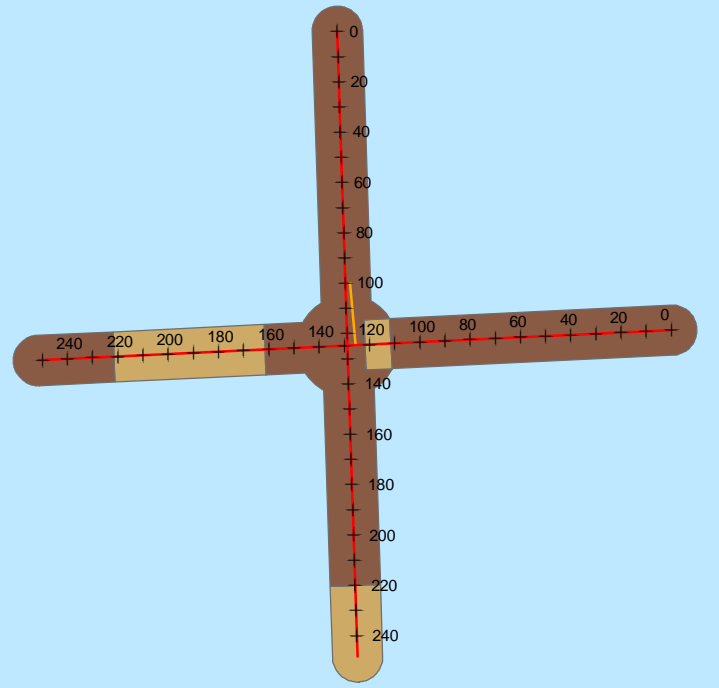


### Barge Location

### Transshipment Location



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**Project Components**

- + Distance Marker (10m)
- Transect Line
- Project Infrastructure

**Study Features**

Substrate

- Fine Dominant
- ▨ Interpolated Fine Dominant
- ▩ Medium Dominant
- ▧ Interpolated Medium Dominant
- Coarse Dominant
- ▤ Interpolated Coarse Dominant

**SOURCE:**  
**Base Data:** Nova Scotia Geomatics Centre, Nova Scotia Topographic Database (NSTDB).  
 ST NS-121510478-020

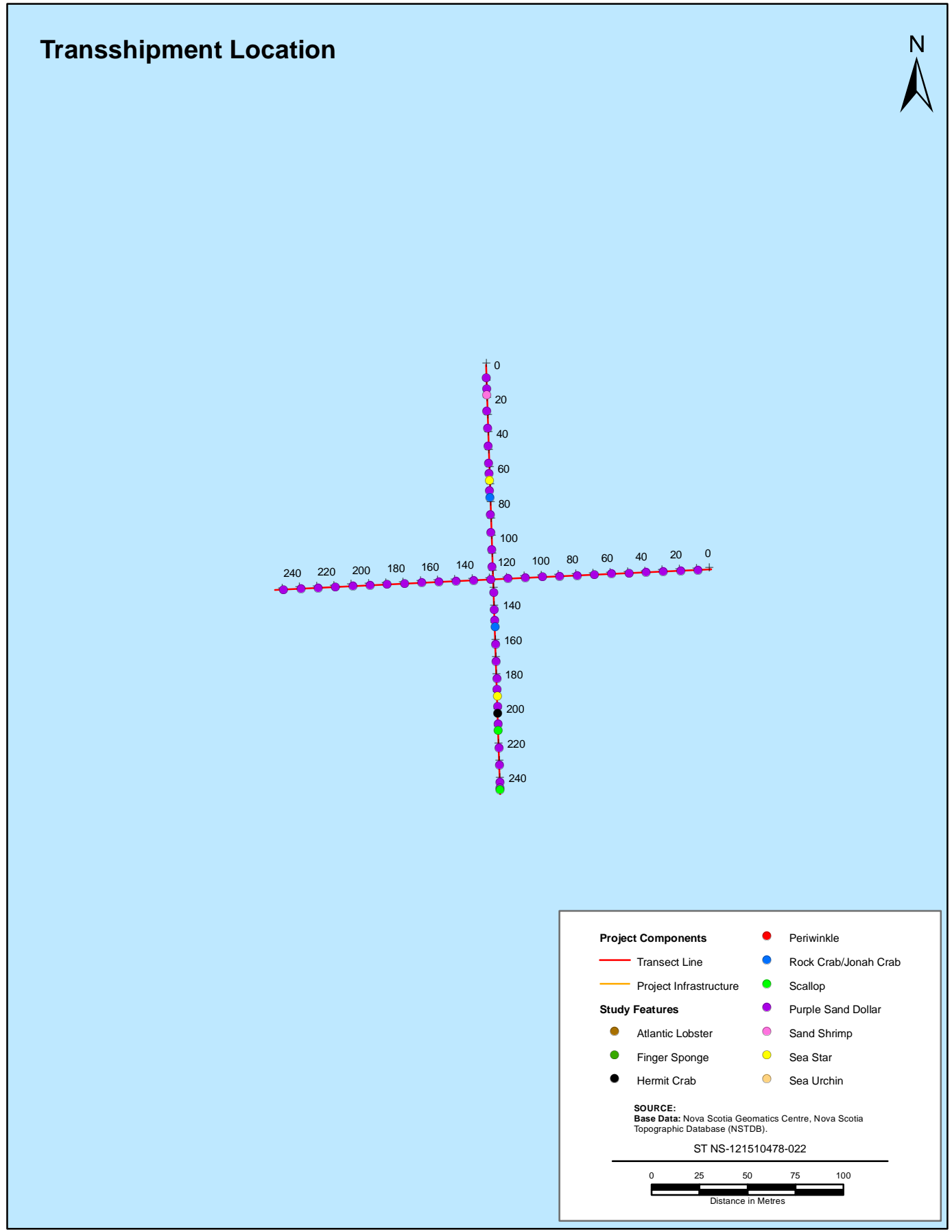
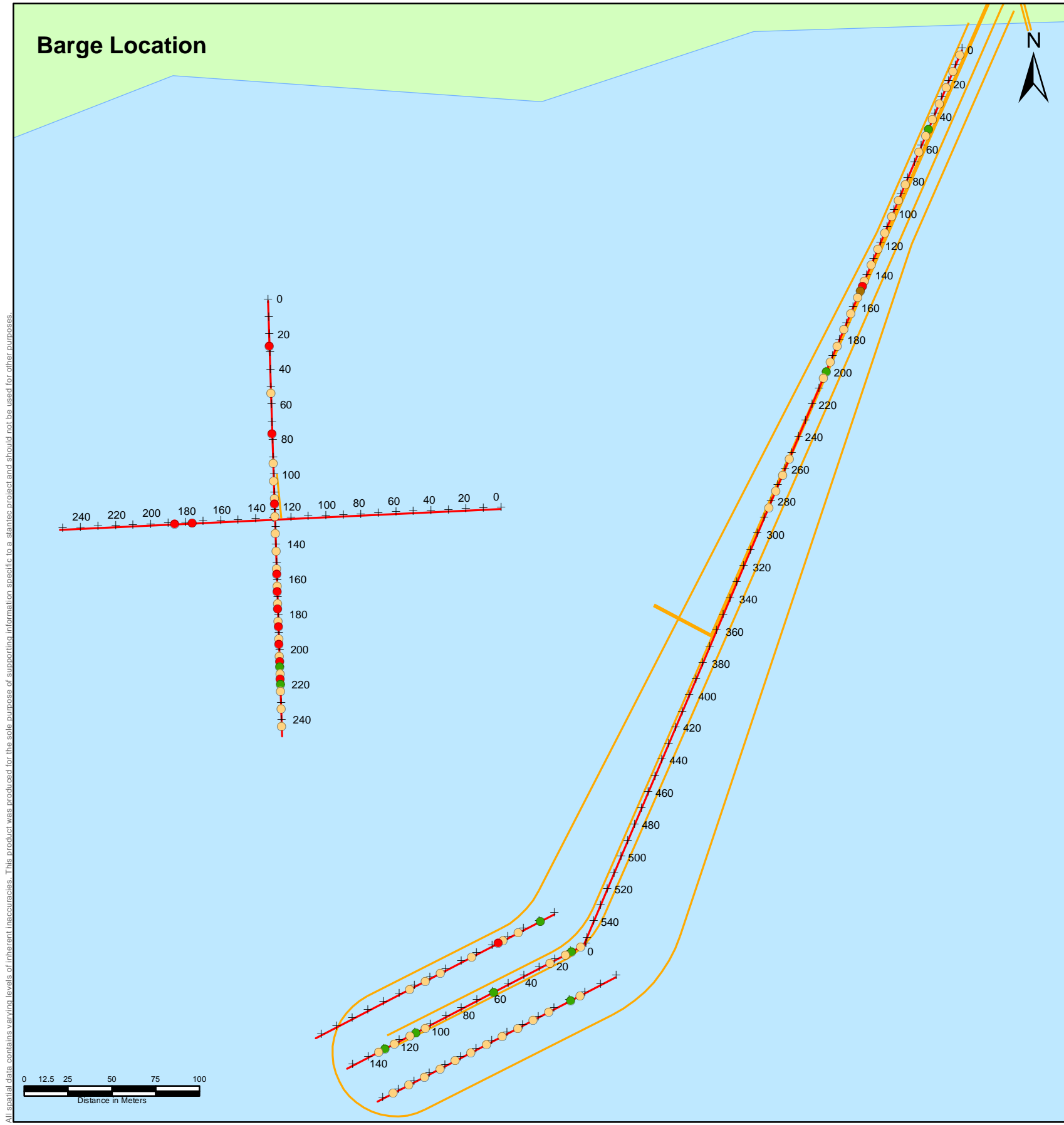
0 25 50 75 100  
 Distance in Metres

PREPARED BY: M. Huskins-Shupe
REVIEWED BY: M. Steeves
CLIENT: 

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## Distribution of Substrate Type in the Project Footprints

FIGURE NO.: 11
DATE: Apr 04, 2012



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PREPARED BY:  
K Keizer

REVIEWED BY:  
M. Steeves

CLIENT:

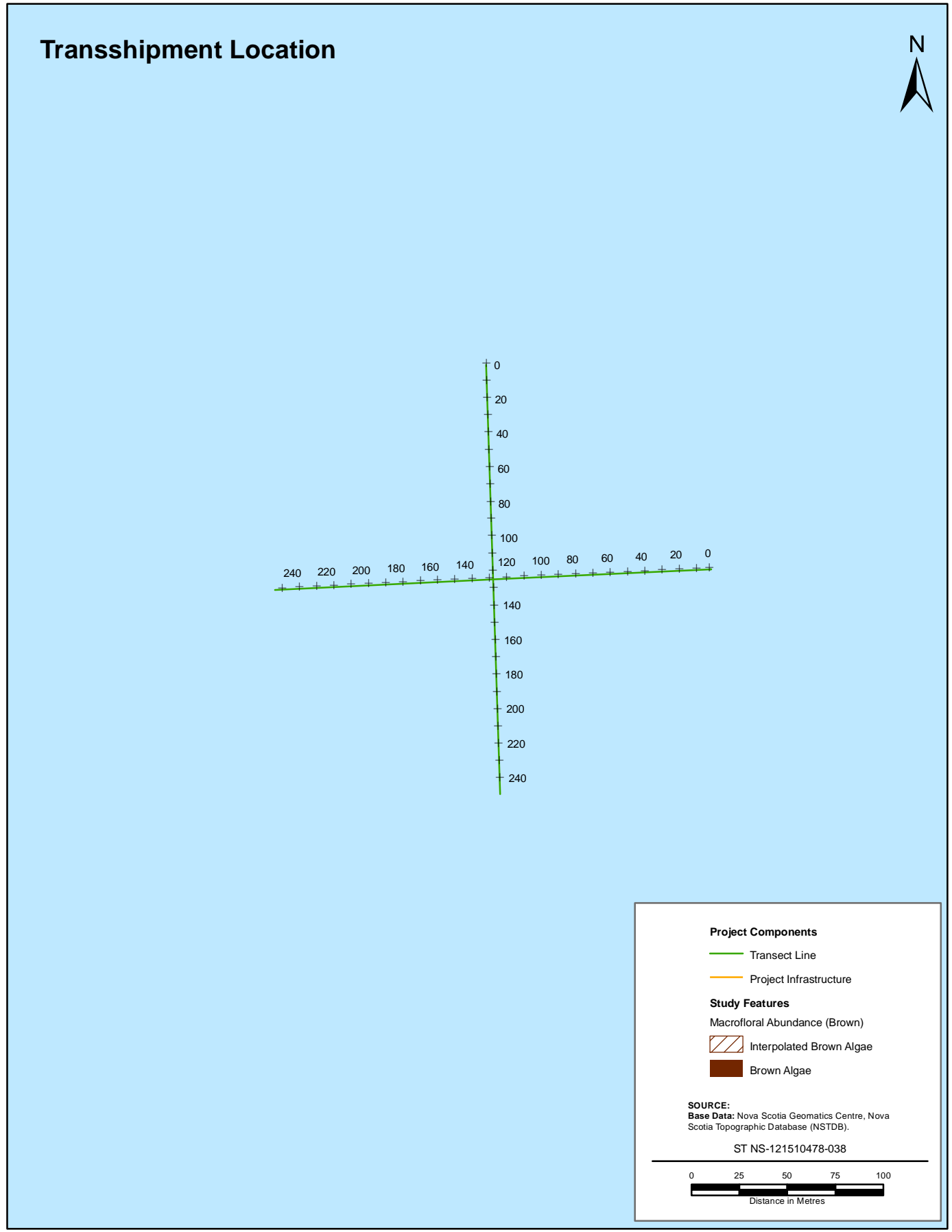
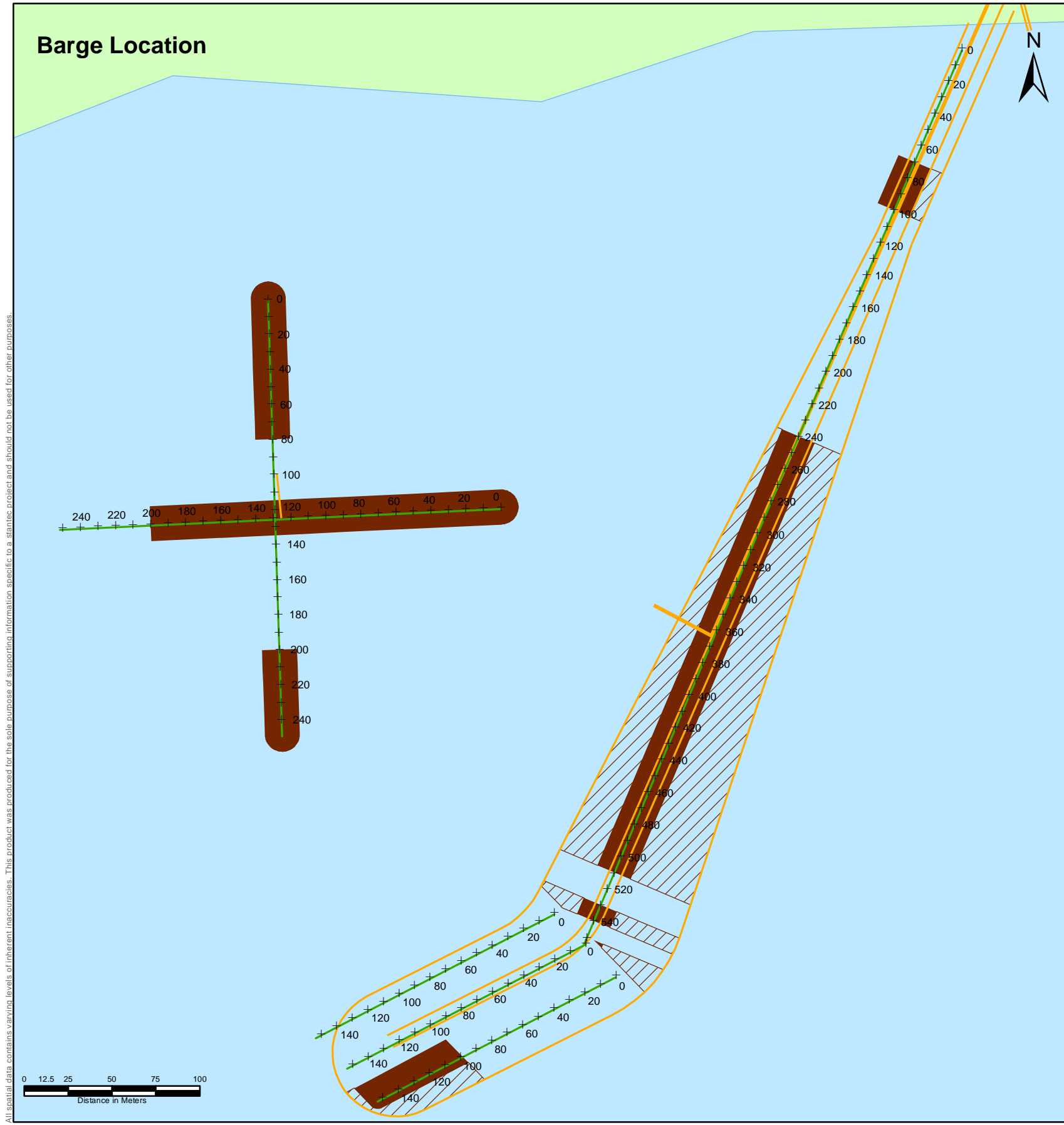
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## Distribution of Marine Benthic Macrofauna in the Project Footprints

FIGURE NO.:  
12

DATE:  
Apr 04, 2012





**Project Components**

- Transect Line
- Project Infrastructure

**Study Features**

- Macrofloral Abundance (Brown)
- Interpolated Brown Algae
- Brown Algae

**SOURCE:**  
**Base Data:** Nova Scotia Geomatics Centre, Nova Scotia Topographic Database (NSTDB).  
 ST NS-121510478-038

0 25 50 75 100  
 Distance in Metres

PREPARED BY:  
K Keizer

REVIEWED BY:  
M. Steeves

CLIENT:

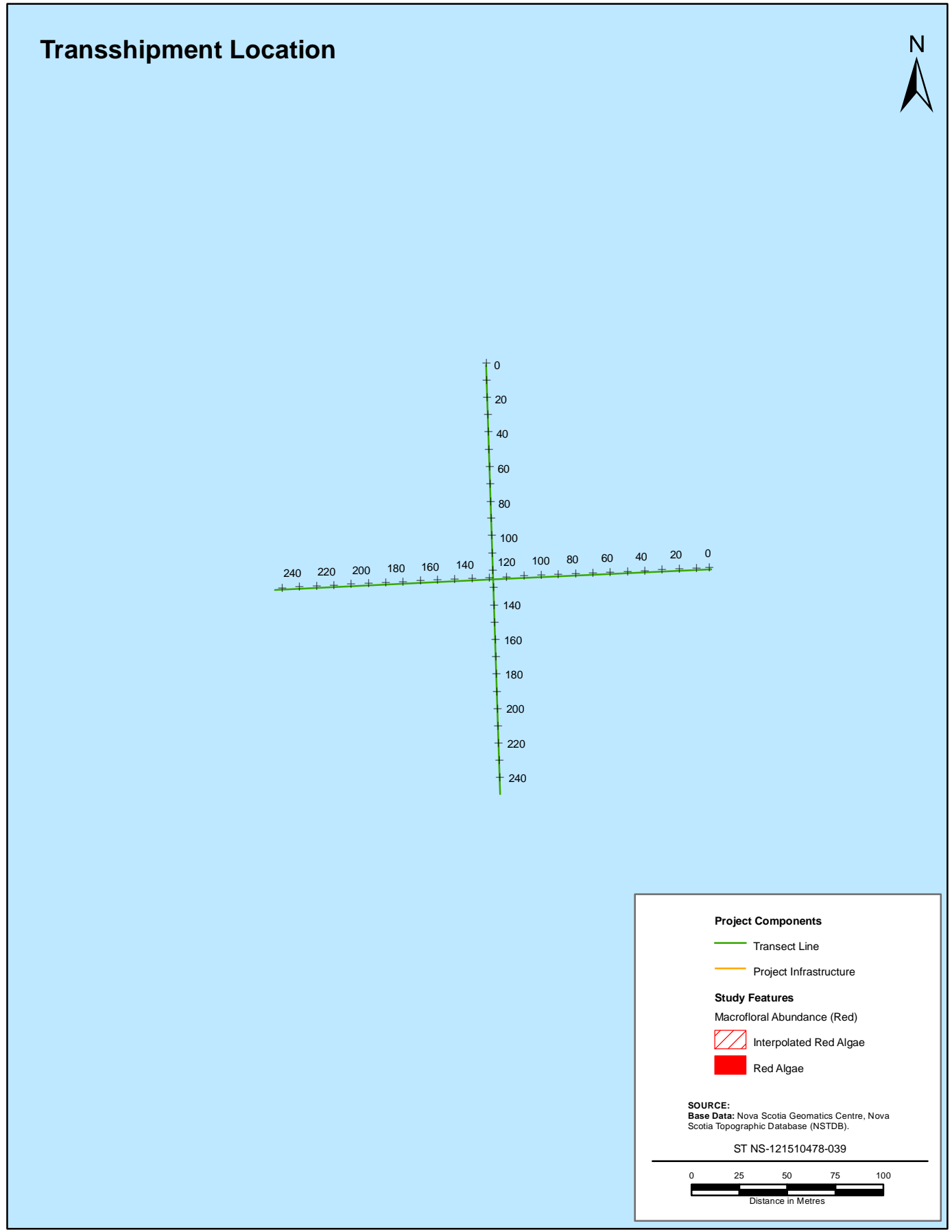
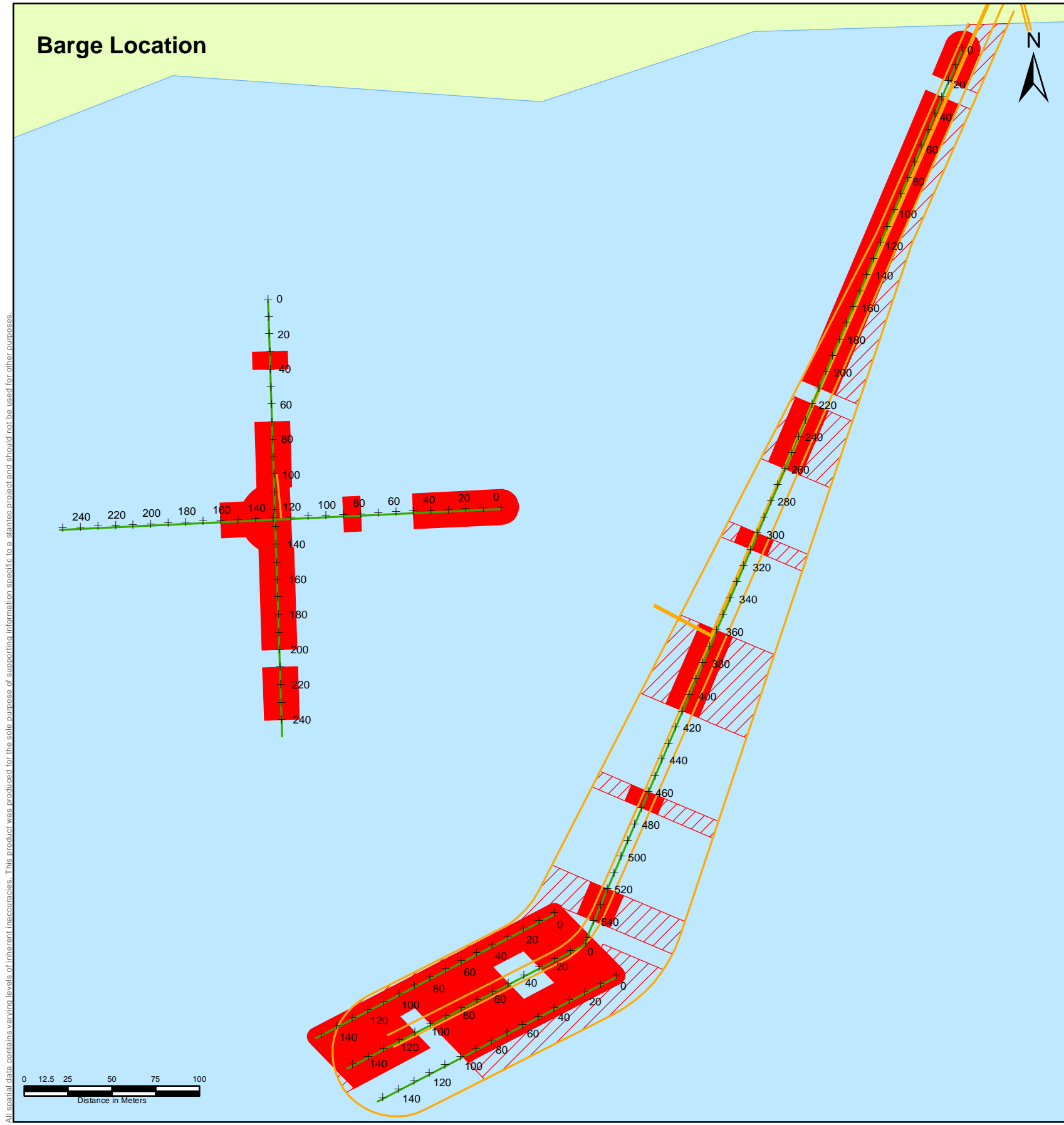
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## Distribution of Brown Algae in the Project Footprints

FIGURE NO.:  
13

DATE:  
Apr 04, 2012

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K Keizer

REVIEWED BY:  
M. Steeves

CLIENT:

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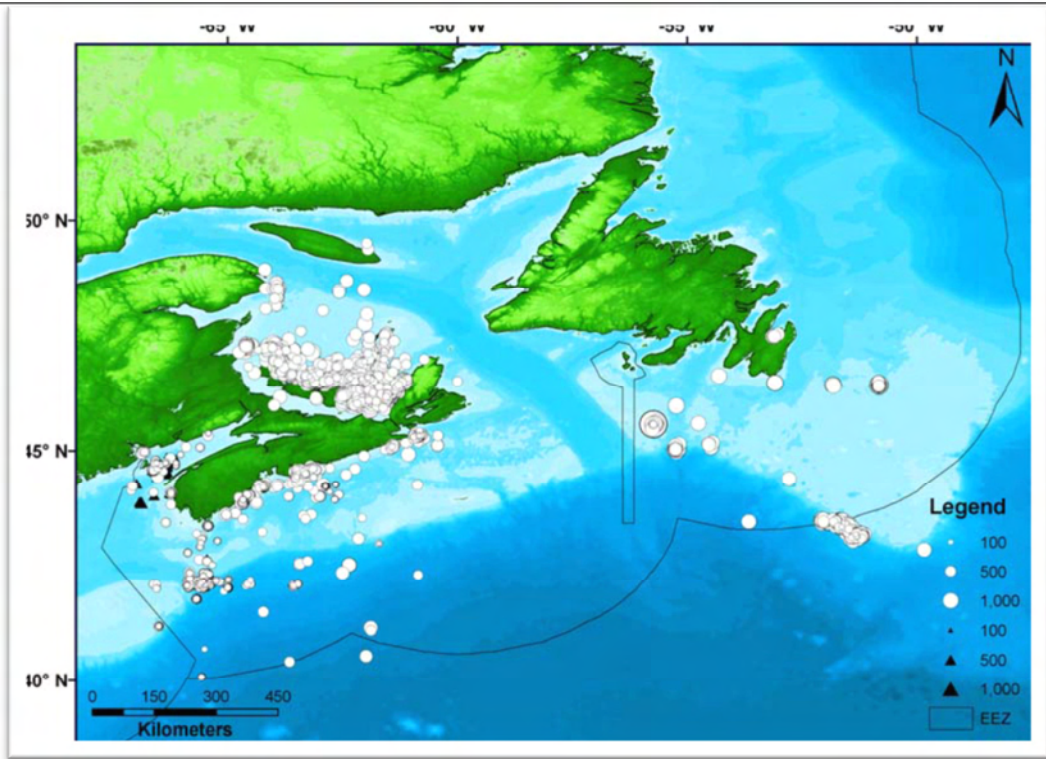
## Distribution of Red Algae in the Project Footprints

FIGURE NO.:  
14

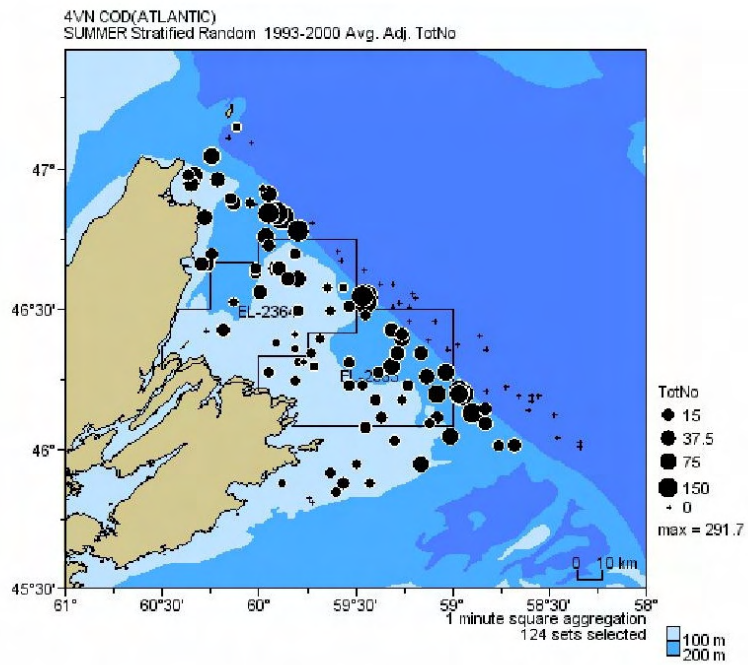
DATE:  
Apr 05, 2012

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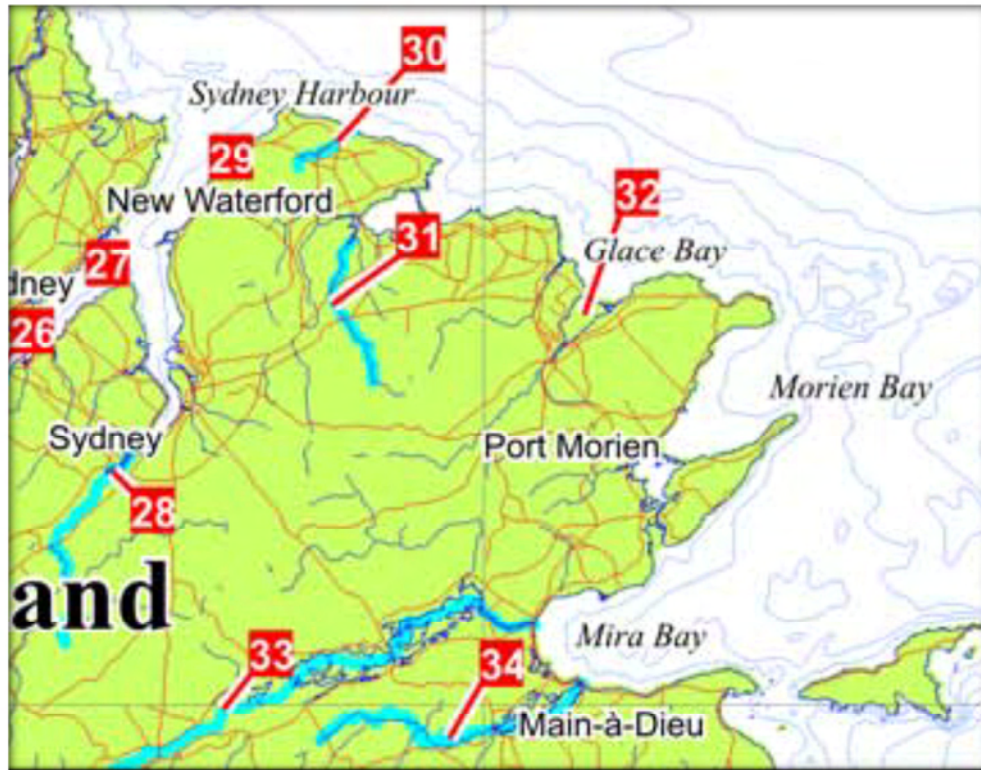




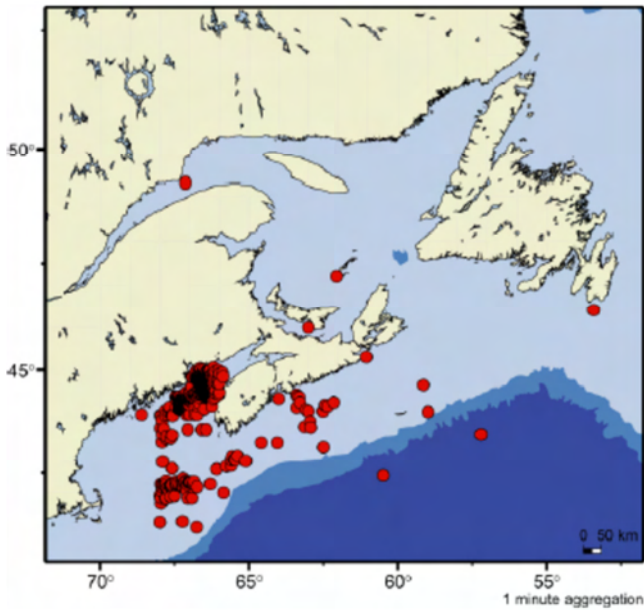
Location and landed weight (lbs) of Canadian Atlantic Bluefin tuna catches by gear from logbook records from 2000-2009.



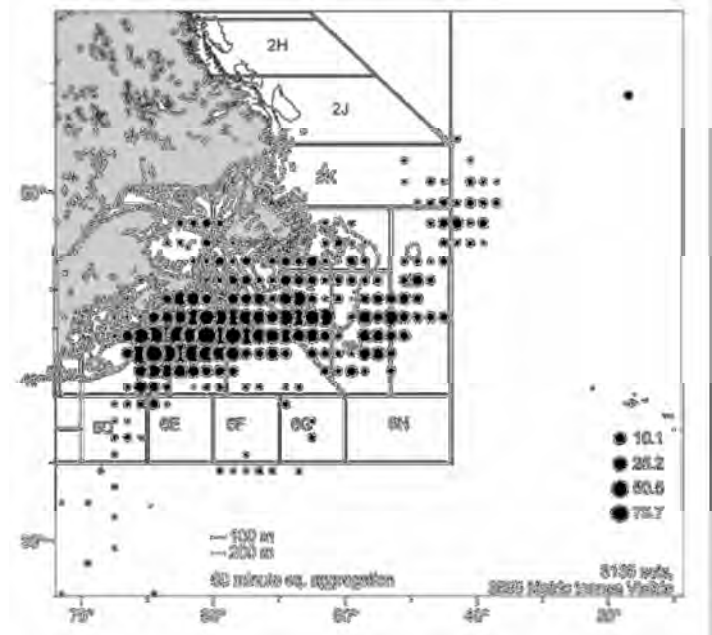
The distribution of cod catches during the 1993 - 2000 summer RV surveys



Atlantic Salmon Rivers located in the RAA.

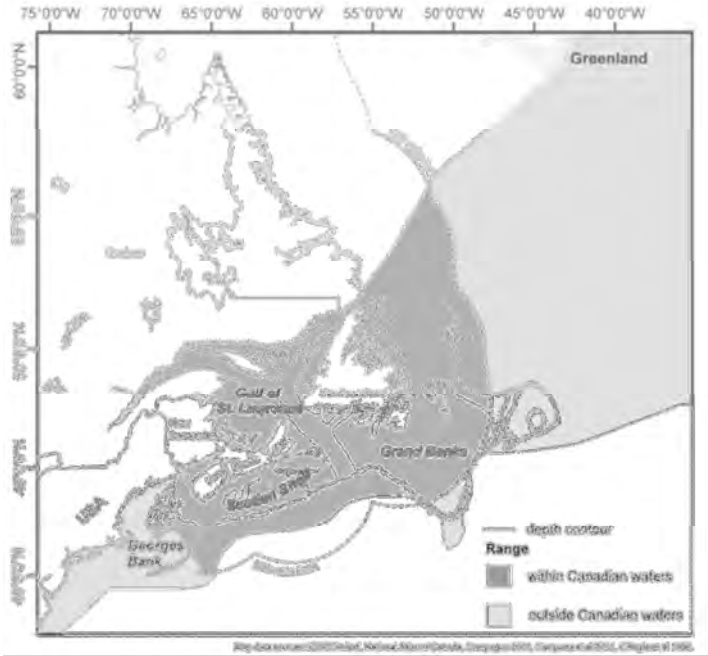


Confirmed Sightings of Basking sharks in Atlantic Canadian waters.

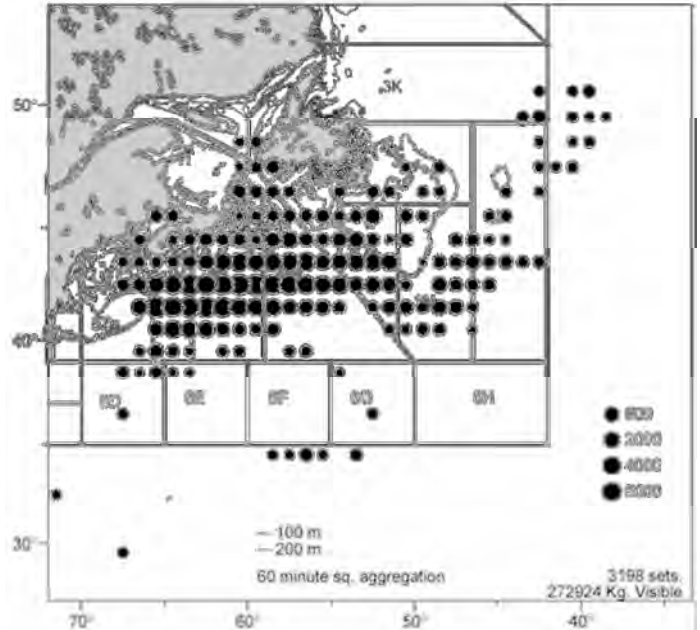


Distribution of Blue sharks on Atlantic Canada 1986-2004.

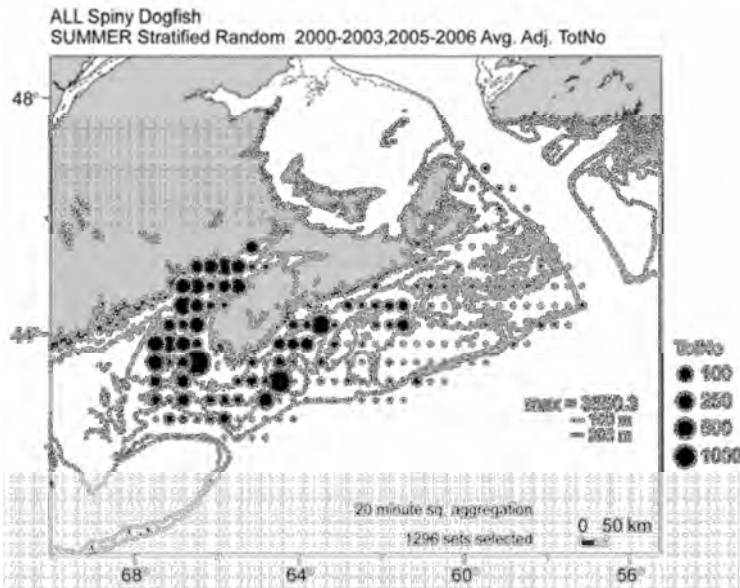




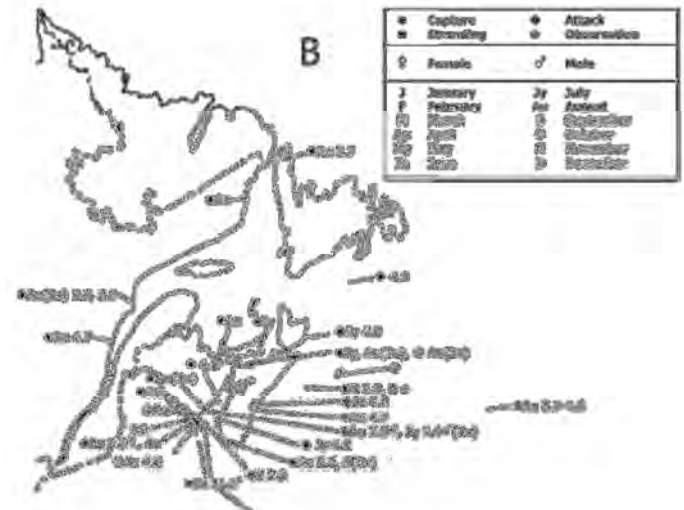
Distribution range of the Porbeagle shark.



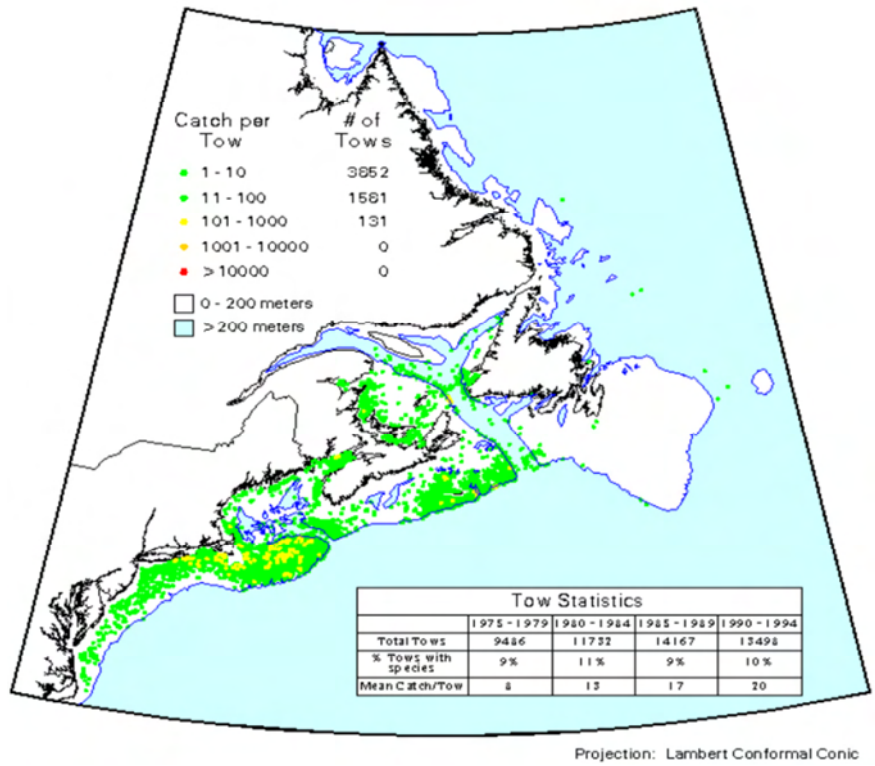
Distribution (kg) of the Shortfin mako in Atlantic Canada 1986 – 2004.



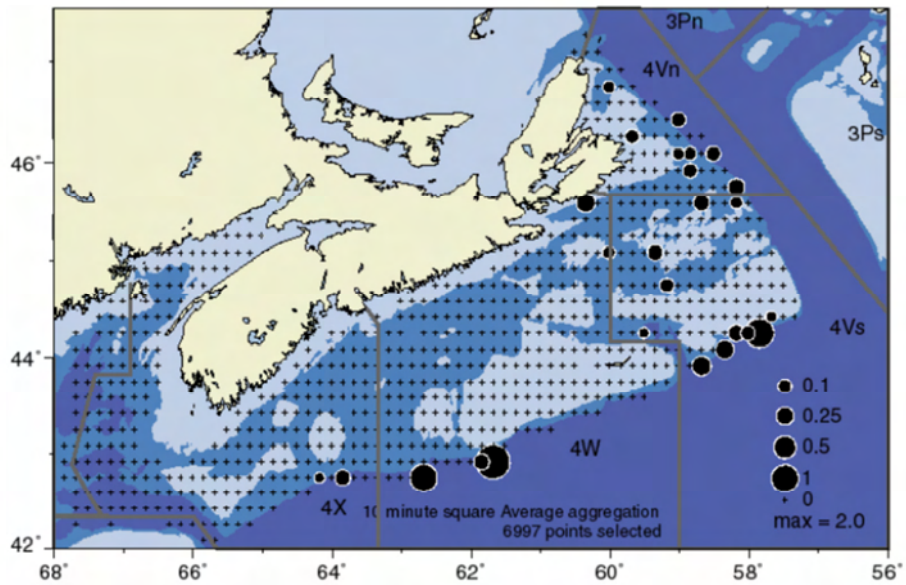
Distribution of Spiny Dogfish in Atlantic Canada base on Summer RV Surveys.



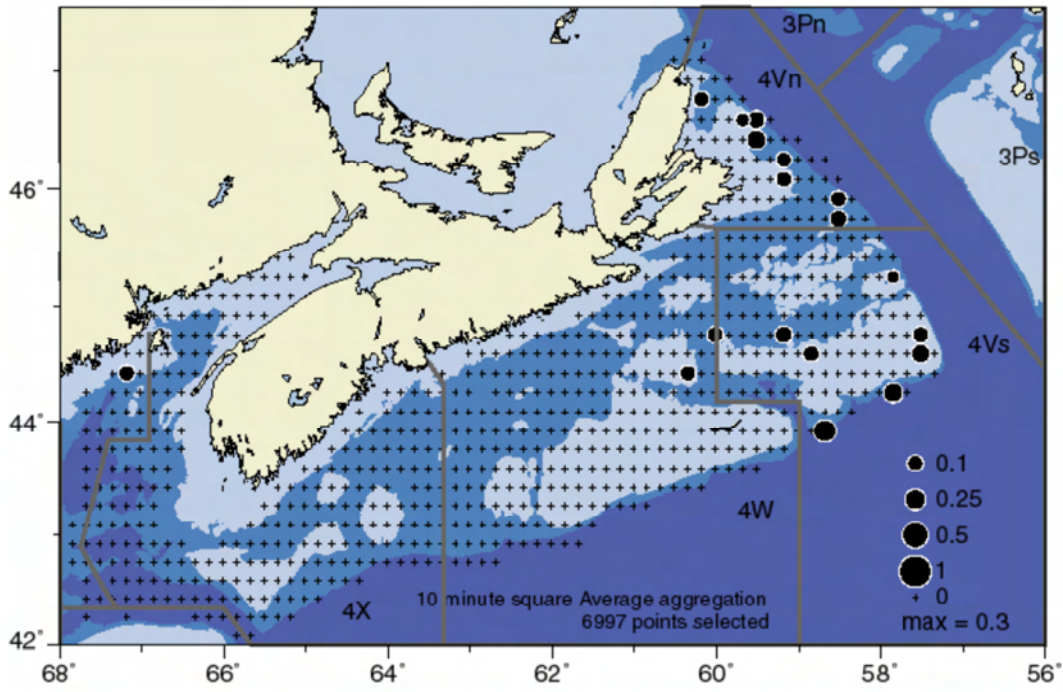
White shark occurrences in Atlantic Canadian waters.



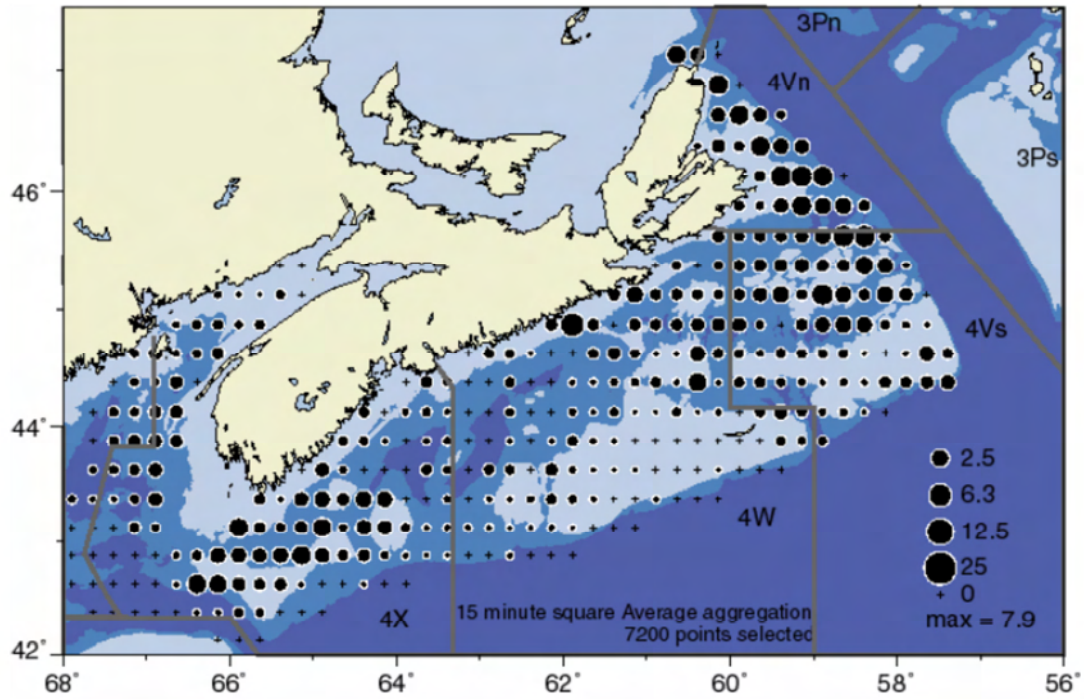
Winter Skate Population in Atlantic Canadian Waters.



Distribution of the Northern Wolfish from the Summer RV Surveys 1970 – 2010.

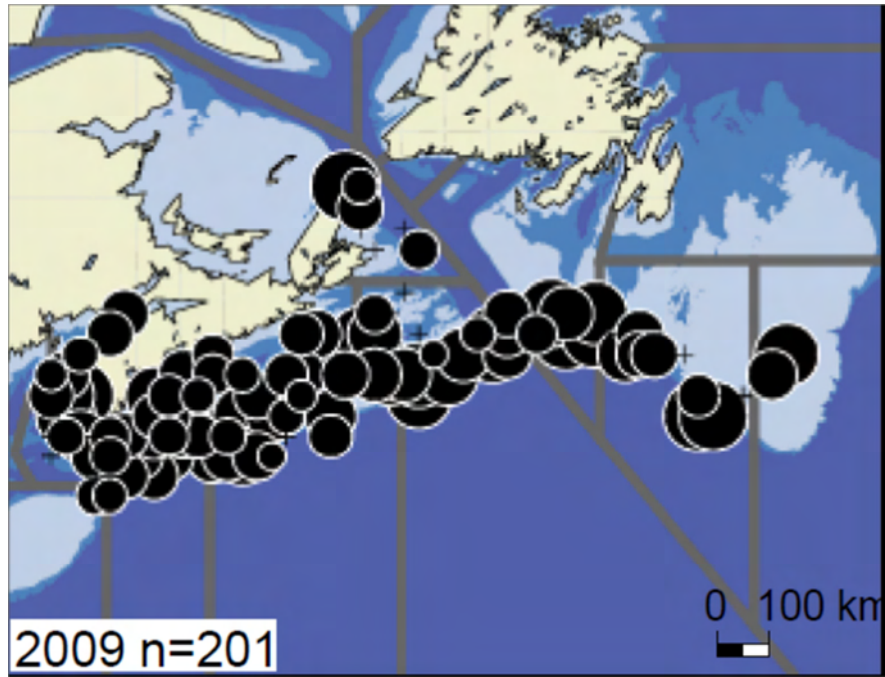


Distribution of the Spotted Wolfish from the Summer RV Survey 1970-2010.

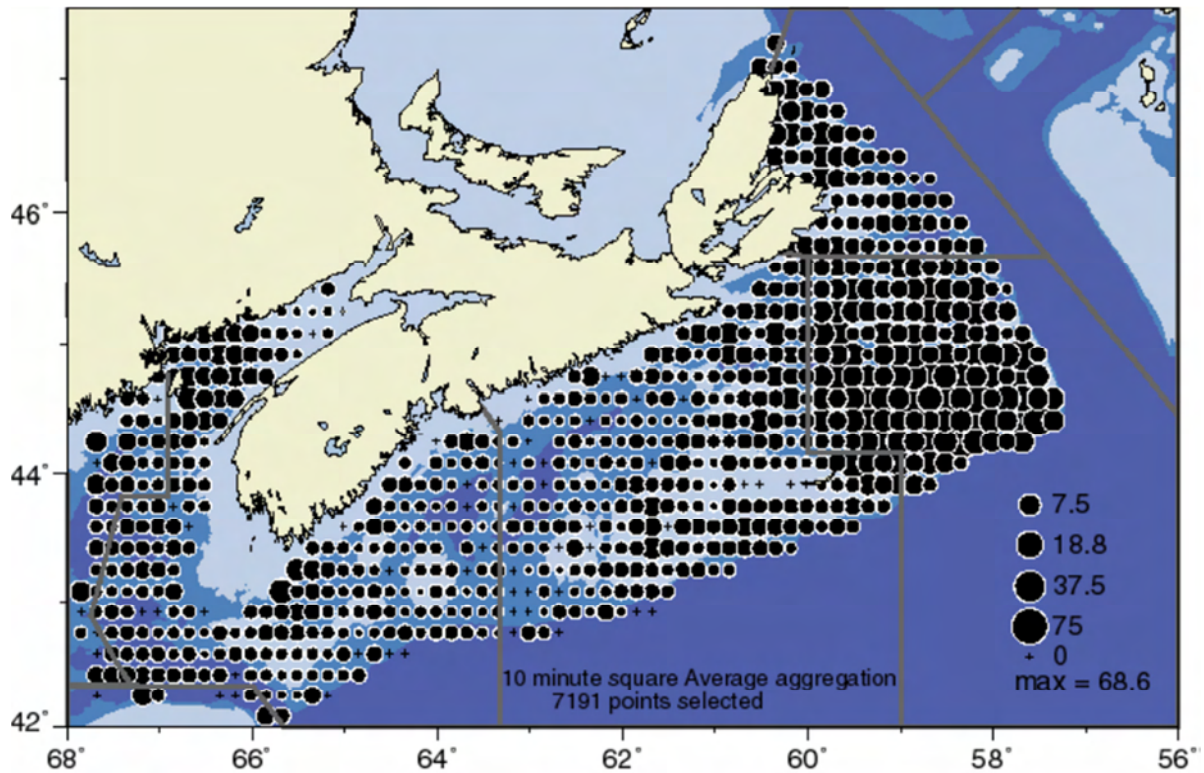


Distribution of the Atlantic Wolfish from the Summer RV Survey 1970-2010.

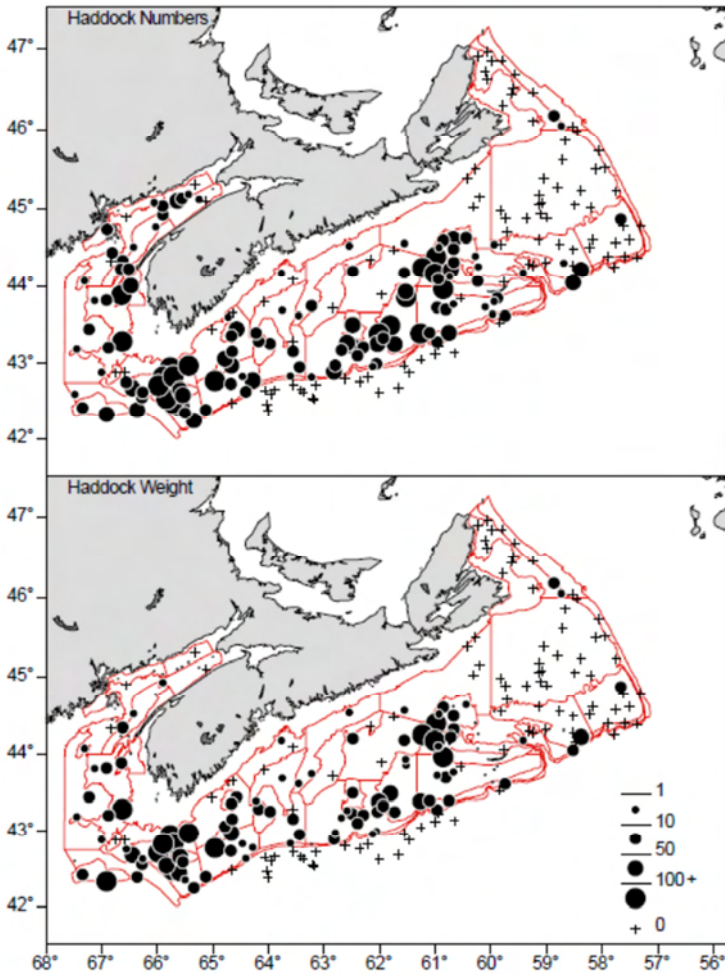




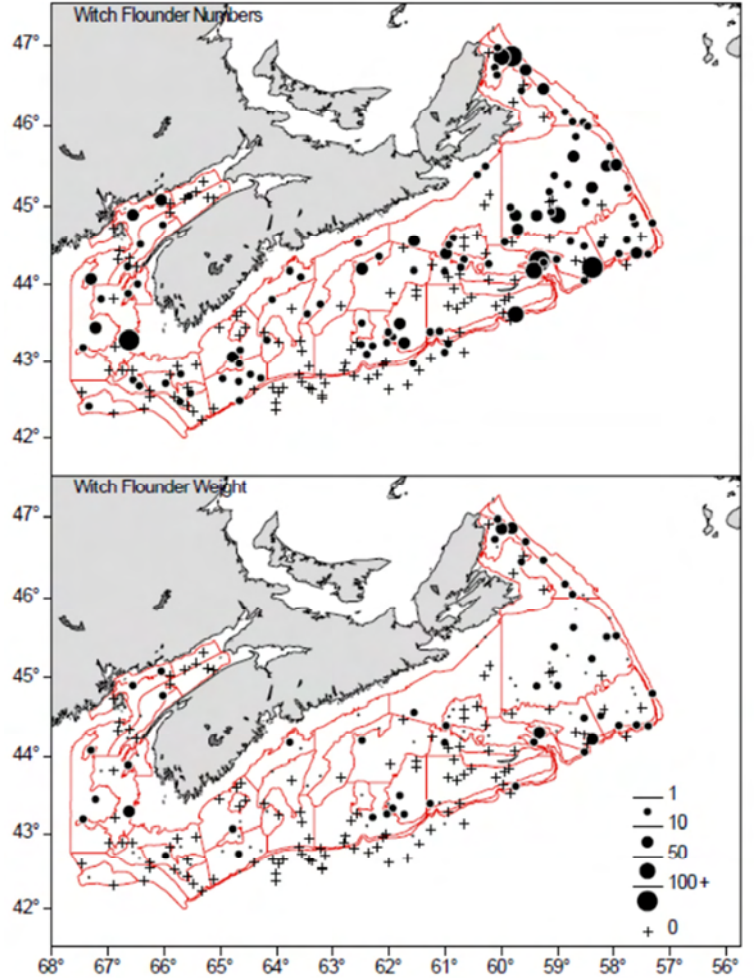
Atlantic Halibut Catches from the Summer 2009 Summer RV Survey.



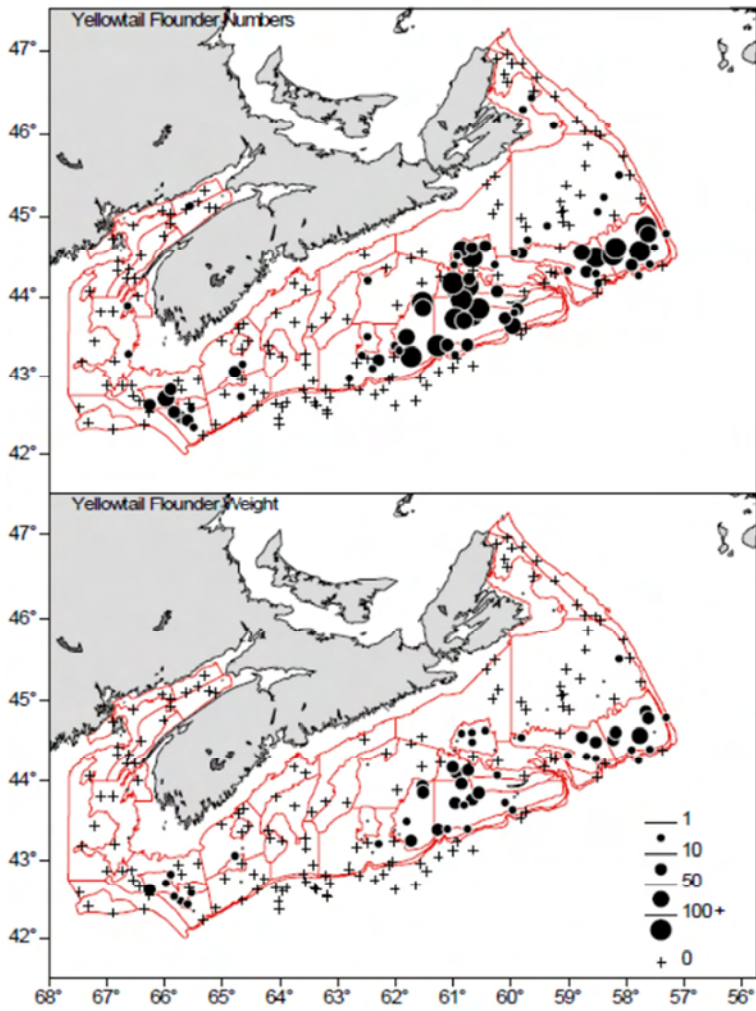
Distribution of Thorny skate as indicate by the Summer RV Survey 1970-2010.



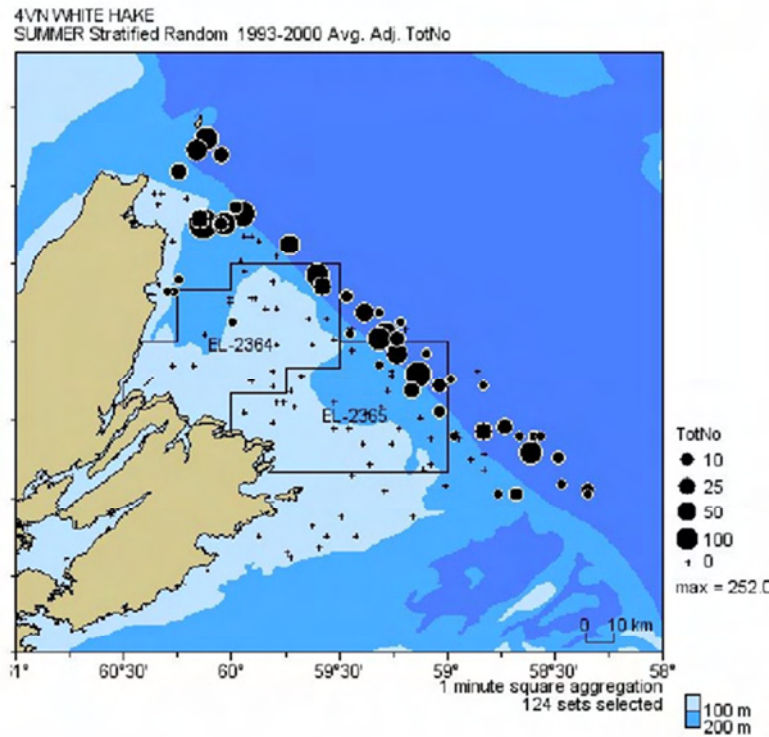
Haddock Catch from the Summer 2010 RV Survey.



Witch Flounder Catch from the Summer 2010 Survey.



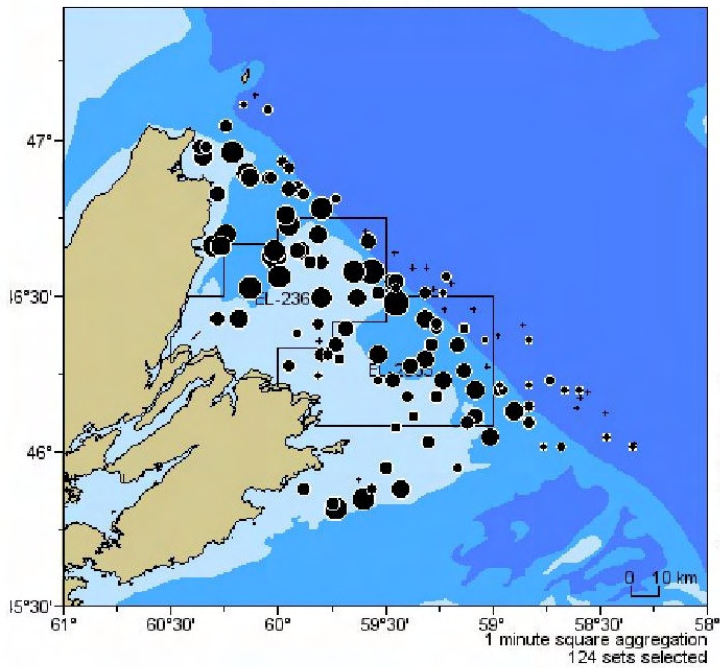
Yellowtail Flounder catch from the Summer 2010 RV Survey.



White Hake catch from the Summer RV Survey 1993-2000.

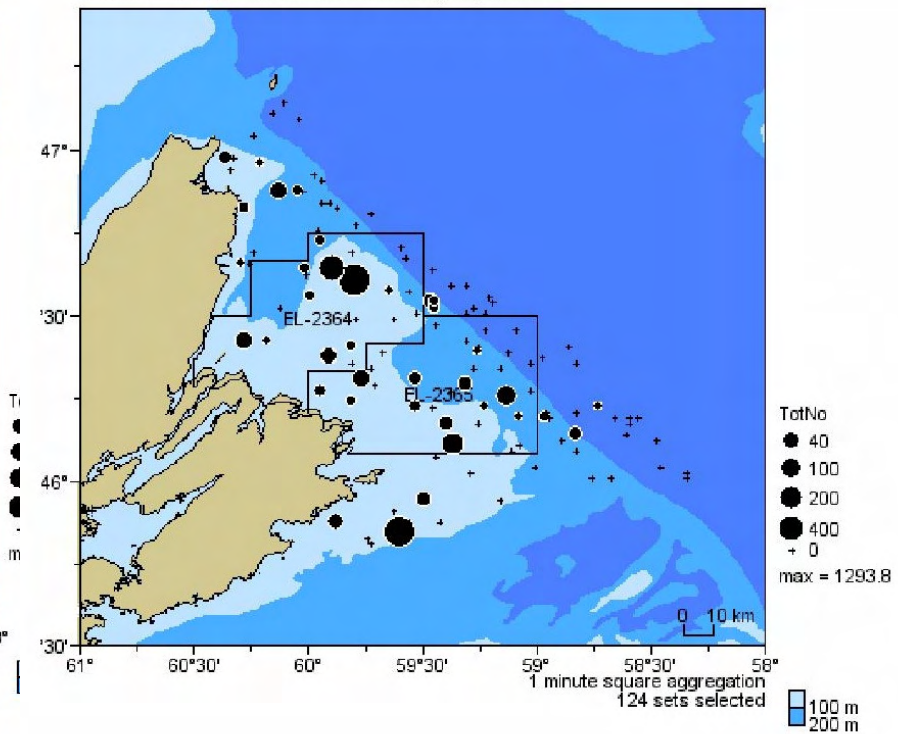


4VN AMERICAN PLAICE  
SUMMER Stratified Random 1993-2000 Avg. Adj. TotNo

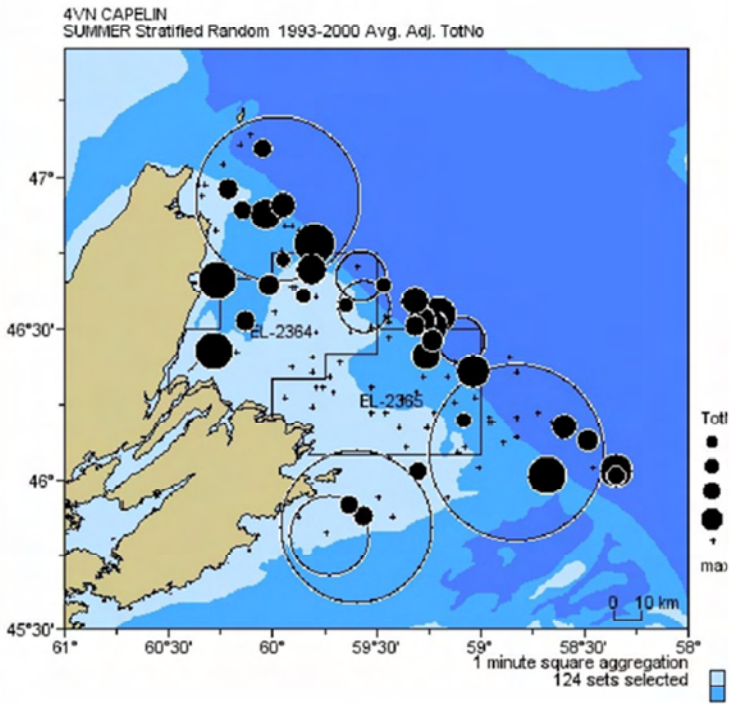


American plaice Catch 1993-2000  
Summer RV Survey.

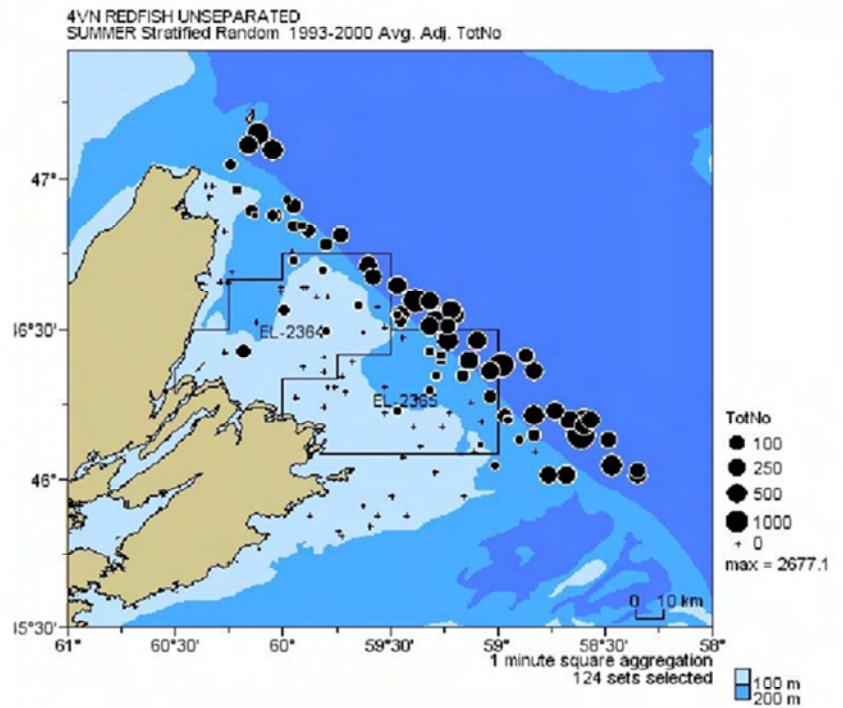
4VN HERRING(ATLANTIC)  
SUMMER Stratified Random 1993-2000 Avg. Adj. TotNo



Atlantic herring catch during the 1993-2000  
Summer RV Survey.



Capelin catch during the Summer 1993-2000 RV Surveys.



Redfish catch during the Summer 1993-2000 RV Surveys.