

**Table 3.2 Water Body (P0X) and Stream (S0X) Locations**

Station	Position ( WGS 84 UTM)	
	Northing	Easting
P01	723718	5293828
P02	723952	5294102
P03	723593	5294197
P04	723584	5294348
P05	723492	5294186
S01	724761	5294597
S02	724400	5294681
S03	723788	5294415
S04	724070	5294613

The substrate and flow of streams were described using the classifications detailed in Tables 3.3 and 3.4, respectively. Baseline Information sheets for each watercourse crossing is attached as Appendix B.

**Table 3.3 Classification of Substrate**

Substrate	Description
Bedrock (Br)	Continuous solid rock exposed by scouring forces.
Boulder (Bo)	Boulder-sized rocks from 25 cm to greater than 1 m in diameter.
Rubble (R)	Large rocks from 14 to 25 cm in diameter.
Cobble (C)	Moderate to small size rocks from 3 to 13 cm in diameter.
Gravel (G)	Small stones from 2 mm to 3 cm in diameter.
Sand (Sa)	Fine deposits ranging from 0.06 to 2 mm in diameter.
Silt (Si)	Fine material less than 0.06 mm in diameter, often carried by currents.
Muck (detritus)	Silt and clay containing greater than 85% organic (detritus).
Clay (mud)	Material of inorganic origin with greasy feel between fingers and no apparent structure.
Fines (F)	Sand and smaller-sized material of 2 mm in diameter or less. This classification is used for an indeterminate mix of sand, silt, muck and clay when the dominant component is not determined.

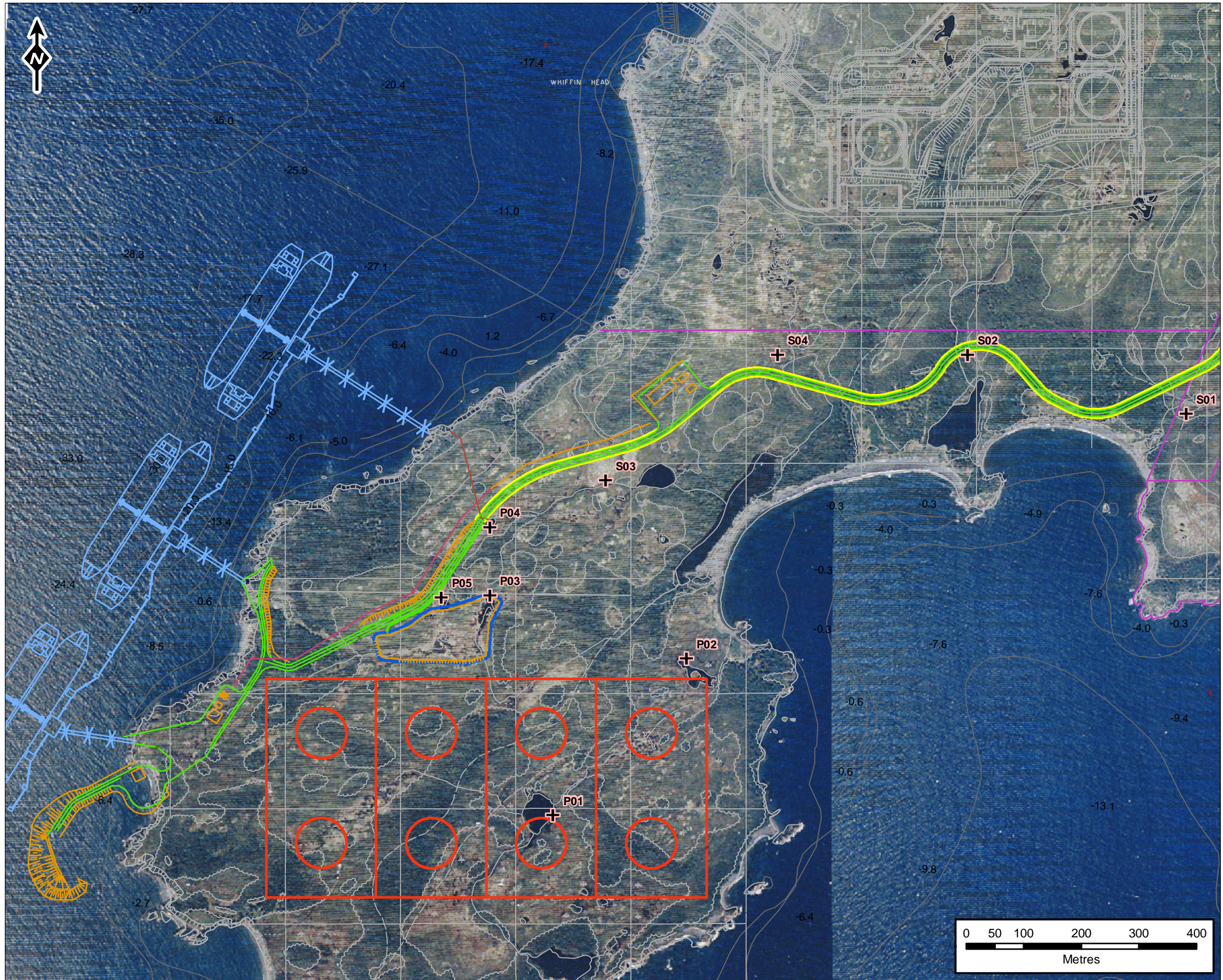
Adapted from: Bradbury et al. (2001).

**Table 3.4 Classification of Flow**

Flow Type	Description
Run	Swiftly flowing water with some surface agitation but no major flow obstructions, coarser substrate (gravel, cobble, boulder).
Riffle (Rif)	Shallower section with swiftly flowing, turbulent water with some partially exposed substrate (usually cobble or gravel-dominated).
Pocketwater	Turbulence increased greatly by numerous emergent boulders, which create eddies or scour holes (pockets) behind the obstructions.
Steady (or Flat)	Water surface is smooth and substrate is made up of organic matter, sand, muck, and fine gravel. This habitat differs from a pool due to length, associated with low gradient. This habitat type generally has a flat bottom.
Pool	Deeper area comprising full or partial width of stream; due to depth or width, flow velocity is reduced. Pool has rounded surface on bottom.
Cascade (Cas) (rapids)	Area of steeper gradient with irregular and rapid flows, often with turbulent white water. Rapids are primarily associated with larger stream sections and rivers. In larger rivers, it is recommended that the survey crew not attempt to conduct cross sections in these types of habitat.
Glide	Wide, shallow pool flowing smoothly and gently, with low to moderate velocities and little or no surface turbulence. Substrate usually consists of cobble, gravel and sand.

Source: Sooley et al. (1998).





LEGEND

- P0X**  
+ Waterbody locations
- S0X**  
+ Stream locations

NOTES:  
1. DO NOT SCALE FROM DRAWING.  
2. @ JACQUES WHITFORD, 2006.

CLIENT:

NEWFOUNDLAND LNG LIMITED

PROJECT TITLE:

REGISTRATION / PROJECT DESCRIPTION

DRAWING TITLE:

STREAM AND WATERBODY  
SAMPLING LOCATIONS

FIGURE 3.12

Jacques Whitford



SCALE: 1:7,000	DATE: OCT. 26, 2006
DRAWN BY: SAR	CHECKED BY:
EDITED BY: -	REV. No. 0
DRAWING No.:	
MAP FILE: 1015846_06.MXD	



Where relevant, the habitat was classified using the Beak salmonid habitat classification system, as described in Table 3.5. Several stream sections are not considered suitable salmonid habitat (i.e., bog channels) and are described more generally in Section 3.3.3.2.

**Table 3.5 Characteristics of the Four Beak Salmonid Habitat Types**

Habitat Type	Description
Type I	Good salmonid spawning and rearing habitat; often with some feeding pools for larger age classes: <b>Flows:</b> moderate riffles; <b>Current:</b> 0.1 to 0.3 m/s; <b>Depth:</b> relatively shallow, 0.3 to 1 m; <b>Substrate:</b> gravel to small cobble-size rock, some larger rocks or boulders; and <b>General habitat types:</b> primarily riffle, pool.
Type II	Good salmonid rearing habitat with limited spawning, usually only in isolated gravel pockets; good feeding and holding areas for larger fish in deeper pools, pockets or backwater eddies: <b>Flows:</b> heavier riffles to light rapids; <b>Current:</b> 0.3 to 1 m/s; <b>Depth:</b> variable from 0.3 to 1.5 m; <b>Substrate:</b> larger cobble rubble size rock to boulders and bedrock, some gravel pockets between larger rocks; and <b>General habitat types:</b> run, riffle, pocketwater, pool.
Type III	Poor rearing habitat with no spawning capabilities, used for migratory purposes: <b>Flows:</b> very fast, turbulent, heavy rapids, chutes, small waterfalls; <b>Current:</b> 1 m/s or greater; <b>Depth:</b> variable, 0.3 to 1.5 m; <b>Substrate:</b> large rock and boulders, bedrock; and <b>General habitat types:</b> run, pocketwater, cascades.
Type IV	Poor juvenile salmonid rearing habitat with no spawning capability, provides shelter and feeding habitat for larger, older salmonid (especially brook trout): <b>Flows:</b> sluggish; <b>Current:</b> 0.15 m/s; <b>Depth:</b> variable but often 1 m; <b>Substrate:</b> soft sediment or sand, occasionally large boulders or bedrock, aquatic macrophytes present in many locations; and <b>General habitat types:</b> steady, pool, glide.
Source: Sooley et al. (1998).	

Electrofishing sampling was conducted in each of the streams planned to intersect with the facilities access road route. Each stream was sampled above, below and near the planned crossing location, where possible. Some stream sections were not suitable for electrofishing due to insufficient water depth or inaccessibility due to dense canopy cover.

Each still or low-flow water body within the Project footprint was also sampled. Larger water bodies were sampled by experimental gillnet and smaller, shallow water bodies were sampled by electrofishing the perimeter. An experimental gillnet was set across the widest section of the water body for a minimum of three hours. The mesh size of the experimental gillnet ranged from 0.5 to 1.5 inches (1.3 to 3.8 cm).

### 3.3.3.2 Results

All water bodies within the footprint of the Project and all visible streams potentially intersecting the planned route for the access road were surveyed at the request of Fisheries and Oceans Canada (DFO). None of the water bodies within the footprint of the Project are reportedly fished by locals (M. Peach, pers. comm.). Some fishing was reported in the ponds near Labours Cove and Wild Cove, but it is not considered “very good fishing”. The Wild Cove and Labours Cove ponds were not sampled directly since they are not within the footprint of the Project. The streams entering these ponds were surveyed since they will require culverting for the access road.

### Water Body P01

Water body P01 was sampled on October 19, 2006, by experimental gillnet (Figure 3.13). The gillnet was retrieved after four hours and no fish had been collected by the gillnet. The water body is approximately 100 m long by 60 m wide and approximately 3 to 4 m deep. Yellow pond lily (*Nuphar luteum*) occurred throughout the pond.

**Figure 3.13 Water Body P01**



### Water Body P02

Water body P02 is approximately 30 m long and 6 m wide at the widest point (Figure 3.14). The substrate is composed of silt and mud, with water depth ranging from 1.0 to 1.5 m. No visible streams entered or exited the water body. Yellow pond lily was the only visible aquatic vegetation. No fish were caught with a gillnet set for three hours.

**Figure 3.14 Gillnet Set at P02**





### Water Body P03

Water body P03 is approximately 35 m long and 10 m wide at the widest point (Figure 3.15). The substrate is composed of silt and mud, with water depth ranging from approximately 1.5 to 2.5 m. No visible streams entered or exited the water body. Yellow pond lily occurred along the perimeter in low abundance. No fish were caught with a gillnet set for three hours.

**Figure 3.15 Gillnet Set at P03**



### Water Body P04

Water body P04 was a maximum of approximately 18 m long and 15 m wide at the time of the survey (Figure 3.16). This water body was a maximum of 0.5 m deep so was too shallow to set a gillnet. Instead, the perimeter of the water was sampled by electrofisher. No fish were sampled or observed. Buckbean (*Menyanthes trifoliata*) was the only visible vegetation in the water body.

**Figure 3.16 Waterbody P04**



### **Water Body P05**

Water body P05 is approximately 12 m long and 10 m wide at the widest point (Figure 3.17). The substrate is composed of silt and mud, with water depth ranging from approximately 1.0 to 1.5 m. No visible streams entered or exited the water body. Yellow pond lily occurred throughout the pond. No fish were caught with a gillnet set for three hours.

**Figure 3.17 Gillnet Set at P05**



### **Stream S01**

Stream S01 was intermittently visible along its entire course as it meandered through a bog. The remainder of the stream is visible only as small pools throughout the wet bog (Figure 3.18). There is a larger bog pond on the topographic map at the head of stream S01, but it is not within the planned route for the access road.

**Figure 3.18 Stream S01**





The section of stream S01 nearest to the proposed stream crossing that was wide enough to electrofish is indicated by the symbol S01 on Figure 3.12. The actual stream crossing is proposed upstream approximately 70 m from the S01 sampling location. The stream crossing is proposed through a bog section which is of little value as fish habitat. This lower section of the stream is considered the only potential fish habitat within the stream. However, there is very low flow through channels less than 0.25 to 0.75 m wide. Water depths ranged from 10 to 15 cm, over a substrate of fines and occasional cobble (See Appendix B). Within a 25-m lower section of Stream S01, six juvenile brook trout (*Salvelinus fontinalis*) were collected, ranging in length from 4 to 9 cm. No other fish were collected. Stream S01 could not be electrofished at or above the proposed stream crossing location.

## Stream S02

Stream S02 (S02) is densely covered by a canopy (Figure 3.19). The list of dominant canopy species is listed below in order of abundance:

- leatherleaf;
- Canadian burnet - *Sanguisorba canadensis*;
- green alder - *Alnus crispa*;
- grasses - *Poaceae* spp.;
- eastern larch;
- Labrador tea; and
- sheep laurel.

The S02 stream section directly upstream of the planned crossing location was not accessible, but it appeared to be no different than the lower sections. The crossing and lower stream sections were classified as Type II salmonid habitat (see Appendix B). The channel is 1.0 to 1.5 m wide, with a depth ranging from 5 to 50 cm and velocity between 0.2 to 1.0 m/s. By electrofishing at the crossing and lower 25 m section of the stream, seven juvenile brook trout were collected, ranging from 5.5 to 15 cm, standard length. One threespine stickleback (*Gasterosteus aculeatus*) was also collected.



**Figure 3.19 Lower Section of Stream S02**

## Stream 03

Stream S03 also originates from a bog and is not traceable at or above the planned stream crossing location. The stream only becomes visible approximately 250 m from the proposed stream crossing location (Figure 3.12). The downstream section nearest the pond (Figure 3.20) is classified as Type IV salmonid habitat (Appendix B) since it is predominately a 2-m wide steady with a substrate of fines,

ranging from 0.25 to 1.0 m deep, with velocities of 0.25 m/s. This 25-m stream section was sampled by electrofishing and no fish were observed.

**Figure 3.20 Lower Section of Stream S03**



#### **Stream S04**

Stream S04 also originates from a bog and is visible only intermittently above the planned stream crossing location (Figure 3.21). This section of the stream was classified as unsuitable salmonid habitat. All portions of this stream section large enough were sampled by electrofisher, but no fish were observed. This stream section was a series of bog pools, with a substrate of fines and occasional cobble or rubble. Water depth averaged between 10 and 15 cm, with a velocity of 0.1 to 0.2 m/s. The proposed stream crossing and lower sections were inaccessible.

**Figure 3.21 Upstream Section of Stream S04**

