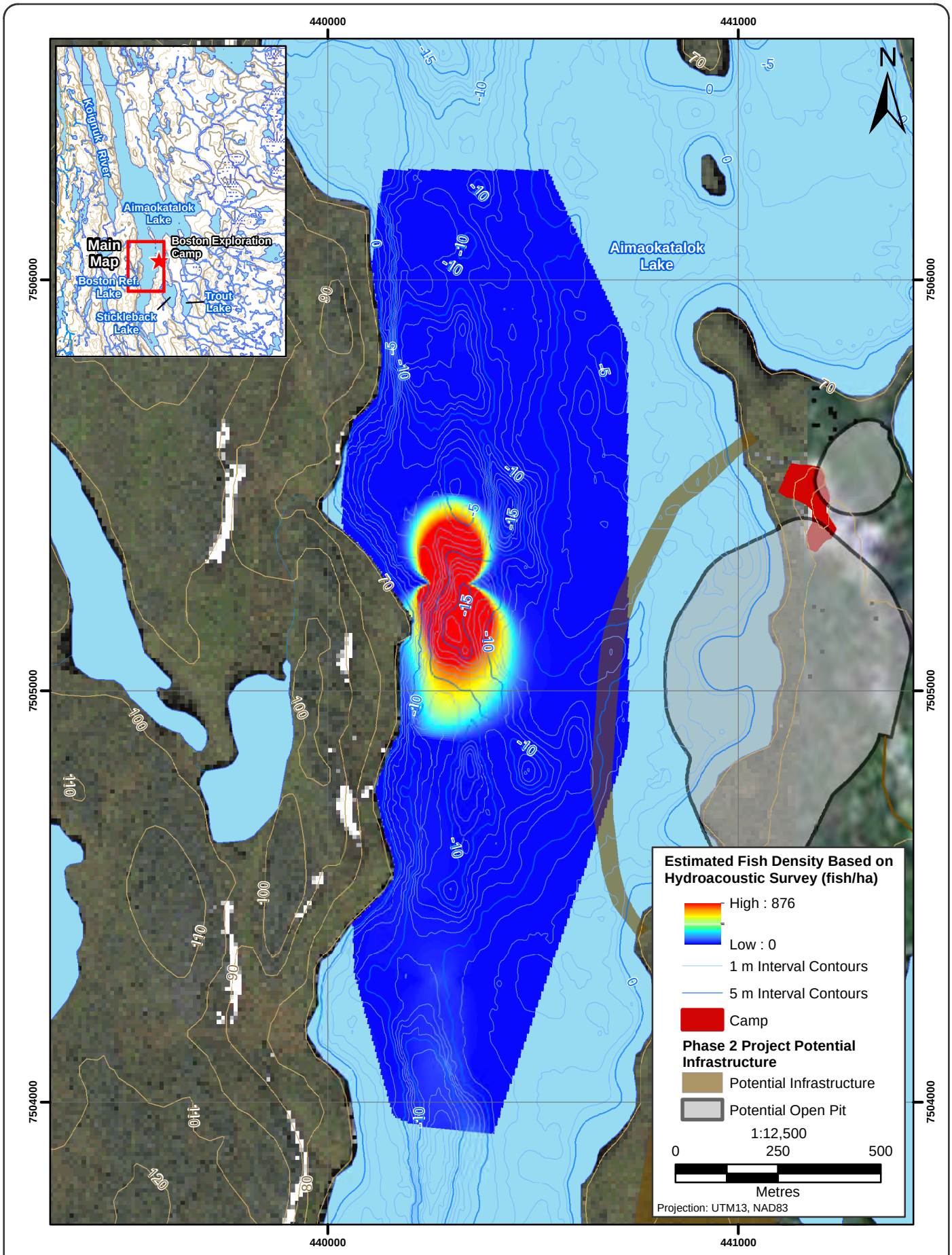

Aimaokatalok Lake Fish Density Distribution Derived from Hydroacoustics (Ore Deposit Area, Daytime), Hope Bay Belt Project, 2010

Figure 3.2-1

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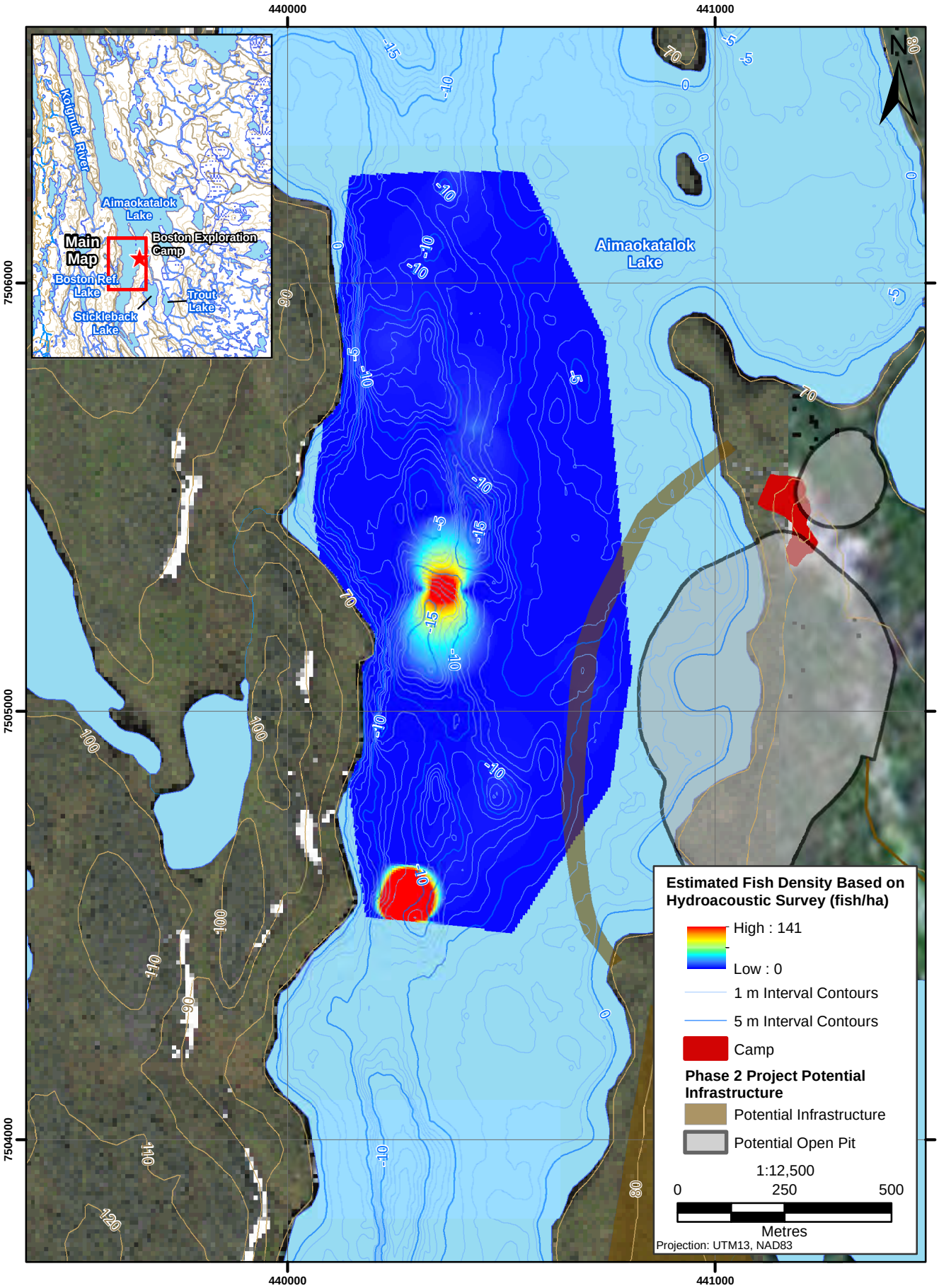

Aimaokatalok Lake Fish Density Distribution Derived from Hydroacoustics (Ore Deposit Area, Dusk), Hope Bay Belt Project, 2010

Figure 3.2-2

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Table 3.2-1. Total Catch and Mean Catch per Unit Effort for Gillnets in Lakes, Hope Bay Belt Project, 2010

Lake	Number of Sets	Total Catch (Number of Fish)				Mean Total CPUE					
		LT	LW	CS	SG	LT	SE	LW	SE	CS	SE	AG	SE
Reference B	4	15	0	0	0	0.07	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Reference D	6	7	1	2	0	0.02	0.31	0.00	0.17	0.01	0.33	0.00	0.00
Stickleback	5	0	0	0	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Trout	5	2	0	0	0	0.01	0.40	0.00	0.00	0.00	0.00	0.00	0.00
Aimaokatalok	23	79	25	177	0	0.06	0.92	0.02	0.44	0.13	4.04	0.00	0.00

Fish Species Codes: LT = lake trout, CS = cisco, AG = Arctic grayling, LW = lake whitefish
SE = standard error of the mean
CPUE = number of fish per 100 m^2 gill net per hour

Table 3.2-2. Total Effort, Catch by Species, Total Catch and Catch per Unit Effort at Varying Depths for Ore Body and Reference Sites in Aimaokatalok Lake, Hope Bay Belt Project, 2010

Site	Total Effort (h)	LT	LW	CS	Total Catch	CPUE (LT)	CPUE (LW)	CPUE (CS)	CPUE (TOTAL)
Ore Body 0 to 5 m Interval	18.52	19	3	0	22	0.47	0.07	0.00	0.55
Ore Body 5 to 10 m Interval	3.18	3	0	0	3	0.43	0.00	0.00	0.43
Ore Body 10 to 15 m Interval	10.83	30	15	100	145	1.27	0.64	4.25	6.16
Reference 0 to 5 m Interval	10.18	12	2	27	41	0.54	0.09	1.22	1.85
Reference 5 to 10 m Interval	3.32	2	2	0	4	0.28	0.28	0.00	0.55
Reference 10 to 15+ m Interval	6.73	12	2	23	37	0.82	0.30	1.57	2.53
Total	**52.77**	**78**	**24**	**150**	**252**	**0.68**	**0.21**	**1.31**	**2.20**

Fish Species Codes: LT = lake trout, CS = cisco, LW = lake whitefish
CPUE = number of fish per 100 m^2 gill net per hour

Table 3.2-3. Catch per Unit Effort in Floating and Sinking Gillnets at Various Lakes, Hope Bay Belt Project, 2010

Lake	Gear Type	Hours	LT	CPUE	LW	CPUE	CS	CPUE	AG	CPUE	Total	CPUE
Reference B	Floating	4.2	9	2.1	0	0.0	0	0.0	0	0.0	9	2.1
Reference B	Sinking	3.1	6	1.9	0	0.0	0	0.0	0	0.0	6	1.9
Reference D	Floating	4.1	2	0.5	0	0.0	0	0.0	0	0.0	2	0.5
Reference D	Sinking	4.2	5	1.2	1	0.2	2	0.5	0	0.0	8	1.9
Stickleback	Floating	4.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Stickleback	Sinking	4.3	0	0.0	0	0.0	0	0.0	1	0.2	1	0.2
Trout	Floating	4.0	2	0.5	0	0.0	0	0.0	0	0.0	2	0.5
Trout	Sinking	2.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Fish Species Codes: LT = lake trout, CS = cisco, AG = Arctic grayling, LW = lake whitefish
CPUE = number of fish per 100 m^2 gill net per hour

Table 3.2-4. Mean Areal Fish Density (Fish/ha) by Transect during each Survey of the Aimaokatalok Lake Ore Body and Reference Areas, Hope Bay Belt Project, 2010

Ore Body - Daytime			Ore Body - Dusk			Reference - Daytime		
Transect	Fish/ha	n*	Transect	Fish/ha	n*	Transect	Fish/ha	n*
1	0.003	9	1	0.1	9	1	62	30
3	0.07	13	2	0.03	10	2	25	28
5	0.016	12	3	0.09	13	3	29	27
6	96	10	4	0.15	12	4	72	26
8	0.02	12	5	0.02	12	5	0.01	24
10	0.3	7	6	3	10	6	0.008	23
11	1.4	7	7	0.03	13	7	0.03	20
12	3	5	8	0.05	12	8	0.03	17
13	4	6	9	0.04	9	9	0.004	12
			10	19	8	10	295	2
Mean	12	9	Mean	2	10	Mean	48	10
SD	32	9	SD	6	10	SD	91	10

** n = sample size. For transects it was the number of 50 m long segments per transect; for surveys, it was the number of transects sampled per survey.*

Table 3.2-5. Species Composition Derived from Gillneting Surveys of the Ore Deposit and Reference Areas at Aimaokatalok Lake, Hope Bay Belt Project, 2010

Sampling Site	Depth (m)	Effort (hrs)	Catch				CPUE				Species Composition (Percent)			
			LKTR	LKWH	LCIS	TOTAL	LKTR	LKWH	LCIS	TOTAL	LKTR	LKWH	LCIS	TOTAL
Ore Body	0 - 5	18.5	19	3	0	22	0.5	0.1	0.0	0.6	86	14	0	100%
	5.1 - 10	3.2	3	0	0	3	0.4	0.0	0.0	0.4	100	0	0	100%
	10.1 - 15+	10.8	30	15	100	145	1.3	0.6	4.3	6.2	21	10	69	100%
	Combined	32.5	52	18	100	170	2.2	0.7	4.3	7.2	31	10	60	100%
Reference	0 - 5	10.2	12	2	27	41	0.5	0.1	1.2	1.9	29	5	66	100%
	5.1 - 10	3.3	2	2	0	4	0.3	0.3	0.0	0.6	50	50	0	100%
	10.1 - 15+	6.7	12	2	23	37	0.8	0.1	1.6	2.5	32	5	62	100%
	Combined	20.2	26	6	50	82	1.6	0.5	2.8	4.9	33	10	57	100%

Fish Species Codes: LKTR = lake trout, LKWH = lake whitefish, LCIS = lake cisco
CPUE = catch per unit effort

Table 3.2-6. Fish Species Composition and Density by Depth during each Survey of the Aimaokatalok Lake Ore Deposit and Reference Areas, Hope Bay Belt Project, 2010

Location	Period	Depth (m)	Mean Fish/m^3	Species Composition (Percent)			Fish/m^3			
				LKTR	LKWH	LCIS	LKTR	LKWH	LCIS	Combined
Ore Body	Daytime	0-5 m	3.17E-04	86	14	0	0.000274	0.000043	0	0.00032
		5-10 m	2.13E-05	100	0	0	0.000021	0	0	0.00002
		10-15 m	3.26E-03	21	10	69	0.000675	0.000337	0.002248	0.00326
		15-20 m	1.48E-05	21	10	69	0.000003	0.000002	0.00001	0.00001
Ore Body	Dusk	0-5 m	-	86	14	0	-	-	-	-
		5-10 m	1.10E-04	100	0	0	0.00011	0	0	0.00011
		10-15 m	6.40E-97	21	10	69	0	0	0	0
		15-20 m	6.40E-97	21	10	69	0	0	0	0
Reference	Daytime	0-5 m	1.16E-04	29	5	66	0.000034	0.000006	0.000076	0.000116
		5-10 m	1.33E-07	50	50	0	0	0	0	0
		10-15 m	2.01E-03	32	5	62	0.000651	0.000109	0.001249	0.002009
		15-20 m	4.03E-03	32	5	62	0.001308	0.000218	0.002506	0.004032
		20-25 m	3.01E-03	32	5	62	0.000976	0.000163	0.00187	0.003009
		25-30 m	5.34E-97	32	5	62	0	0	0	0

Fish Species Codes: LKTR = lake trout, LKWH = lake whitefish, LCIS = lake cisco
Dashes (-) = data not collected

Areal fish density within 50 m transect segments ranged from 0 to 935 fish/ha for all species combined during the day survey (Figure 3.2-1). The distribution of fish was very patchy, with highest densities where relatively deep water was present (e.g., 10 to 15 m). Mean density per transect ranged from 0.003 to 96 fish/ha, with an overall mean density of 12 fish/ha for the entire Ore Deposit area (Table 3.2-4). Application of the relative species composition in the Ore Deposit area to the overall mean density (in fish/ha) gave mean densities of 3.6 fish/ha for lake trout, 1.2 fish/ha for lake whitefish and 7 fish/ha for lake cisco (Table 3.2-7).

Table 3.2-7. Mean Areal Fish Density (Fish/ha) by Species for each Survey of the Aimaokatalok Lake Ore Deposit and Reference Areas, Hope Bay Belt Project, 2010

		Fish/ha			
Location	Survey Period	LKTR	LKWH	LCIS	Combined
Ore Body	Day	4	1.2	7	12
Ore Body	Dusk	0.7	0.2	1.3	2
Reference	Day	16	5	27	48

Fish Species Codes: LKTR = lake trout, LKWH = lake whitefish, LCIS = lake cisco

Reference Area

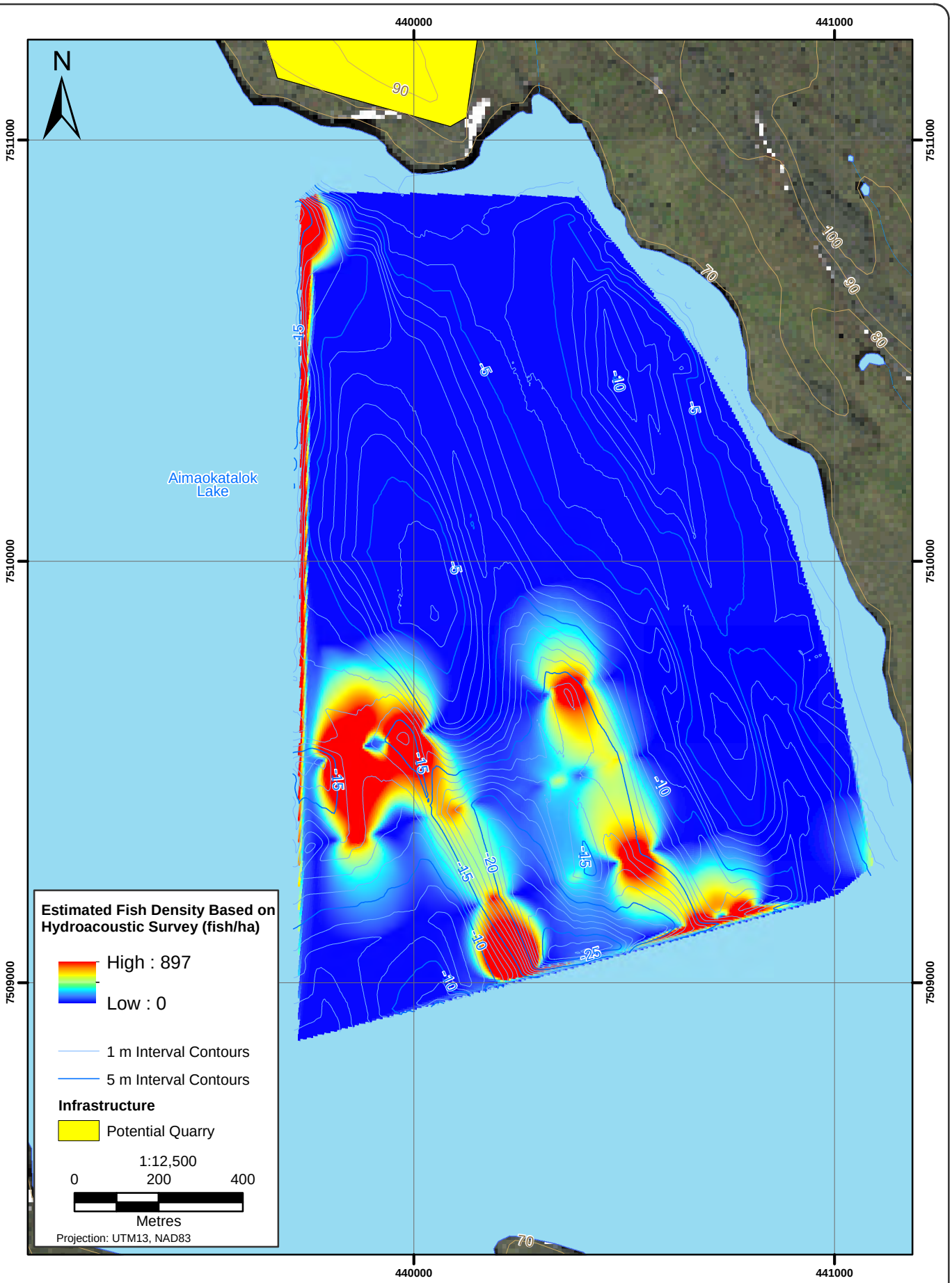
Appendix 3.2-4 presents fish density data collected during hydroacoustic surveys of the Aimaokatalok Lake reference area. Figure 3.2-3 illustrates the pattern of fish density at the Aimaokatalok Lake Reference area during the daytime survey. Fish densities in the Reference area were higher throughout the water column than in the Ore Deposit area, ranging from 0 to 0.015 fish/m^3 for all species combined (Table 3.2-6).

Fish were observed in the highest density at depths ranging from 10 to 25 m within most transects. Fish were most commonly detected on the bottom and often in aggregations within the central and southern portions for the reference area (Figure 3.2-3). When the species composition from Table 3.2-5 was applied to the acoustic estimate of the 15 to 20 m depth range, densities were 0.0013 fish/m^3 for lake trout, 0.0002 fish/m^3 for lake whitefish, and 0.0025 fish/m^3 for lake cisco (Table 3.2-6). The second highest fish density was found in the 20 to 25 m for all three species.

Areal fish density within 50 m transect segments ranged from 0 to 1,026 fish/ha for all species combined (Figure 3.2-3). Overall, fish densities were very low except in the deeper portion in the southwest corner of the reference area. Fish densities exceeded 100 fish/ha in this location. Mean density per transect ranged from 0.004 to 295 fish/ha, with an overall mean density of 48 fish/ha for the entire reference area (Table 3.2-7). The overall mean may have been influenced by the very high density along Transect 10, which was much shorter than most other transects (Table 3.2-7). In this case the average of all transect segments in the Reference area (28 fish/ha) may be a better estimate of mean density, although this practice is not generally recommended because adjacent segments may be serially correlated and thereby not independent samples (Simmonds and MacLennan 2005). Using the mean species relative abundance (Table 3.2-5) with the area mean density of 48 fish/ha produced mean densities of 16.09 fish/ha for lake trout, 5 fish/ha for lake whitefish, and 27 fish/ha for lake cisco in the Reference area (Table 3.2-7).

3.2.1.3 Length, Weight and Condition

Length, weight and condition of fish captured in Aimaokatalok Lake, Stickleback Lake, Trout Lake, Reference Lake B, and Reference Lake D are summarized in Table 3.2-8. Figures 3.2-4 and 3.2-5 show the length-frequency distributions for lake trout, lake whitefish, and cisco sampled from Aimaokatalok Lake and reference lakes, respectively.



Aimaokatalok Lake Fish Density Distribution Derived from Hydroacoustics (Reference Area, Daytime), Hope Bay Belt Project, 2010

Figure 3.2-3

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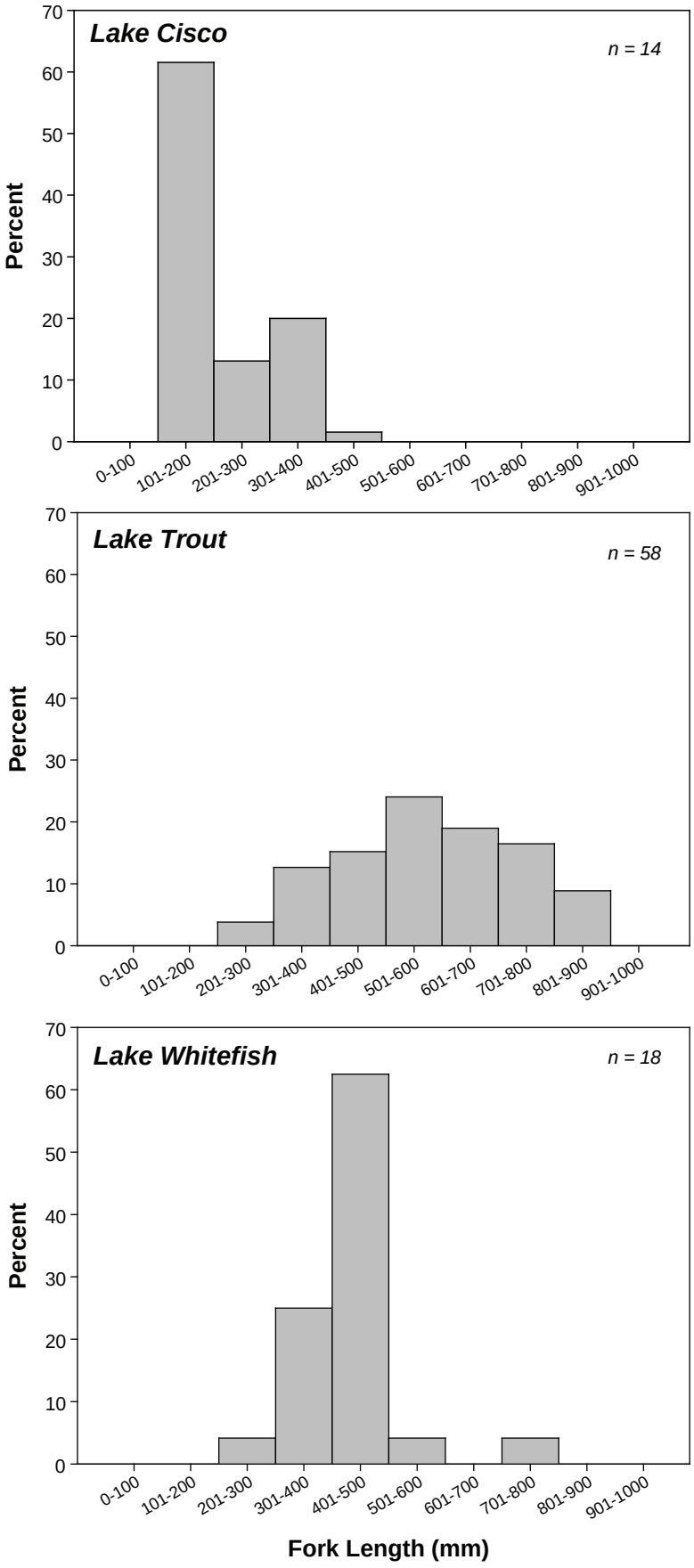

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Length-Frequency Distributions for Fish Sampled from Aimaokatalok Lake, Hope Bay Belt Project, 2010

Figure 3.2-4

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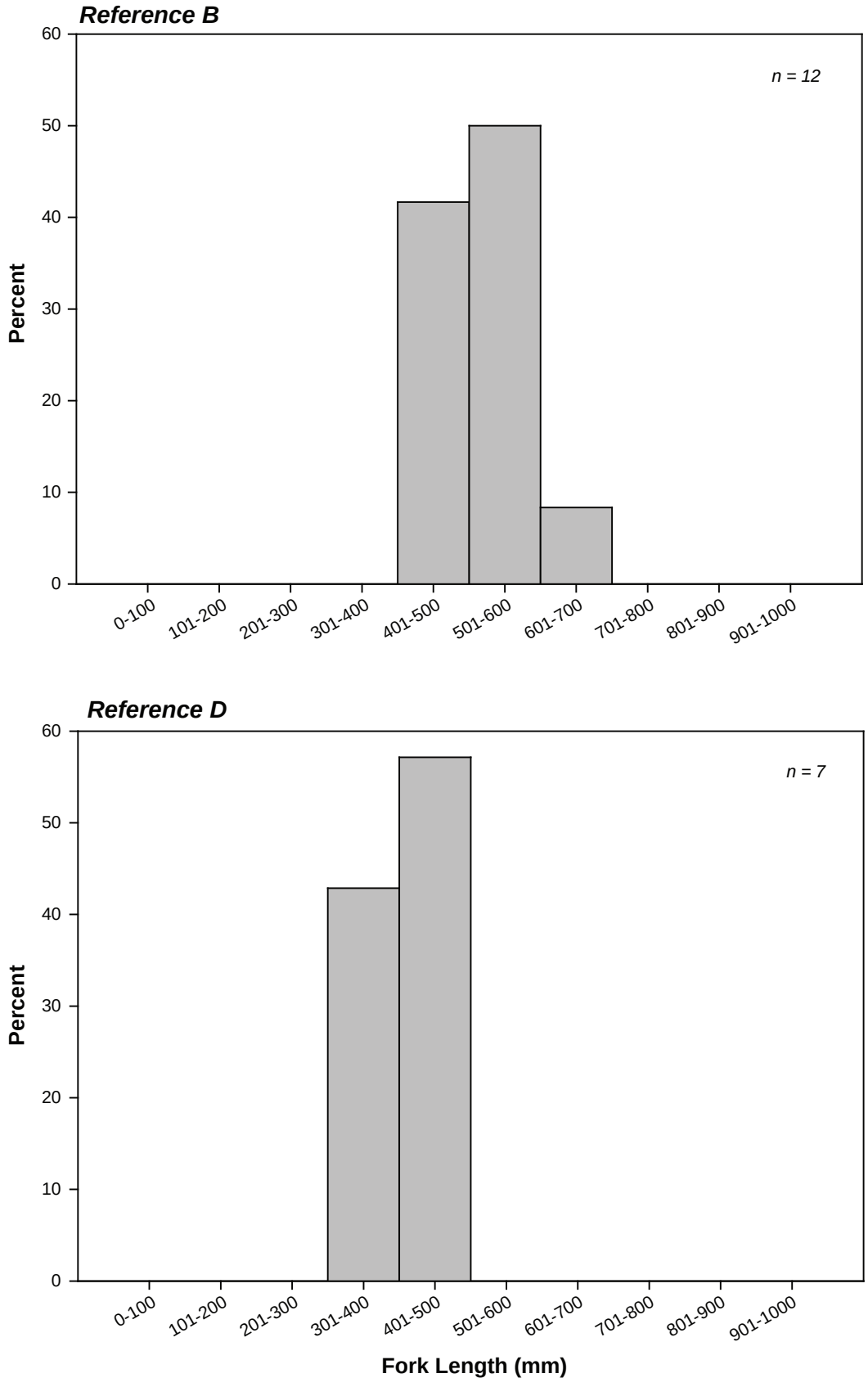

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Length-Frequency Distributions for Lake Trout Sampled from Reference Lakes, Hope Bay Belt Project, 2010

Figure 3.2-5

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Table 3.2-8. Summary of Mean Length, Weight and Condition for Fish Sampled from Five Lakes, Hope Bay Belt Project, 2010

Site	Watershed	Species Code	Method	Fork Length (mm)			Weight (g)			Condition		
				n	Mean	SE	n	Mean	SE	n	Mean	SE
Reference B Lake	Reference B	LT	GN	12	512	19	12	1,450	155	12	1.05	0.03
Reference D Lake	Reference D	CS	GN	2	123	1.5	2	16	3	2	0.84	0.11
		LW	GN	1	127	-	1	21	-	1	1.00	-
		LT	GN	7	398	18	7	689	81	7	1.07	0.05
		NSB	MT	16	54	1.7	-	-	-	-	-	-
Trout	Aimaokatalok	LT	GN	2	658	91	2	4,271	1728	2	1.41	0.02
Stickleback	Aimaokatalok	NSB	MT	34	49	1	-	-	-	-	-	-
		AG	GN	1	380	-	1	676	-	1	1.23	-
Aimaokatalok Lake	Aimaokatalok	LC	GN	130	221	7	115	162	16	115	1.16	0.14
		LT	GN	78	573	18	63	1,807	168	63	0.92	0.03
		LW	GN	24	427	20	20	884	86	20	1.27	0.02

Fish Species Codes: LT = lake trout, CS = cisco, NSB = ninespine stickleback, LW = lake whitefish
GN = gillnet, MT = minnow trap

In Aimaokatalok Lake, 130 cisco were captured by gillnetting. Mean fork length was 221 mm and mean weight was 162 g. The dominant size class was 101-200 mm. Lake trout (n = 78) were larger than those in the Reference Lakes but smaller on average than the two lake trout captured in Trout Lake (mean FL = 573 mm; mean weight = 1807 g). The dominant size class of lake trout was 501-600 mm. A total of 24 lake whitefish were captured by gillnetting in Aimaokatalok Lake. Mean length was 427 mm and mean weight was 884 g. The dominant size class was 401-500 mm.

Gillnet sampling in Reference Lake B captured lake trout only. Mean fork length of lake trout was 512 mm and mean weight was 1,450 g. As with Aimaokatalok Lake, the dominant size class was 501-600 mm. In contrast, four species were captured in Reference Lake D, including two cisco, one lake whitefish and seven lake trout caught in gillnets and 16 ninespine stickleback taken in minnow traps. The two cisco captured in Reference lake D were smaller than those in Aimaokatalok Lake (mean length = 123 mm; mean weight = 16 g). The single lake whitefish was a juvenile (127 mm FL; 21 g). Lake trout in Reference Lake D were smaller (mean FL = 398 mm and mean weight = 689 g) than those taken from other lakes. The dominant size class of lake trout in Reference Lake D was 401-500 mm. Mean length of ninespine stickleback in Reference Lake D was 54 mm. Ninespine sticklebacks were too light to be accurately weighed with an electronic balance.

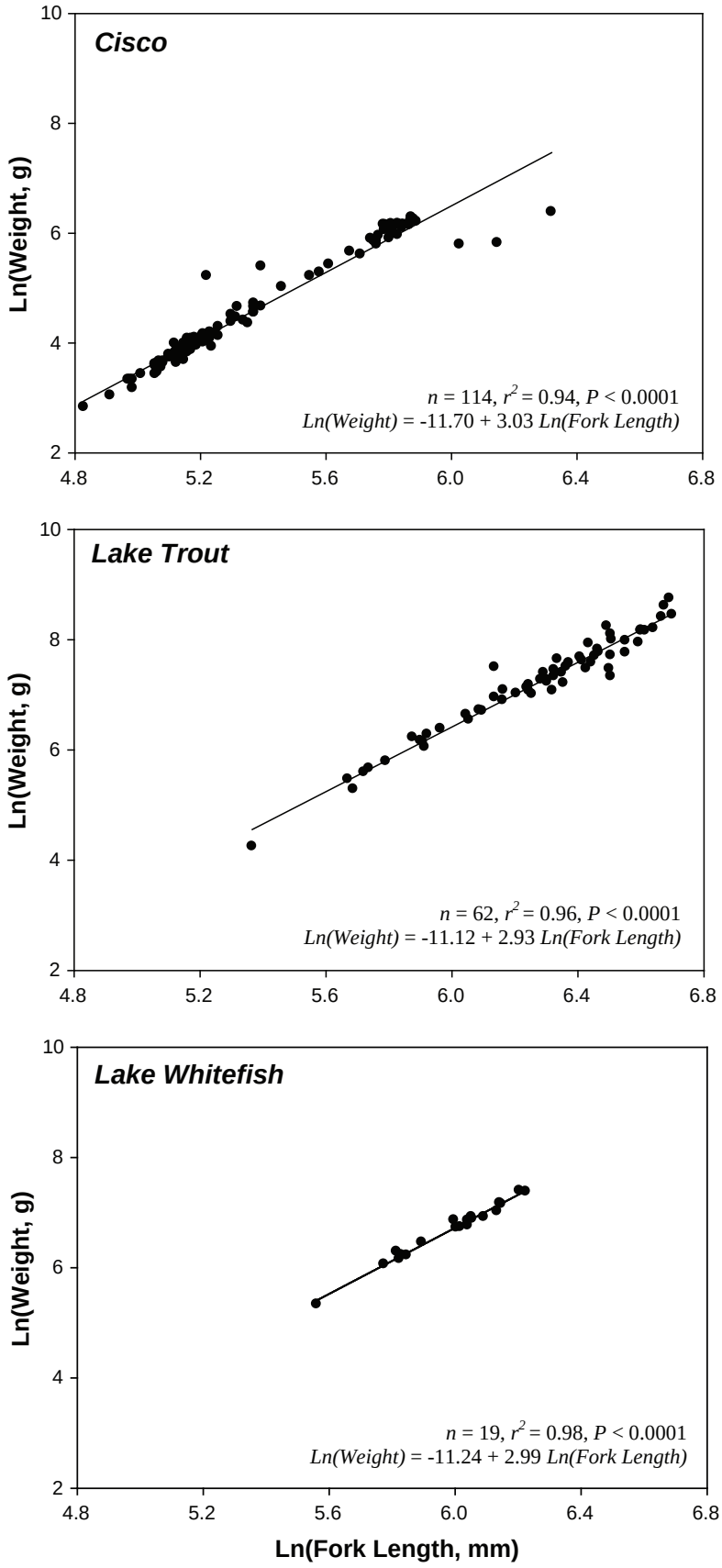
Gillnet sampling in Trout Lake yielded only two lake trout. These trout were large, with a mean FL of 658 mm and a mean weight of 4271 g. In Stickleback Lake, a single adult Arctic grayling (length = 380 mm; weight = 676 g) was taken by gillnetting, while 34 ninespine stickleback were caught in minnow traps. Mean length of ninespine stickleback was 49 mm.

Figures 3.2-6 and 3.2-7 show length-weight regressions for all species for which at least seven individuals were sampled from a lake. The length-weight regression of cisco sampled from Aimaokatalok Lake was highly significant ($P<0.0001$) and explained 94% of the variation in ln(weight). A length-weight regression for cisco from Reference Lake D was not conducted due to a low sample size (n = 2). All lake trout length-weight regressions were highly significant ($P<0.001$) and explained 90 to 96% of the variation in ln(weight). The length-weight regressions for lake whitefish in Aimaokatalok Lake was also highly significant ($P<0.0001$) and explained between 98% of the variation in ln(weight).

Fork length and weight were also used to calculate condition values for each fish species per lake. Mean condition of fish sampled from lakes is shown in Figure 3.2-8. Mean condition of lake trout was lowest in Aimaokatalok Lake (0.92) and highest in Trout Lake (1.41). Lake trout condition was moderate in the Reference Lakes (mean 1.05 and 1.07 for Reference B and D, respectively). In contrast, mean condition of lake whitefish was higher in Aimaokatalok Lake (1.27) than Reference D Lake (1.00). Similarly, mean condition of cisco was higher in Aimaokatalok Lake (1.16) than in Reference D Lake (0.84). However, only one lake whitefish and two ciscoes were taken in Reference D Lake, so the sample sizes are insufficient to make robust comparisons between lakes.

3.2.1.4 Age and Growth

Table 3.2-9 summarizes the age of fish species sampled in 2010. Mean ages of lake trout ranged from 9 years (Reference Lake D) to 19 years (Aimaokatalok Lake). Lake whitefish mean age was 20 years in Aimaokatalok Lake, while cisco mean age ranged from 1 year (Reference Lake D, based on only two individuals)) to 8 years (Aimaokatalok Lake). The eldest fish sampled were a 37 year-old lake trout and a 37 year-old lake whitefish, both captured from Aimaokatalok Lake. Lake trout and lake whitefish occasionally had individuals aged over 25 years.



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Length-Weight Regressions for Fish Sampled from Aimaokatalok Lake, Hope Bay Belt Project, 2010

Figure 3.2-6

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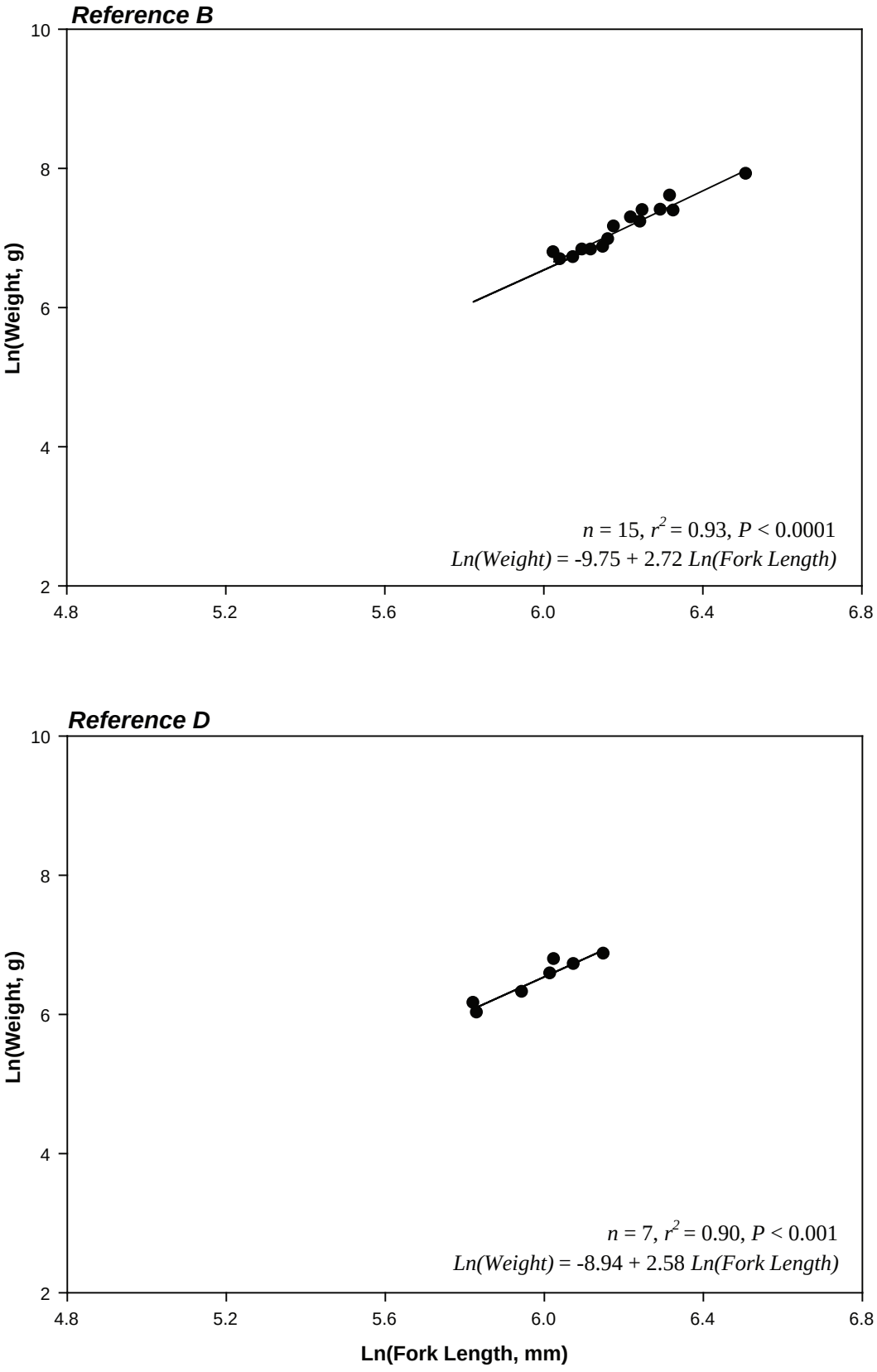

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Length-Weight Regressions for Lake Trout Sampled from Reference Lakes, Hope Bay Belt Project, 2010

Figure 3.2-7

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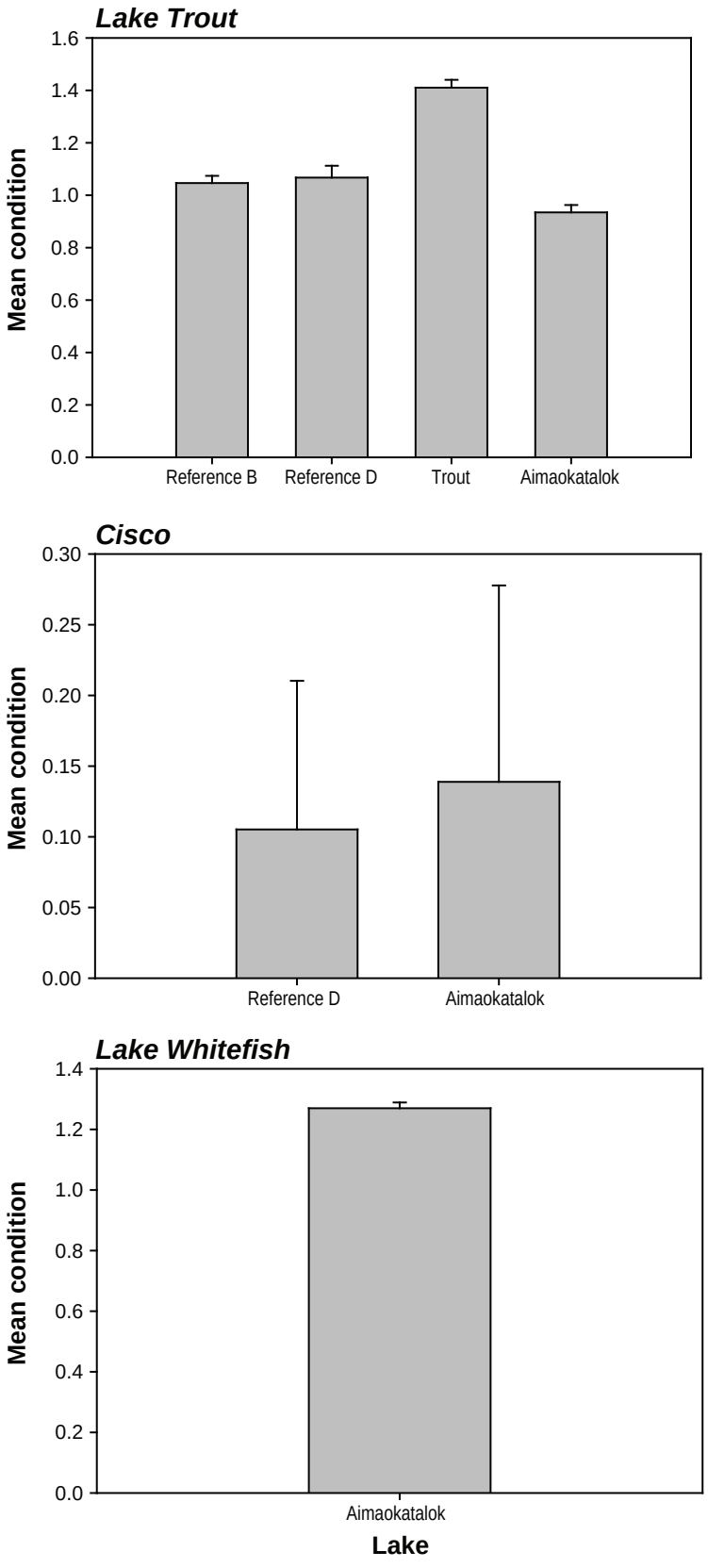

Note: Error bars represent standard error of the mean.

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Mean Condition of Fish Sampled from Four Lakes, Hope Bay Belt Project, 2010

Figure 3.2-8

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Table 3.2-9. Age Data Summary for Fish Sampled from Three Lakes, Hope Bay Belt Project, 2010

Lake	Watershed	Species	Age (years)				
			n	Mean	SE	Min	Max
Reference B	Reference B	LT	15	17	0.9	12	24
		LW	-	-	-	-	-
		LC	-	-	-	-	-
Reference D	Reference D	LT	12	9	1	6	16
		LW	-	-	-	-	-
		LC	2	1	-	1	1
Aimaokatalok	Aimaokatalok	LT	64	19	0.4	8	37
		LW	18	20	2	7	37
		LC	14	8	1.4	2	16

Species code: LT = lake trout, LW = lake whitefish, LC = cisco
n = number, SE = standard error, min = minimum, max = maximum

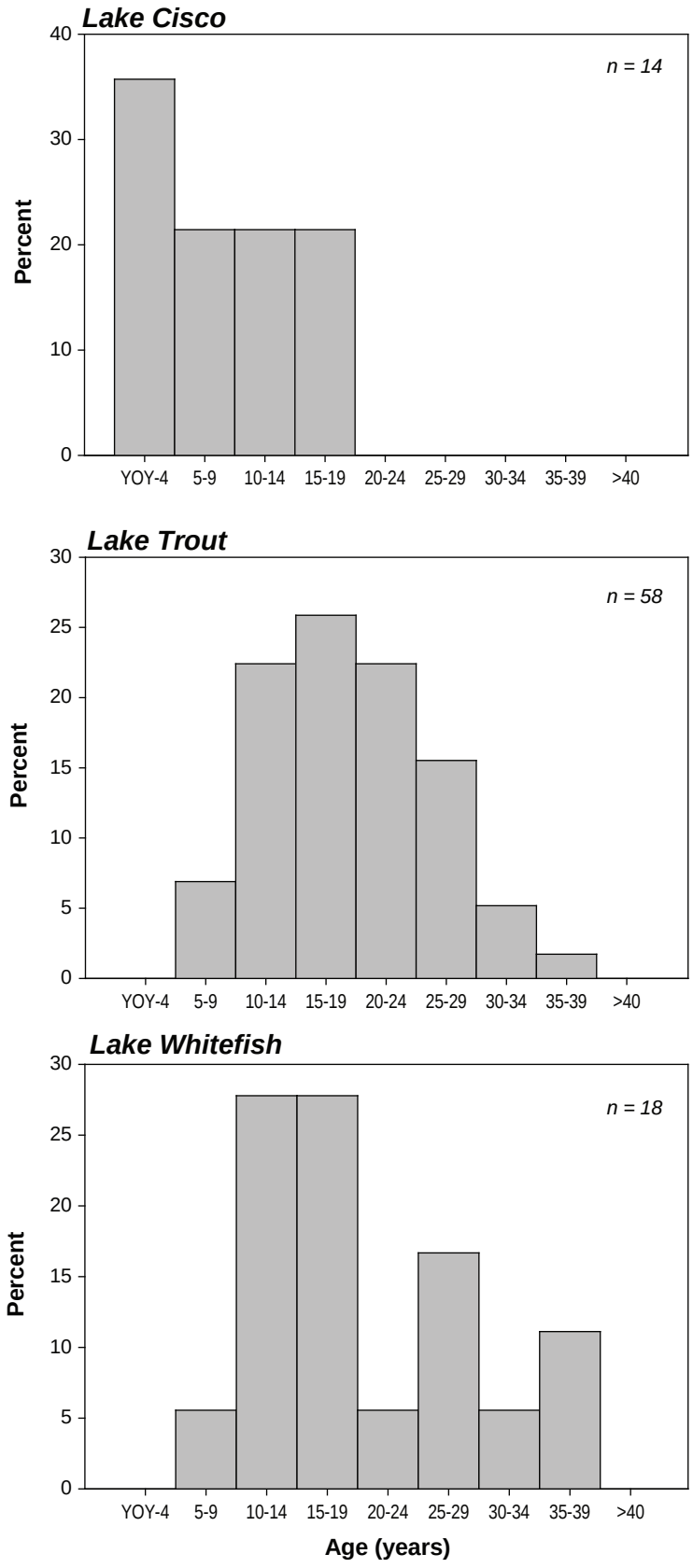
Figures 3.2-9 and 3.2-10 show age-frequency distributions for each fish species, and Figures 3.2-11 and 3.2-12 show von Bertalanffy growth models. Lake trout captured in the project area ranged in age from 6 to 37 years. The dominant age classes within were 10 to 14 years and 15 to 19 years – identical to the dominant age classes reported in other Hope Bay lakes in 2009 (Rescan 2010). Aimaokatalok Lake had the oldest mean age. The von Bertalanffy growth models explained between 45 and 61% of the variation in length-at-age for lake trout sampled from their respective lakes. These models were less robust than growth models reported in Rescan (2010) because the sample sizes involved are smaller. Growth coefficients varied from 0.08 $year^{-1}$ (Aimaokatalok Lake) to 0.21 $year^{-1}$ (Reference Lake D).

Lake whitefish ranged in age from 7 to 37 years within the Project area. Aimaokatalok Lake also had the widest range of ages. The dominant age classes for lake whitefish were the same as lake trout: 10 to 14 years and 15 to 19 years. The von Bertalanffy growth model explained 45% of the variation in length-at-age for lake whitefish sampled from Aimaokatalok Lake. The growth coefficient was 0.12 $year^{-1}$. The sample sizes for cisco were too small for modelling.

3.2.1.5 Diet

Taxonomic analysis of stomach contents was conducted on a total of 19 preserved lake trout stomachs: eight from Aimaokatalok Lake and 11 from Reference lake D. An additional three lake whitefish stomachs were sampled from Aimaokatalok Lake and analyzed for diet composition. Full taxonomic results are presented in Appendix 3.2-5 (by number) and Appendix 3.2-6 (by wet weight). Diet composition was analyzed and presented by number (Figure 3.2-13) and by weight (Figure 3.2-14). It is important to note that some differences in the diet composition between numbers and weight are caused by the higher average weight of larger organisms (e.g., fish) versus small invertebrates.

By number, the diet of lake trout sampled from Aimaokatalok Lake was predominantly (89%) comprised of isopods. Salmonid fish (probably juvenile lake trout) made up the remaining 11% of the diet. The diet of lake trout sampled from Reference Lake D had the widest variety of food items (by number). Lake trout stomach contents sampled from Reference Lake D were comprised predominantly of trichopterids (45%) and ninespine stickleback (22%). The diet of lake whitefish in Aimaokatalok Lake consisted mostly of mysid shrimp (76%), with bivalves making up the remainder.



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Age-Frequency Distributions for Fish Sampled from Aimaokatalok Lake, Hope Bay Belt Project, 2010

Figure 3.2-9

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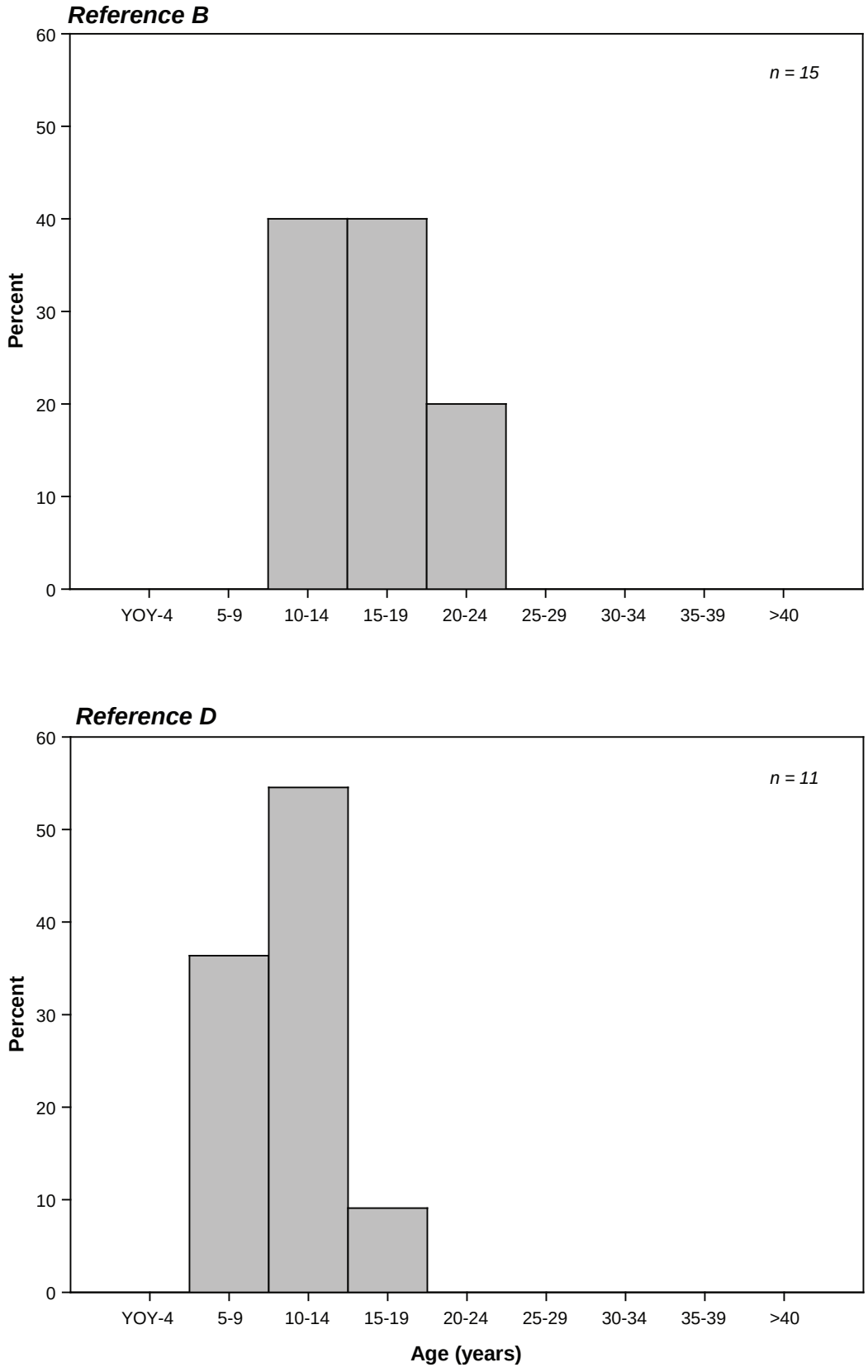

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Age-Frequency Distributions for Lake Trout Sampled from Reference Lakes, Hope Bay Belt Project, 2010

Figure 3.2-10

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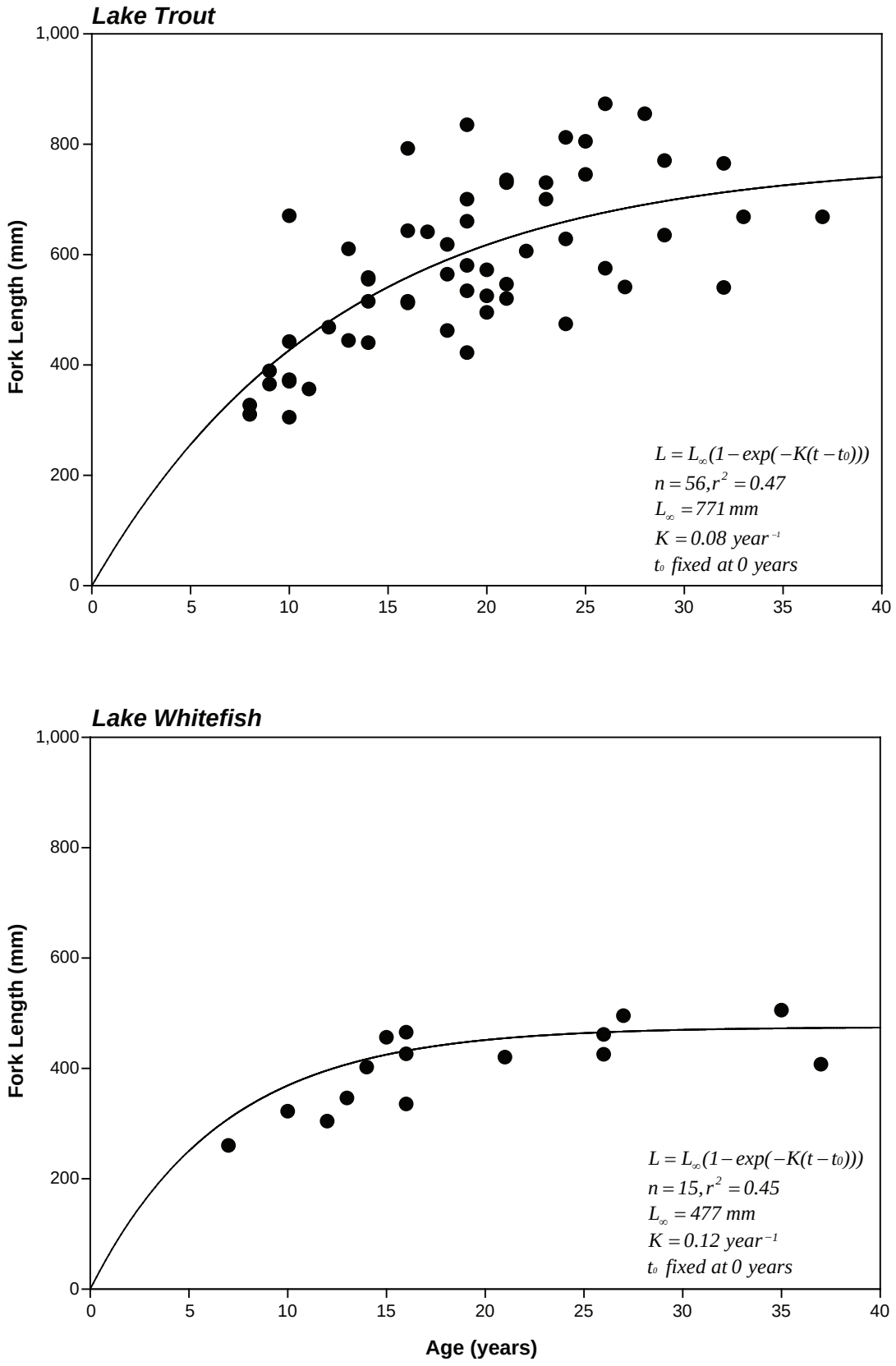

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von Bertalanffy Growth Models for Lake Trout and Lake Whitefish Sampled from Aimaokatalok Lake, Hope Bay Belt Project, 2010

Figure 3.2-11

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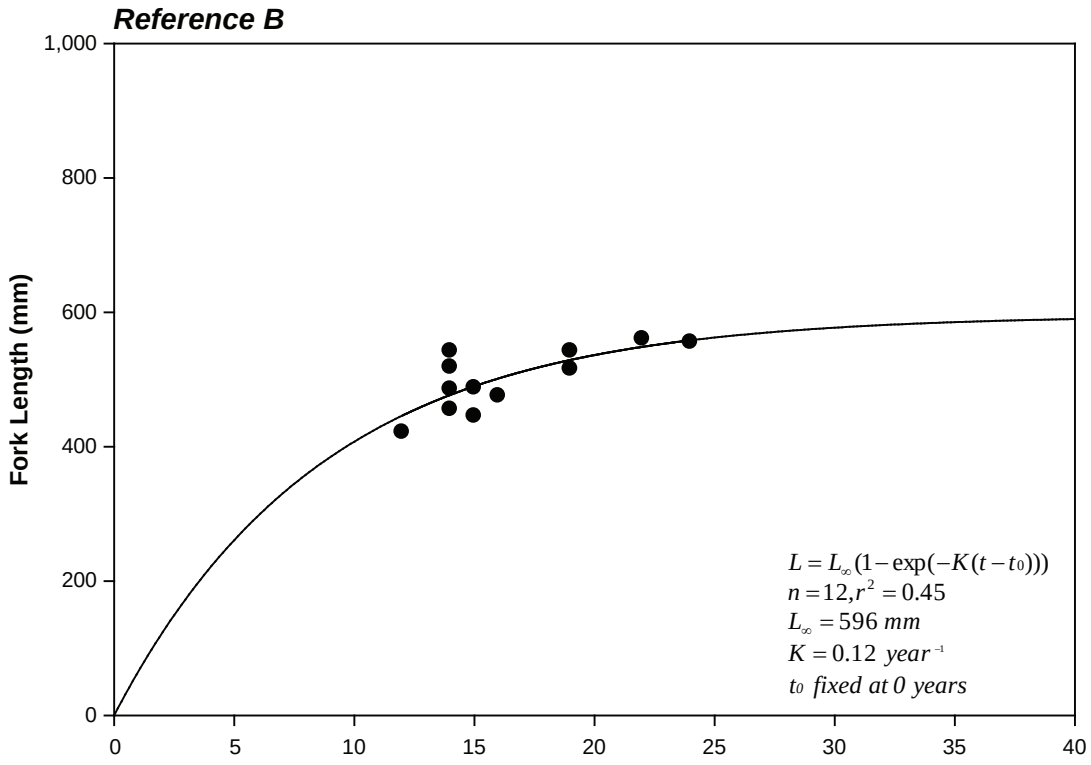

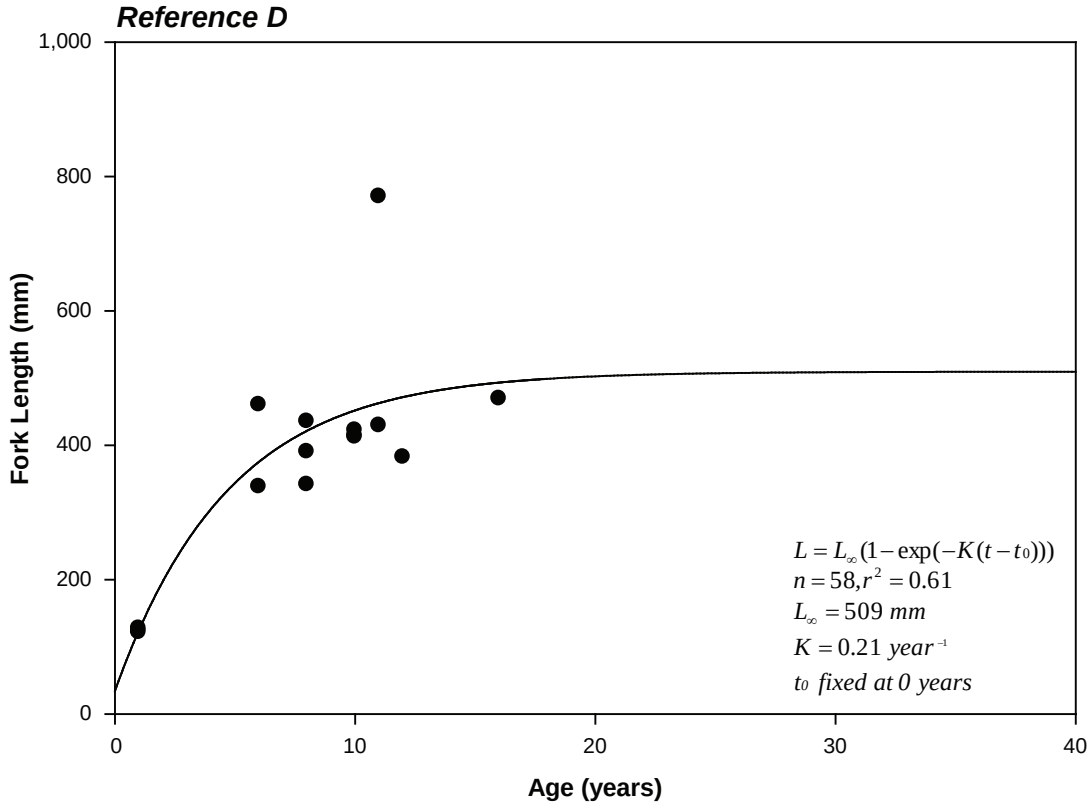

NEWMONT NORTH AMERICA

von Bertalanffy Growth Models for Lake Trout Sampled from Reference Lakes, Hope Bay Belt Project, 2010

Figure 3.2-12

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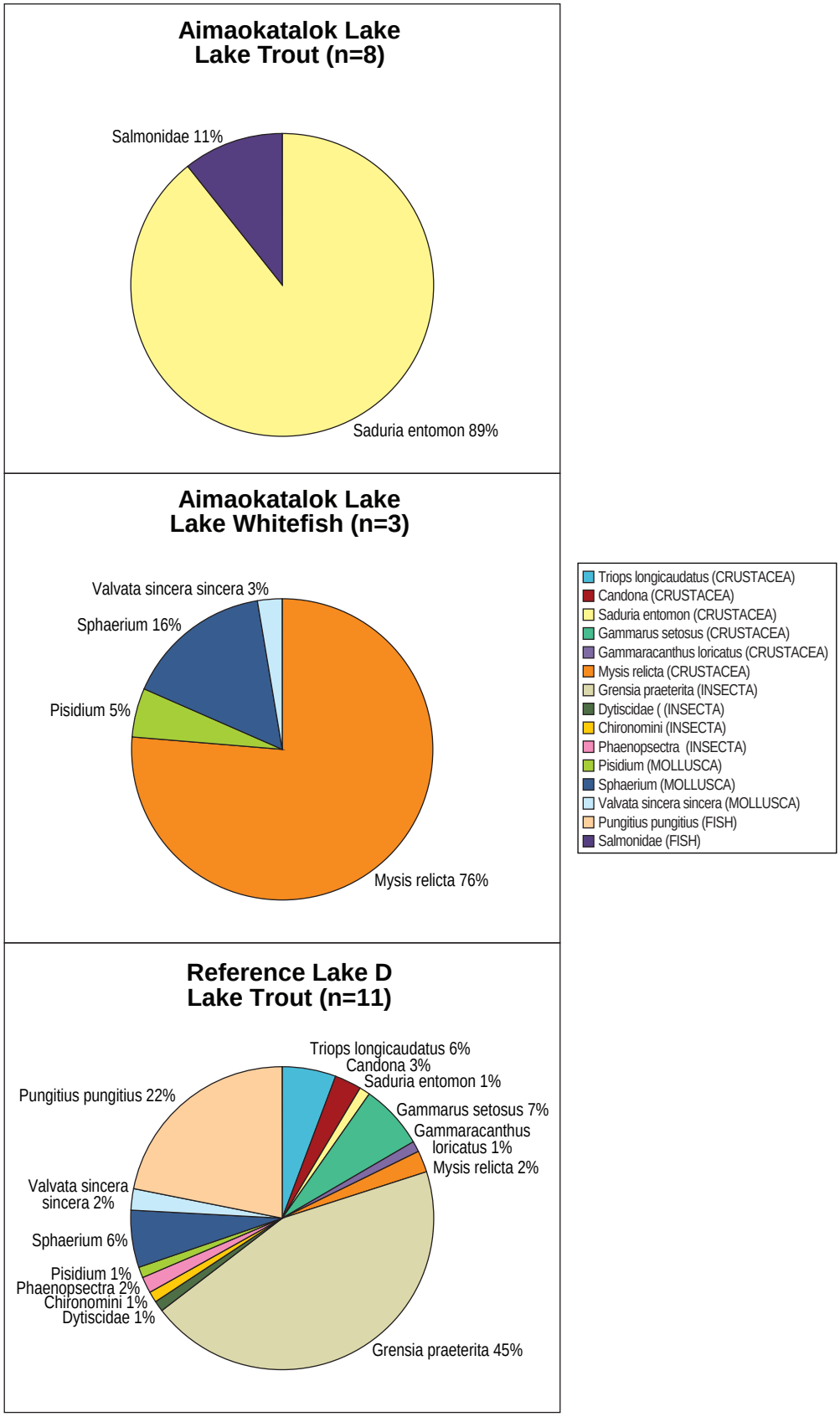

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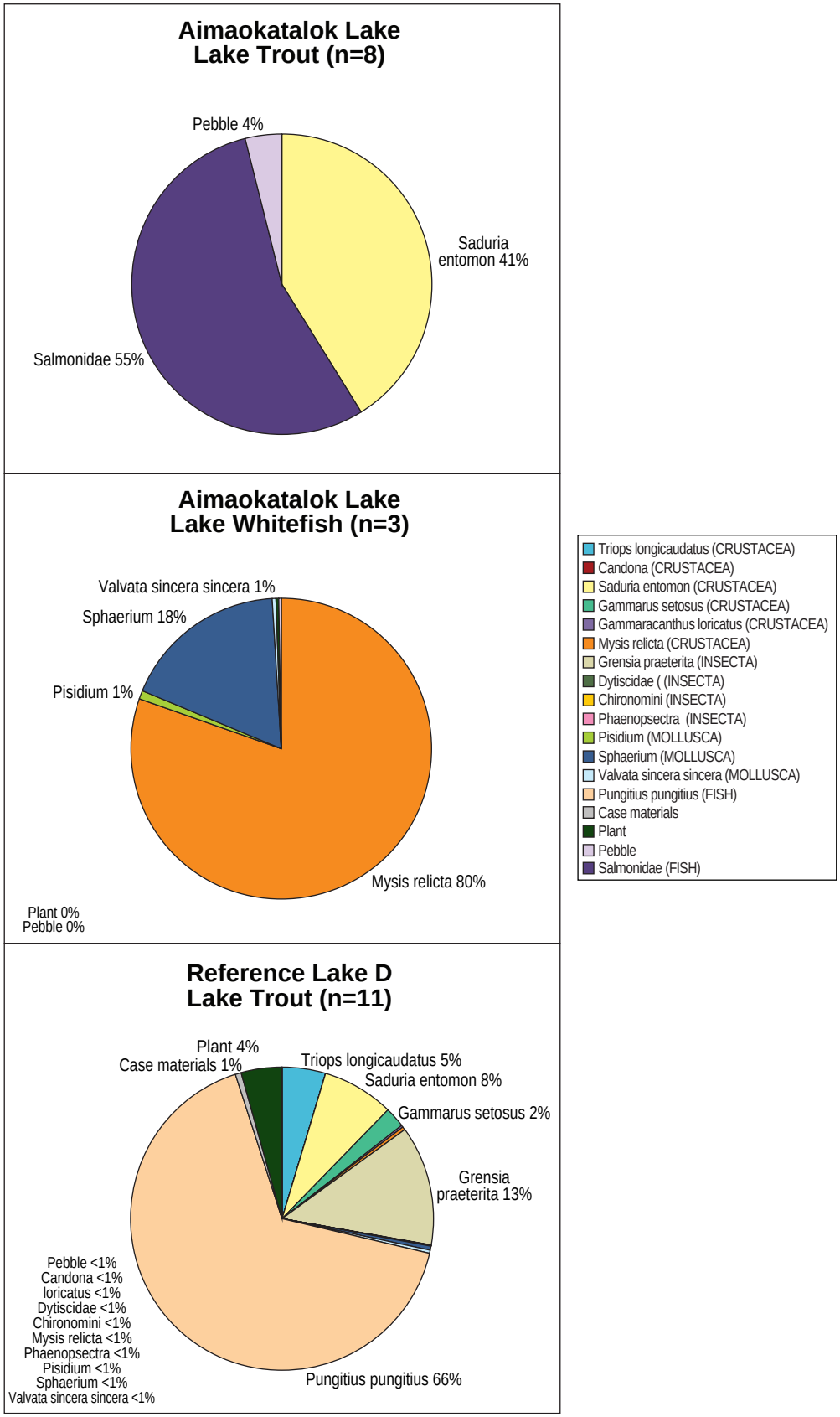
Mean Taxonomic Composition of Fish Stomach Contents by Count, Hope Bay Belt Project, 2010

Figure 3.2-13

Rescan Engineers & Scientists



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Mean Taxonomic Composition of Fish Stomach Contents by Wet Weight, Hope Bay Belt Project, 2010

Figure 3.2-14

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When examined by weight, lake trout sampled from Aimaokatalok Lake and Reference Lake D showed relatively high proportion of fish in their diet. Juvenile salmonids made up 55% of lake trout diets, followed by isopods (41%), and pebbles (4%). In contrast, the diet of lake trout sampled from Reference Lake D was predominately ninespine stickleback (66%), followed by substantial proportions of trichopterids, amphipods and isopods. The diet of lake whitefish sampled from Aimaokatalok Lake was similar in terms of weight and number of prey items: predominantly mysid shrimp, supplemented with bivalves.

3.2.1.6 Tissue Metals Concentrations

Appendix 3.2-7 shows the metal concentrations measured in each sample of muscle and liver collected from lake trout in Aimaokatalok and Reference D Lakes. Appendix 3.2-7 also displays the fork lengths of each fish. Lengths, not weights, are the conventional measure of body size for tissue metals analysis.

Since the concentrations of some metals that bind permanently to protein (e.g., mercury) are typically positively correlated with fish body size, the first step in analysis was to conduct a t-test of fork length on lake to test for significant differences in mean body size among lakes. Only those lake trout used for tissue metal analyses were included. A Student's T-test was used to test for difference in mean fork length of lake trout between Aimaokatalok Lake and Reference D Lake. The t-test indicated that mean fork length was significantly higher ($t_{1,18}$ = 26.63, P<0.001) in Aimaokatalok Lake than in Reference Lake D.

The second step in analysis was to exclude those metals for which 90% of concentrations were below the metal-specific MDL. The following nine metals were excluded: antimony, beryllium, bismuth, cadmium, cobalt, lithium, thallium, uranium and vanadium. Tables 3.2-10 and 3.2-11 show the mean concentrations of the remaining metals for lake trout muscle and liver tissue, respectively, for Aimaokatalok and Reference D lakes. To calculate the means, concentrations below metal-specific MDL were replaced by one-half of the MDL.

Table 3.2-10. Mean Concentration of Metals in Lake Trout Muscle Tissue from Two Lakes, Hope Bay Belt Project, 2010

Variable	Detection Limit	Units	Reference D Lake (n = 11)				Aimaokatalok Lake (n = 13)			
			Mean	SE	Min	Max	Mean	SE	Min	Max
Fork Length	1	mm	398.429	18.201	338	469	600.077	26.69	444	765
Moisture	0.1	%	77.609	0.383	76	80.3	80.615	0.322	78.8	82.5
Aluminum (Al)	2.0	mg/kg WW	1.518	0.291	1	3.7	1.262	0.262	1	4.4
Antimony (Sb)	0.01	mg/kg WW	0.005	0	0.005	0.005	0.005	0	0.005	0.005
Arsenic (As)	0.01	mg/kg WW	0.027	0.009	0.01	0.119	0.084	0.01	0.033	0.15
Barium (Ba)	0.01	mg/kg WW	0.025	0.004	0.011	0.048	0.016	0.005	0.005	0.067
Beryllium (Be)	0.10	mg/kg WW	0.05	0	0.05	0.05	0.05	0	0.05	0.05
Bismuth (Bi)	0.03	mg/kg WW	0.015	0	0.015	0.015	0.015	0	0.015	0.015
Cadmium (Cd)	0.005	mg/kg WW	0.003	0	0.003	0.003	0.003	0	0.003	0.003
Calcium (Ca)	2.0	mg/kg WW	111.091	23.498	50.7	285	67.569	9.341	40.3	159
Chromium (Cr)	0.1	mg/kg WW	0.145	0.042	0.05	0.44	0.209	0.048	0.05	0.7
Cobalt (Co)	0.02	mg/kg WW	0.01	0	0.01	0.01	0.01	0	0.01	0.01
Copper (Cu)	0.01	mg/kg WW	0.278	0.014	0.22	0.357	0.234	0.02	0.15	0.417
Lead (Pb)	0.02	mg/kg WW	0.013	0.003	0.01	0.048	0.01	0	0.01	0.01
Lithium (Li)	0.1	mg/kg WW	0.05	0	0.05	0.05	0.05	0	0.05	0.05

(continued)

Table 3.2-10. Mean Concentration of Metals in Lake Trout Muscle Tissue from Two Lakes, Hope Bay Belt Project, 2010 (completed)

Variable	Detection Limit	Units	Reference D Lake (n = 11)				Aimaokatalok Lake (n = 13)			
			Mean	SE	Min	Max	Mean	SE	Min	Max
Magnesium (Mg)	1.0	mg/kg WW	236	7.33	195	268	219.692	3.518	191	234
Manganese (Mn)	0.01	mg/kg WW	0.197	0.022	0.118	0.346	0.144	0.013	0.072	0.239
Mercury (Hg)	0.001	mg/kg WW	0.142	0.014	0.089	0.232	***1.042***	0.102	0.393	***1.8***
Molybdenum (Mo)	0.01	mg/kg WW	0.006	0.001	0.005	0.014	0.012	0.002	0.005	0.031
Nickel (Ni)	0.1	mg/kg WW	0.088	0.02	0.05	0.22	0.131	0.025	0.05	0.38
Selenium (Se)	0.2	mg/kg WW	0.113	0.013	0.1	0.24	0.116	0.011	0.1	0.21
Strontium (Sr)	0.01	mg/kg WW	0.155	0.039	0.046	0.412	0.065	0.015	0.019	0.215
Thallium (Tl)	0.01	mg/kg WW	0.005	0	0.005	0.005	0.005	0	0.005	0.01
Tin (Sn)	0.05	mg/kg WW	0.114	0.025	0.025	0.244	0.033	0.005	0.025	0.087
Uranium (U)	0.002	mg/kg WW	0.001	0	0.001	0.001	0.001	0	0.001	0.001
Vanadium (V)	0.1	mg/kg WW	0.05	0	0.05	0.05	0.05	0	0.05	0.05
Zinc (Zn)	0.1	mg/kg WW	3.701	0.107	3.11	4.16	2.855	0.076	2.52	3.37

Note: values in bold italics exceed Health Canada guidelines for consumption by humans.
Health Canada guideline for arsenic in fish protein concentrate is 3.5 mg/kg wet weight. Health Canada guideline for mercury in fish tissue is 0.5 mg/kg wet weight.

Table 3.2-11. Mean Concentration of Metals in Lake Trout Liver Tissue from Two lakes, Hope Bay Belt Project, 2010

Variable	Detection Limit	Units	Reference D Lake (n = 11)				Aimaokatalok Lake (n = 13)			
			Mean	SE	Min	Max	Mean	SE	Min	Max
Fork Length	1	mm	398.429	18.201	338	469	600.077	26.69	444	765
Moisture	0.1	%	75.173	0.936	67.6	78.1	77.969	0.537	74.2	80.9
Aluminum (Al)	0.0	mg/kg WW	2.345	0.473	1	5.6	2.923	0.467	1	6.1
Antimony (Sb)	0.00	mg/kg WW	0.005	0	0.005	0.005	0.005	0	0.005	0.005
Arsenic (As)	0.00	mg/kg WW	0.046	0.006	0.016	0.09	0.07	0.014	0.03	0.222
Barium (Ba)	0.00	mg/kg WW	0.040	0.01	0.005	0.104	0.016	0.005	0.005	0.067
Beryllium (Be)	0.00	mg/kg WW	0.05	0	0.05	0.05	0.05	0	0.05	0.05
Bismuth (Bi)	0.00	mg/kg WW	0.015	0	0.015	0.015	0.015	0	0.015	0.015
Cadmium (Cd)	0.000	mg/kg WW	0.020	0.002	0.013	0.042	0.069	0.006	0.025	0.107
Calcium (Ca)	2.0	mg/kg WW	67.0	4.5	47.5	96.3	139.7	56.6	51.9	813
Chromium (Cr)	0.0	mg/kg WW	0.33	0.06	0.05	0.66	0.13	0.02	0.05	0.34
Cobalt (Co)	0.00	mg/kg WW	0.076	0.012	0.035	0.151	0.235	0.034	0.085	0.496
Copper (Cu)	0.00	mg/kg WW	10.95	1.06	7.17	17.10	22.6	2.3	7.32	38.8
Lead (Pb)	0.00	mg/kg WW	0.01	0	0.01	0.01	0.012	0.002	0.01	0.031
Lithium (Li)	0.0	mg/kg WW	0.05	0	0.05	0.05	0.05	0	0.05	0.05
Magnesium (Mg)	0.0	mg/kg WW	165	7	137	207	140	3	127	161
Manganese (Mn)	0.00	mg/kg WW	1.62	0.06	1.26	1.89	1.54	0.1	1.02	2.26
Mercury (Hg)	0.000	mg/kg WW	0.147	0.017	0.072	0.263	***2***	0.22	0.47	***3.42***
Molybdenum (Mo)	0.00	mg/kg WW	0.147	0.007	0.115	0.183	0.133	0.008	0.104	0.195
Nickel (Ni)	0.0	mg/kg WW	0.17	0.03	0.05	0.38	0.09	0.014	0.05	0.2

(continued)

Table 3.2-11. Mean Concentration of Metals in Lake Trout Liver Tissue from Two lakes, Hope Bay Belt Project, 2010 (completed)

Variable	Detection Limit	Units	Reference D Lake (n = 11)				Aimaokatalok Lake (n = 13)			
			Mean	SE	Min	Max	Mean	SE	Min	Max
Selenium (Se)	0.0	mg/kg WW	1.22	0.09	0.87	1.76	1.66	0.09	1.1	2.33
Strontium (Sr)	0.00	mg/kg WW	0.143	0.007	0.114	0.202	0.194	0.065	0.074	0.966
Thallium (Tl)	0.00	mg/kg WW	0.033	0.003	0.016	0.047	0.034	0.003	0.017	0.062
Tin (Sn)	0.00	mg/kg WW	0.158	0.023	0.105	0.379	0.092	0.011	0.025	0.167
Uranium (U)	0.000	mg/kg WW	0.001	0	0.001	0.002	0.001	0	0.001	0.001
Vanadium (V)	0.0	mg/kg WW	0.05	0	0.05	0.05	0.05	0	0.05	0.05
Zinc (Zn)	0.0	mg/kg WW	32.3	0.7	27.9	35.1	32.715	1.271	26.6	45

Note: values in bold italics exceed Health Canada guidelines for consumption by humans.
Health Canada guideline for arsenic in fish protein concentrate is 3.5 mg/kg wet weight; Health Canada guideline for mercury in fish tissue is 0.5 mg/kg wet weight (Health Canada 2001).

Two-way ANOVAs of ln-transformed metal concentrations on lake and tissue type showed that all 18 metals showed some significant variability with either lakes or tissues or the interaction of lakes and tissues (Table 3.2-12). Six basic patterns of variability were observed:

- 8 metals (aluminum, cadmium, cobalt, copper, mercury, molybdenum, selenium, strontium, and zinc) had concentrations that varied significantly among lakes, between tissues and with the interaction of lakes and tissues (molybdenum varied among lakes at the $P < 0.1$ level). This result represented a combination of environmental differences in metal concentrations, a difference in uptake and storage between tissues and interactions of location and tissue type.
- 2 metals (aluminium and thallium) had concentrations that varied between the two types of tissues, but not among lakes or with the interaction of lakes and tissues. This result represented different degrees of metal uptake and storage by the two types of tissue that was not affected by environmental influences.
- 3 metals (magnesium, manganese and tin) had concentrations that varied among lakes and between tissues, but not with the interaction of lakes and tissues. This result represented a combination of environmental differences in metal concentrations plus a difference in uptake and storage between tissues, but no interaction of lake and tissue type.
- 1 metal (barium) had concentrations that varied among lakes, but not between tissue types or with the interaction of lakes and tissues. This result represented environmental differences in metal concentrations that were not influenced by tissue type.
- 1 metal (arsenic) had concentrations that varied among lakes and with the interaction of lakes and tissues, but not between tissue types. This result represented environmental differences in metal concentrations that were detectable only in the liver, which stores higher concentrations of toxins, and not in muscle tissue.
- 3 metals (calcium, chromium and nickel) had concentrations that did not significantly vary among lakes or tissue types, although the interaction of lake and tissue type was significant. This result could indicate that the difference among lakes in mean tissue metal concentration varied between tissue types, or that the difference between liver and muscle tissue metals varied among lakes.

Table 3.2-12. Two-Way ANOVA Results Comparing Lake Trout Tissue Metal Concentrations among Lakes and Tissue Types, Hope Bay Belt, 2010

Metal	Source	df	F	P	Metal	Source	df	F	P
AL	Lakes	1	0.04	0.84	MN	Lakes	1	5.25	0.03
	Tissues	1	11.70	0.00		Tissues	1	789.15	0.00
	Lakes*Tissues	1	1.47	0.23		Lakes*Tissues	1	2.09	0.16
	Error	44				Error	44		
AS	Lakes	1	27.63	0.00	HG	Lakes	1	375.84	0.00
	Tissues	1	1.89	0.18		Tissues	1	7.05	0.01
	Lakes*Tissues	1	10.55	0.00		Lakes*Tissues	1	6.76	0.01
	Error	44				Error	44		
BA	Lakes	1	12.46	0.00	MO	Lakes	1	3.00	0.09
	Tissues	1	1.02	0.32		Tissues	1	659.26	0.00
	Lakes*Tissues	1	0.08	0.79		Lakes*Tissues	1	7.27	0.01
	Error	44				Error	44		
CD	Lakes	1	76.39	0.00	NI	Lakes	1	0.11	0.74
	Tissues	1	1433.07	0.00		Tissues	1	0.66	0.42
	Lakes*Tissues	1	76.39	0.00		Lakes*Tissues	1	6.83	0.01
	Error	44				Error	44		
CA	Lakes	1	0.00	0.95	SE	Lakes	1	6.14	0.02
	Tissues	1	0.09	0.77		Tissues	1	1307.22	0.00
	Lakes*Tissues	1	6.46	0.02		Lakes*Tissues	1	4.15	0.05
	Error	44				Error	44		
CR	Lakes	1	0.97	0.33	SR	Lakes	1	4.26	0.05
	Tissues	1	1.73	0.20		Tissues	1	11.50	0.00
	Lakes*Tissues	1	8.09	0.01		Lakes*Tissues	1	4.78	0.03
	Error	44				Error	44		
CO	Lakes	1	27.60	0.00	TL	Lakes	1	0.16	0.69
	Tissues	1	538.52	0.00		Tissues	1	589.95	0.00
	Lakes*Tissues	1	27.60	0.00		Lakes*Tissues	1	0.10	0.76
	Error	44				Error	44		
CU	Lakes	1	7.41	0.01	SN	Lakes	1	20.18	0.00
	Tissues	1	2011.92	0.00		Tissues	1	20.69	0.00
	Lakes*Tissues	1	23.94	0.00		Lakes*Tissues	1	1.29	0.26
	Error	44				Error	44		
MG	Lakes	1	17.36	0.00	ZN	Lakes	1	17.88	0.00
	Tissues	1	223.28	0.00		Tissues	1	5941.18	0.00
	Lakes*Tissues	1	2.79	0.10		Lakes*Tissues	1	19.88	0.00
	Error	44				Error	44		

Health Canada Guidelines

Arsenic

Arsenic is a toxin and tends to accumulate with the age and size of the fish (Eisler 1988); however, it does not biomagnify as it moves up the food chain because fish and other aquatic organisms are able to excrete it. Most living organisms normally contain measurable concentrations of arsenic, though the amounts measured are typically less than 1 mg/kg wet weight or less than 4 mg/kg dry weight (assuming 80% moisture content). The maximum allowable Health Canada guideline for arsenic in fish tissue is 3.5 mg/kg wet weight, but that guideline is for fish protein concentrate only, not wet whole fish tissue (Health Canada 2001). None of the lake trout sampled in either Aimaokatalok Lake or Reference Lake D exceeded the Health Canada guidelines for arsenic.

Mercury

Mercury is a toxic metal with no known biological function (Eisler 1987). In fish, it binds tightly and permanently to proteins because fish lack the metabolic machinery to excrete mercury. Thus, concentrations tend to increase directly with the age and size of fish. For the same reason, mercury is biomagnified as it passes up the food chain. A significant positive relationship between muscle mercury concentration and body weight has been reported for other species of fish in North America and the Northwest Territories and Nunavut (Lockhart et al. 2005). The Health Canada guideline for the maximum allowable concentration of total mercury in fish muscle tissue sold commercially is 0.5 mg/kg wet weight (Health Canada 2001).

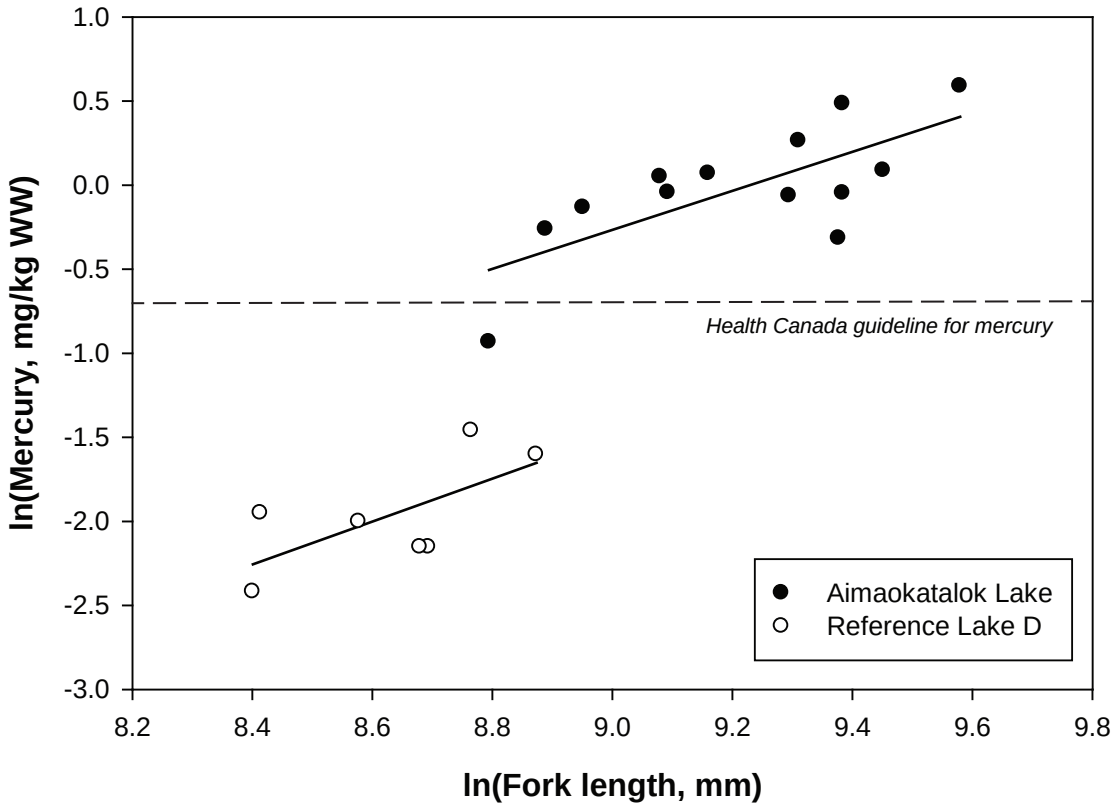
The ln-transformed data of mercury concentration in muscle tissue was plotted on ln-transformed data of lake trout fork length for Aimaokatalok and Reference D Lakes (Figure 3.2-15). Regression analysis showed that mercury was significantly ($n = 13$, $r^2 = 0.49$, $P < 0.005$) related to fork length for lake trout sampled from Aimaokatalok Lake. Lake trout muscle samples from Reference D Lake showed a positive relationship ($n = 7$, $r^2 = 0.35$, $P = 0.01$) between mercury and fork length, but the relationship was significant only at the 90% confidence level. The results suggest that mercury is accumulating in the tissues of lake trout sampled from Aimaokatalok Lake and Reference Lake D.

The mean concentration of mercury observed in lake trout muscle tissue from Aimaokatalok Lake was 1.042 mg/kg WW – more than double the Health Canada guideline. The highest concentration of mercury in lake trout muscle tissue from Aimaokatalok Lake was 1.8 mg/kg WW. In Reference Lake D, the highest mercury concentration recorded was 0.263 mg/kg WW in liver tissue and 0.232 mg/kg WW in muscle tissue. Both of these levels are well below the Health Canada guideline.

3.2.2 River, Stream and Pond Fish Community

3.2.2.1 Community and CPUE

Biological data for fish sampled from streams, ponds and surface waters adjacent to proposed quarry sites in the Project area are presented in Appendix 3.2-8. A total of 366 fish were collected by electrofishing from 15 stream locations, six pond locations and seven water bodies adjacent to proposed quarry locations (Table 3.2-13). The total number of fish collected per site ranged from 1 to 50 (Pond S20). A total of six different fish species were identified utilizing stream habitat. Ninespine stickleback (Plate 3.2-5) was the predominant fish species found, as they accounted for 90.1% of all fish caught. The next most abundant species were Arctic grayling (Plate 3.2-6) and slimy sculpin, which made up 7.1% and 1.4% of the total respectively. Ninespine stickleback were common throughout the study area, whereas Arctic grayling were found only in the central and southern areas of Hope Bay Belt. Lake trout (n=2), Arctic char (n=2) and burbot (n=1) constituted the remaining 1.4% of fish captured from stream sites.



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Plot of Muscle Tissue Mercury Concentrations from Lake Trout Sampled for Tissue Metals, Hope Bay Belt Project, 2010

Figure 3.2-15

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Table 3.2-13. Fish Species and Numbers Captured from Streams, Ponds and Surface Waters Adjacent to Proposed Quarry Sites, Hope Bay Project, 2010

Site ID	Date	Sampling Method	Number of Fish by Species						Total
			LT	AC	NSB	AG	BB	CCG	
Streams									
N20	4-Aug-10	EF	0	0	10	0	0	0	10
S11	11-Aug-10	EF	0	0	5	0	0	0	5
S17	10-Aug-10	EF	0	0	13	0	0	0	13
N04	2-Aug-10	EF	0	1	0	0	0	0	1
N08	17-Sep-10	EF	0	0	16	0	0	0	16
N09	17-Sep-10	EF	0	0	25	0	0	0	25
N11	6-Aug-10	EF	0	0	2	0	0	0	2
C01	8-Aug-10	EF	0	0	0	3	0	0	3
S31	7-Aug-10	EF	0	0	1	0	0	0	1
N21	3-Aug-10	EF	0	1	0	0	0	0	1
N17	18-Sep-10	EF	0	0	5	0	0	0	5
N19	8-Aug-10	EF	0	0	0	2	0	0	2
S03	21-Sep-10	EF	0	0	0	0	0	4	4
S04	11-Aug-10	EF	0	0	3	2	0	0	5
S16	22-Sep-10	EF	0	0	36	2	0	0	38
Ponds									
S32	8-Aug-10	EF	0	0	17	0	0	0	17
S20	16-Aug-10	EF	2	0	31	15	1	1	50
S33	19-Aug-10	EF	0	0	2	0	0	0	2
S34	21-Aug-10	EF	0	0	16	0	0	0	16
S22	17-Aug-10	EF	0	0	30	0	0	0	30
S25	18-Aug-10	EF	0	0	23	0	0	0	23
Surface Waters Adjacent to Proposed Quarry Sites									
Q2	18-Sep-10	EF	0	0	6	0	0	0	6
Q4	19-Sep-10	EF	0	0	28	0	0	0	28
Q5	19-Sep-10	EF	0	0	30	0	0	0	30
Q6	20-Sep-10	EF	0	0	7	0	0	0	7
Q8	20-Sep-10	EF	0	0	21	0	0	0	21
Q10-L1	23-Sep-10	EF	0	0	1	0	0	0	1
Q10-S1	23-Sep-10	EF	0	0	2	2	0	0	4
Total			**2**	**2**	**330**	**26**	**1**	**5**	**366**

EF = electrofishing
Fish Species Codes: LT = lake trout, AC = Arctic char, NSB = ninespine stickleback, AG = Arctic grayling, BB = burbot, CCG = slimy sculpin

CPUE was calculated for each sampling site and is summarized in Table 3.2-14. Total CPUE ranged from 0.09 fish/100 s at N21 to 5.28 fish/100 s at Q4. The average CPUE for all sites was 1.48 fish/100 s. Seconds were not recorded at N09 and N20, so CPUE could not be calculated for these sites.

Plate 3.2-5. Adult female and juvenile ninespine stickleback caught by electrofishing from stream N07 (Doris Outflow), Hope Bay Belt Project, 2010.

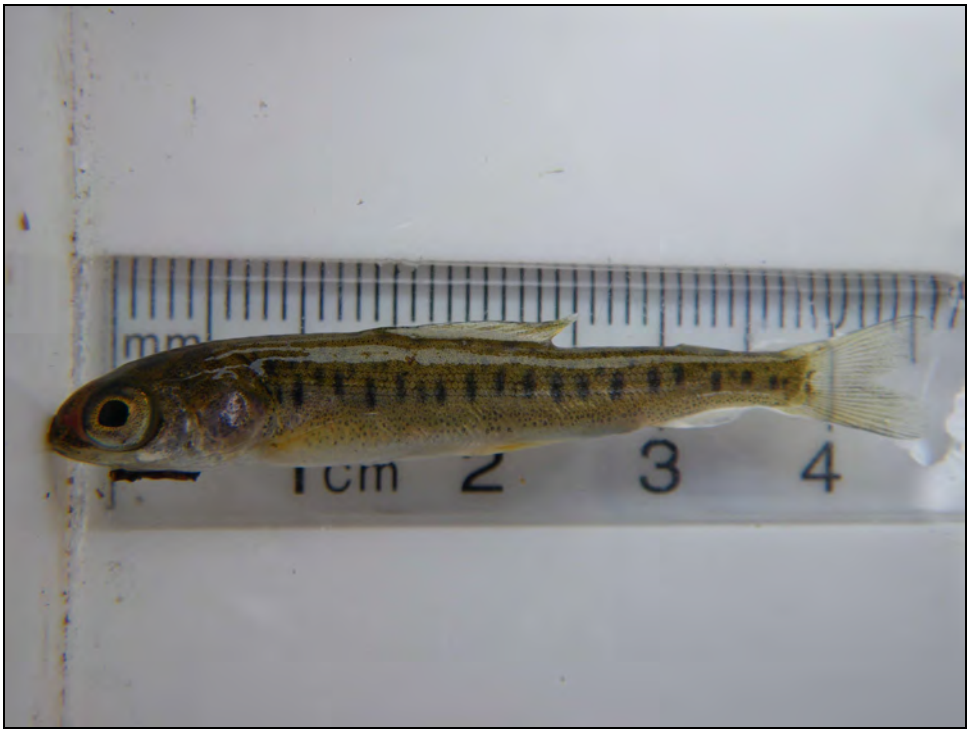


Plate 3.2-6. Young-of-year Arctic grayling caught by electrofishing in stream S04, Hope Bay Belt Project, 2010.

Table 3.2-14. Electrofishing Effort, Catch and CPUE for Streams, Ponds and Surface Waters Adjacent to Proposed Quarry Sites, Hope Bay Project, 2010

Site ID	Total Effort (s)	Number of Fish by Species						Total	CPUE (fish/100s)						
		LT	AC	NSB	AG	BB	CCG		LT	AC	NSB	AG	BB	CCG	Total
Streams															
N20	-	0	0	10	0	0	0	10	-	-	-	-	-	-	-
S11	900	0	0	5	0	0	0	5	0.00	0.00	0.56	0.00	0.00	0.00	0.56
S17	697	0	0	13	0	0	0	13	0.00	0.00	1.87	0.00	0.00	0.00	1.87
N04	853	0	1	0	0	0	0	1	0.00	0.12	0.00	0.00	0.00	0.00	0.12
N08	1058	0	0	16	0	0	0	16	0.00	0.00	1.51	0.00	0.00	0.00	1.51
N09	-	0	0	25	0	0	0	25	-	-	-	-	-	-	-
N11	1395	0	0	2	0	0	0	2	0.00	0.00	0.14	0.00	0.00	0.00	0.14
C01	833	0	0	0	3	0	0	3	0.00	0.00	0.00	0.36	0.00	0.00	0.36
S31	680	0	0	1	0	0	0	1	0.00	0.00	0.15	0.00	0.00	0.00	0.15
N21	1153	0	1	0	0	0	0	1	0.00	0.09	0.00	0.00	0.00	0.00	0.09
N17	1066	0	0	5	0	0	0	5	0.00	0.00	0.47	0.00	0.00	0.00	0.47
N19	736	0	0	0	2	0	0	2	0.00	0.00	0.00	0.27	0.00	0.00	0.27
S03	1238	0	0	0	0	0	4	4	0.00	0.00	0.00	0.00	0.00	0.32	0.32
S04	1403	0	0	3	2	0	0	5	0.00	0.00	0.21	0.14	0.00	0.00	0.36
S16	1640	0	0	36	2	0	0	38	0.00	0.00	2.20	0.12	0.00	0.00	2.32
Ponds															
S32	444	0	0	17	0	0	0	17	0.00	0.00	3.83	0.00	0.00	0.00	3.83
S20	1333	2	0	31	15	1	1	50	0.15	0.00	2.33	1.13	0.08	0.08	3.75
S33	890	0	0	2	0	0	0	2	0.00	0.00	0.22	0.00	0.00	0.00	0.22
S34	626	0	0	16	0	0	0	16	0.00	0.00	2.56	0.00	0.00	0.00	2.56
S22	777	0	0	30	0	0	0	30	0.00	0.00	3.86	0.00	0.00	0.00	3.86
S25	983	0	0	23	0	0	0	23	0.00	0.00	2.34	0.00	0.00	0.00	2.34
Surface Waters Adjacent to Proposed Quarry Sites															
Q2	900	0	0	6	0	0	0	6	0.00	0.00	0.67	0.00	0.00	0.00	0.67
Q4	530	0	0	28	0	0	0	28	0.00	0.00	5.28	0.00	0.00	0.00	5.28
Q5	1444	0	0	30	0	0	0	30	0.00	0.00	2.08	0.00	0.00	0.00	2.08
Q6	1198	0	0	7	0	0	0	7	0.00	0.00	0.58	0.00	0.00	0.00	0.58
Q8	509	0	0	21	0	0	0	21	0.00	0.00	4.13	0.00	0.00	0.00	4.13
Q10-L1	980	0	0	1	0	0	0	1	0.00	0.00	0.10	0.00	0.00	0.00	0.10
Q10-S1	709	0	0	2	2	0	0	4	0.00	0.00	0.28	0.28	0.00	0.00	0.56

Fish Species Codes: LT = lake trout, AC = Arctic char, NSB = ninespine stickleback, AG = Arctic grayling, BB = burbot, CCG = slimy sculpin

3.2.2.2 Length, Weight, and Condition

Table 3.2-15 summarizes fork length, weight and condition data for fish sampled from stream sites. In streams, ninespine stickleback ranged from 28 mm to 59 mm in mean fork length and 0.1 g to 1.3 g mean weight. Mean condition factor of ninespine stickleback in streams ranged from 0.27 to 1.8. Arctic grayling in streams ranged from 51 mm to 231.5 mm in mean fork length and 0.3 to 33.2 g mean weight (the longest fish was likely heavier but could not be weighed). Mean condition factor of Arctic grayling ranged from 0.3 to 1.0. The two Arctic char captured had condition factors of 1.20 and 1.28.

Table 3.2-15. Summary of Mean Length, Weight and Condition for Fish Sampled from Streams, Hope Bay Project, 2010

Site	Species Code	Method	Fork Length (mm)			Weight (g)			Condition		
			n	Mean	SE	n	Mean	SE	n	Mean	SE
C01	AG	EF	3	149.0	90.84	2	33.2	31.55	2	9.55	7.79
N04	AC	EF	1	121.0	-	1	21.3	-	1	1.20	-
N08	NSB	EF	16	31.4	4.44	4	2.2	0.76	4	1.24	0.25
N09	NSB	EF	25	34.7	0.89	-	-	-	-	-	-
N11	NSB	EF	2	28.0	2.00	2	0.1	0.00	2	0.47	0.10
N17	NSB	EF	5	28.4	7.77	1	1.0	-	1	0.50	-
N19	AG	EF	2	132.5	31.50	2	28.3	18.70	2	1.00	0.07
	CCG	EF	4	69.0	11.79	4	3.9	1.25	4	0.92	0.05
N20	LT	EF	2	136.0	32.00	2	31.7	19.70	2.0	1.08	0.01
	NSB	EF	10	39.6	3.43	10	0.6	0.21	10.0	0.69	0.08
N21	AC	EF	1	95.0	-	-	11.0	-	-	1.28	-
	NSB	EF	4	59.0	3.03	4	1.3	0.17	4	0.65	0.08
S03	NSB	EF	7	36.7	4.95	5	0.6	0.13	5	0.64	0.06
S04	NSB	EF	3	55.7	2.19	-	-	-	-	-	-
	AG	EF	2	51.0	3.00	1	0.3	-	1	0.30	-
S11	NSB	EF	5	35.4	8.07	2	0.5	0.05	2	0.27	0.00
S16	AG	EF	2	213.5	23.50	-	-	-	-	-	-
	NSB	EF	36	35.2	1.79	33	0.5	0.12	32	0.83	0.03
S17	NSB	EF	13	40.7	5.00	-	-	-	-	-	-
S31	NSB	EF	1	55.0	-	-	3.0	-	-	1.80	-

Fish Species Codes: LT = lake trout, AC = Arctic char, NSB = ninespine stickleback, AG = Arctic grayling, BB = burbot, CCG = slimy sculpin

Table 3.2-16 summarizes the same information for ponds and for surface waters adjacent to proposed quarry sites. In surface waters adjacent to proposed quarry sites, ninespine stickleback ranged from 17 mm to 72.5 mm in mean fork length and 0.2 to 2.5 g mean weight. Mean condition factor of ninespine stickleback in surface waters adjacent to proposed quarry sites ranged from 0.4 to 0.97. Arctic grayling in surface waters adjacent to proposed quarry sites were smaller than those in streams ranging from 55 mm to 97.1 mm in mean fork length and 1.4 to 34.9 g mean weight. Mean condition factor of Arctic grayling ranged from 0.84 to 1.7. A single burbot was captured, which was 207 mm FL and weighed 62.8 g. A single slimy sculpin was also captured, which was 76 mm FL and weighed 2.1 g.

3.2.2.3 Tissue Metal Concentrations

Tissue metal concentrations were determined from whole-body samples of ninespine stickleback from five streams within three potential tailings management areas in the southern Hope Bay Belt (Boston area). There were no clear trends in the mean concentration of metals in the tissue of ninespine stickleback between sites (Tables 3.2-17a and 3.2-17b; Figure 3.2-16). The concentration of metals from individual samples of ninespine stickleback can be found in Appendix 3.2-9.

Tissue metal concentrations of arsenic in ninespine stickleback did not approach the Health Canada guidelines of 3.5 mg/kg wet weight. Tissue arsenic levels varied somewhat among streams and were significantly higher in Boston 1 North and Boston 1 South (ANOVA, df = 4, F = 36.0, P < 0.001; Figure 3.2-16).

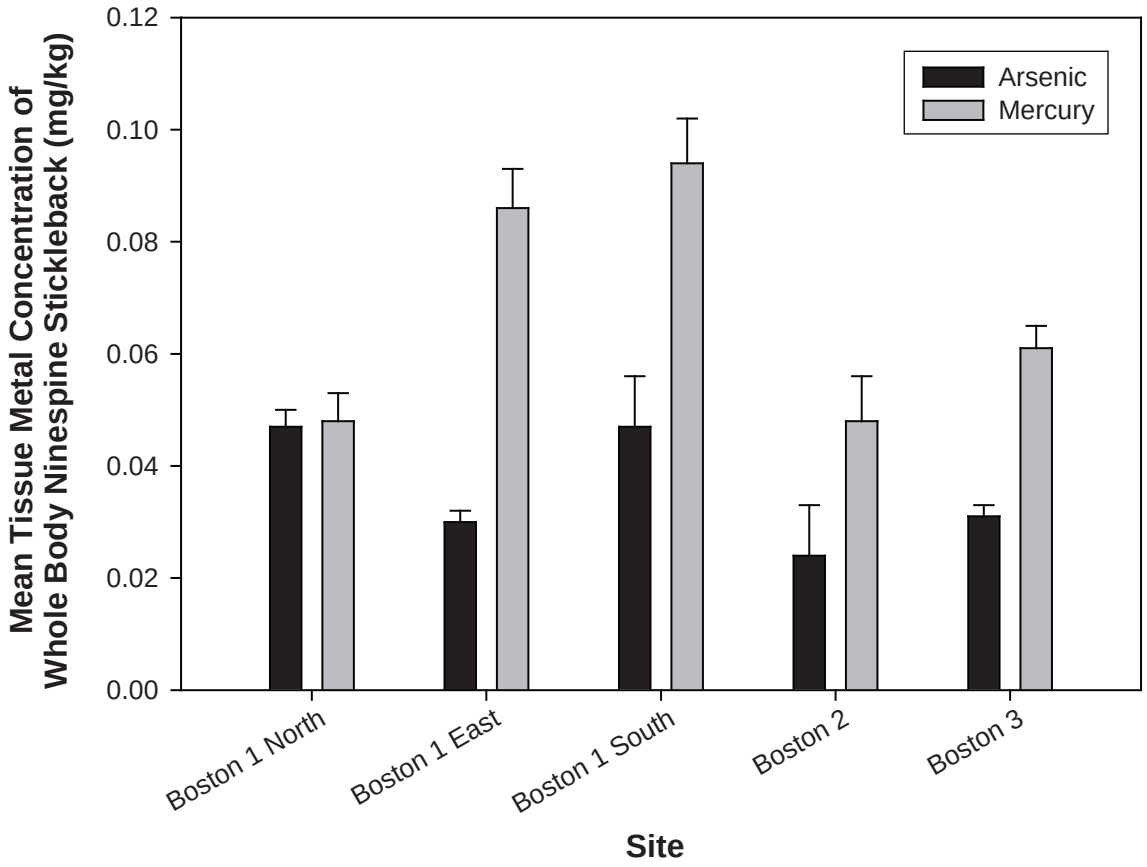
Table 3.2-16. Summary of Mean Length, Weight and Condition for Fish Sampled from Ponds and Surface Waters Adjacent to Quarry Sites, Hope Bay Project, 2010

Site	Species Code	Method	Fork Length (mm)			Weight (g)			Condition		
			n	Mean	SE	n	Mean	SE	n	Mean	SE
S32	NSB	EF	17	41.2	2.7	17	0.5	0.1	17	0.99	0.41
S20	AG	EF	15	97.1	12.5	15	34.9	21.1	15	1.70	0.66
	BB	EF	1	207.0	-	1	62.8	-	1	0.71	-
	NSB	EF	29	47.9	1.5	29	1.1	0.1	27	0.97	0.11
	CCG	EF	1	76.0	-	1	2.1	-	1	0.48	-
	LT	EF									
S33	NSB	EF	2	72.5	5.5	2	2.5	0.3	2	0.66	0.07
S34	NSB	EF	17	26.4	1.8	4	0.4	0.2	4	0.62	0.05
TS 2	NSB	EF	30	33.4	2.0	29	0.3	0.1	29	0.69	0.03
TS 3	NSB	EF	23	27.8	2.2	9	0.5	0.1	9	0.77	0.15
Q2	NSB	EF	6	17.0	1.3	-	-	-	-	-	-
Q4	NSB	EF	28	42.2	2.3	25	0.8	0.1	25	0.85	0.05
Q5	NSB	EF	30	36.8	1.7	28	0.4	0.1	28	0.59	0.03
Q6	NSB	EF	7	40.7	3.2	6	0.5	0.1	6	0.53	0.04
Q8	NSB	EF	21	31.3	2.6	12	0.4	0.2	12	0.55	0.04
Q10-L1	NSB	EF	1	36.0	-	1	0.2	-	1	0.40	-
Q10-S1	NSB	EF	2	28.5	0.5	-	-	-	-	-	-
	AG	EF	2	55.0	0.0	2	1.4	0.0	2	0.84	0.00

Fish Species Codes: LT = lake trout, AC = Arctic char, NSB = ninespine stickleback, AG = Arctic grayling, BB = burbot, CCG = slimy sculpin

The concentrations of mercury in ninespine stickleback from Boston 1 East and Boston 1 South were somewhat higher than in fish from the other Boston area streams (ANOVA, df = 4, F = 9.4, P < 0.001; Figure 3.2-16). Mercury concentrations in the sampled ninespine stickleback were always below 0.1 mg/kg wet weight, which was lower than the Health Canada guideline of 0.5 mg/kg.

The ln-transformed data of mercury concentration in ninespine stickleback body tissue was plotted on ln-transformed data of ninespine stickleback fork length for each stream (Figure 3.2-17). Regression analysis showed that mercury was significantly related to fork length of ninespine stickleback sampled from Boston 1 North (n = 20, r^2 = 0.73, P<0.0001). Weak but statistically significant relationships between tissue mercury concentrations and fork length were found for Boston 1 East (n = 20, r^2 = 0.29, P < 0.01) and Boston 1 South (n = 20, r^2 = 0.39, P < 0.01). Ninespine stickleback tissue samples from Boston 2 stream showed no relationship to fork length (n = 20, r^2 = 0.07, P > 0.1). For Boston 2 Stream, only 4 fish were sampled and therefore regression analysis could not be conducted.



Note: Error bars represent standard error of the mean.
N = 20 for all means, except at the Boston 2 site (n = 4).

Mean Whole-body Tissue Concentrations of Arsenic and Mercury in Ninespine Stickleback from Five Streams in the Boston Area, Hope Bay Belt Project, 2010

Figure 3.2-16

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Table 3.2-17a. Mean Concentration of Metals in Ninespine Stickleback Whole Body Tissue, Hope Bay Belt Project, 2010

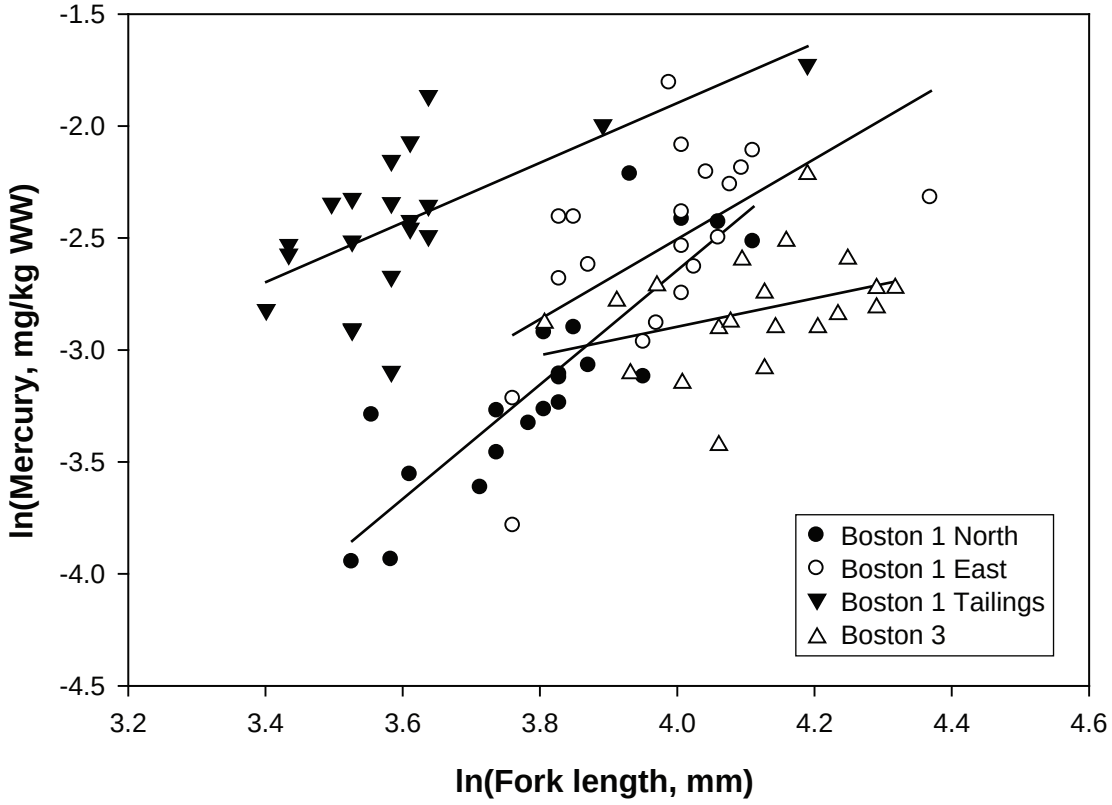
Variable	Detection Limit	Units	Boston 1 North Stream (n = 20)				Boston 1 East Stream (n = 20)				Boston 1 South Stream (n = 20)			
			Mean	SE	Min	Max	Mean	SE	Min	Max	Mean	SE	Min	Max
Fork Length	1	mm	45.55	1.639	34	61	54.1	1.798	43	79	37.25	1.75	30	66
Moisture	0.1	%	69.275	0.733	64.8	76.4	68.51	0.668	62.1	73.5	68.015	0.623	64.7	77.1
Aluminum (Al)	0.1	mg/kg WW	40.2	6.631	6.3	126	14.805	2.804	2	38.7	29.555	3.053	8.2	59.4
Antimony (Sb)	0.00	mg/kg WW	0.01	0	0.01	0.015	0.01	0.001	0.01	0.02	0.011	0.001	0.01	0.015
Arsenic (As)	0.00	mg/kg WW	0.047	0.003	0.01	0.07	0.03	0.002	0.01	0.049	0.047	0.009	0.015	0.171
Barium (Ba)	2.00	mg/kg WW	3.202	0.318	1.56	6.92	2.887	0.205	1.75	5.61	2.921	0.231	1.44	5.96
Beryllium (Be)	0.01	mg/kg WW	0.103	0.003	0.1	0.15	0.1	0	0.1	0.1	0.118	0.005	0.1	0.15
Bismuth (Bi)	0.01	mg/kg WW	0.031	0.001	0.03	0.045	0.031	0.001	0.03	0.06	0.035	0.002	0.03	0.045
Cadmium (Cd)	0.010	mg/kg WW	0.021	0.002	0.01	0.05	0.028	0.003	0.005	0.07	0.04	0.005	0.019	0.105
Calcium (Ca)	2.0	mg/kg WW	12454	457.626	9180	17000	13275	798.119	9700	25700	12651.5	546.419	9100	17900
Chromium (Cr)	0.0	mg/kg WW	0.275	0.16	0.1	3.32	0.14	0.025	0.1	0.52	0.124	0.008	0.1	0.23
Cobalt (Co)	0.01	mg/kg WW	0.031	0.004	0.02	0.074	0.036	0.011	0.02	0.231	0.026	0.002	0.02	0.052
Copper (Cu)	2.00	mg/kg WW	1.317	0.061	0.836	1.78	1.436	0.112	0.866	3.06	1.773	0.159	0.95	4.06
Lead (Pb)	0.10	mg/kg WW	2.016	1.983	0.02	39.7	0.024	0.002	0.02	0.049	0.039	0.005	0.02	0.098
Lithium (Li)	0.0	mg/kg WW	0.103	0.003	0.1	0.15	0.105	0.005	0.1	0.2	0.118	0.005	0.1	0.15
Magnesium (Mg)	0.0	mg/kg WW	422.75	15.498	339	562	414.3	21.725	309	752	415.1	15.868	314	548
Manganese (Mn)	0.02	mg/kg WW	8.514	0.549	5.57	16.5	9.672	0.746	5.9	19	7.816	0.431	3.32	11.2
Mercury (Hg)	0.100	mg/kg WW	0.048	0.005	0.019	0.109	0.086	0.007	0.023	0.164	0.094	0.008	0.045	0.178
Molybdenum (Mo)	1.00	mg/kg WW	0.03	0.001	0.023	0.049	0.031	0.001	0.023	0.043	0.041	0.002	0.015	0.058
Nickel (Ni)	0.0	mg/kg WW	0.103	0.003	0.1	0.15	0.452	0.346	0.1	7.03	0.147	0.021	0.1	0.47
Selenium (Se)	0.0	mg/kg WW	0.275	0.025	0.2	0.49	0.287	0.027	0.2	0.49	0.241	0.014	0.2	0.42
Strontium (Sr)	0.01	mg/kg WW	18.395	0.912	13	26.4	19.825	1.287	14.9	40	12.885	0.662	8.05	18.6
Thallium (Tl)	0.10	mg/kg WW	0.01	0	0.01	0.015	0.01	0.001	0.01	0.02	0.012	0.001	0.01	0.015
Tin (Sn)	0.20	mg/kg WW	0.051	0.001	0.05	0.075	0.053	0.003	0.05	0.1	0.058	0.003	0.05	0.075
Uranium (U)	0.010	mg/kg WW	0.019	0.001	0.011	0.031	0.017	0.002	0.004	0.038	0.092	0.01	0.03	0.169
Vanadium (V)	0.0	mg/kg WW	0.184	0.029	0.1	0.53	0.117	0.009	0.1	0.22	0.136	0.013	0.1	0.34
Zinc (Zn)	0.1	mg/kg WW	49.195	2.259	38.6	82.8	59.66	4.915	43.2	146	55.585	1.653	43.8	68.3

Health Canada guideline for arsenic in fish protein concentrate is 3.5 mg/kg wet weight. Health Canada guideline for mercury in fish tissue is 0.5 mg/kg wet weight.

Table 3.2-17b. Mean Concentration of Metals in Ninespine Stickleback Whole Body Tissue, Hope Bay Belt Project, 2010

Variable	Detection Limit	Units	Boston 2 Stream (n = 4)				Boston 3 Stream (n = 20)			
			Mean	SE	Min	Max	Mean	SE	Min	Max
Fork Length	1	mm	36.25	2.016	33	42	62.25	1.742	45	75
Moisture	0.1	%	70.575	2.436	64.7	76.1	67.095	0.613	60.5	71.6
Aluminum (Al)	0.0	mg/kg WW	4.475	2.475	2	11.9	2	0.073	1	3
Antimony (Sb)	0.00	mg/kg WW	0.01	0	0.01	0.01	0.01	0	0.005	0.015
Arsenic (As)	0.00	mg/kg WW	0.024	0.009	0.01	0.045	0.031	0.002	0.02	0.043
Barium (Ba)	0.00	mg/kg WW	2.575	0.384	1.9	3.63	2.593	0.214	1.59	6.07
Beryllium (Be)	0.00	mg/kg WW	0.1	0	0.1	0.1	0.1	0.004	0.05	0.15
Bismuth (Bi)	0.00	mg/kg WW	0.03	0	0.03	0.03	0.03	0.001	0.015	0.045
Cadmium (Cd)	0.000	mg/kg WW	0.013	0.003	0.005	0.019	0.01	0.001	0.005	0.027
Calcium (Ca)	2.0	mg/kg WW	14950	936.75	12500	17000	16200	690.194	10600	25000
Chromium (Cr)	0.0	mg/kg WW	0.128	0.027	0.1	0.21	0.129	0.021	0.1	0.5
Cobalt (Co)	0.00	mg/kg WW	0.02	0	0.02	0.02	0.021	0.001	0.01	0.042
Copper (Cu)	0.00	mg/kg WW	1.498	0.286	0.942	2.28	0.925	0.047	0.563	1.59
Lead (Pb)	0.00	mg/kg WW	0.032	0.012	0.02	0.067	0.03	0.005	0.01	0.101
Lithium (Li)	0.0	mg/kg WW	0.1	0	0.1	0.1	0.1	0.004	0.05	0.15
Magnesium (Mg)	0.0	mg/kg WW	465.5	9.188	448	491	430.8	11.023	369	526
Manganese (Mn)	0.00	mg/kg WW	5.74	1.032	3.27	8.24	11.571	0.751	6.03	18.1
Mercury (Hg)	0.000	mg/kg WW	0.048	0.008	0.031	0.069	0.061	0.004	0.033	0.109
Molybdenum (Mo)	0.00	mg/kg WW	0.027	0.001	0.025	0.031	0.025	0.002	0.01	0.034
Nickel (Ni)	0.0	mg/kg WW	0.153	0.053	0.1	0.31	0.1	0.004	0.05	0.15
Selenium (Se)	0.0	mg/kg WW	0.2	0	0.2	0.2	0.218	0.012	0.2	0.43
Strontium (Sr)	0.00	mg/kg WW	10.053	2.347	5.47	14.2	15.832	1.391	9.1	34.7
Thallium (Tl)	0.00	mg/kg WW	0.01	0	0.01	0.01	0.01	0	0.005	0.015
Tin (Sn)	0.00	mg/kg WW	0.05	0	0.05	0.05	0.05	0.002	0.025	0.075
Uranium (U)	0.000	mg/kg WW	0.002	0	0.002	0.002	0.003	0.001	0.001	0.009
Vanadium (V)	0.0	mg/kg WW	0.1	0	0.1	0.1	0.107	0.008	0.05	0.24
Zinc (Zn)	0.0	mg/kg WW	59.4	1.431	56.6	63.4	62.625	3.083	41.9	89.7

Health Canada guideline for arsenic in fish protein concentrate is 3.5 mg/kg wet weight. Health Canada guideline for mercury in fish tissue is 0.5 mg/kg wet weight.



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Plot of Muscle Tissue Mercury Concentrations from Ninespine Stickleback from Four Streams in the Boston Area, Hope Bay Belt Project, 2010

Figure 3.2-17

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4. Summary

4. Summary

4.1 AIMAOKATALOK LAKE FISH HABITAT

The fish habitat of Aimaokatalok Lake was surveyed in two main areas: where a potential future dyke and open pit could be located (Ore Deposit area), and a reference area located in the northeast portion of the lake (Reference area). Visual surveys were used to assess shoreline habitat. Hydroacoustic surveys were used to assess substrate in the deeper basin areas of the lake. A total of 29 transects were surveyed to quantify substrate composition. Relatively small and soft substrates such as sand/gravel and mud accounted for 40% and 39% of the total substrate area, respectively in the Ore Deposit area. 'Cobble/large rock' and sand/gravel represented 42% and 37% of the total substrate found in the Reference area. In general, fine substrate was most commonly found within the Ore Deposit area, while hard substrates were associated with the Reference area of Aimaokatalok Lake.

4.2 LAKE FISH COMMUNITY

Aimaokatalok Lake

Hydroacoustic gear was used to estimate fish densities in the Ore Deposit and Reference areas of Aimaokatalok Lake. The highest fish densities were observed in the southwest portion of the Reference area in 10 to 15 m of water. The highest densities in the Ore Deposit area were observed along the western shoreline of the study area. Fish densities ranged from 0 to 935 fish/ha in the Ore Deposit area, while densities in the Reference area ranged from 0 to 1,026 fish/ha. Gillnet surveys were used to determine the relative abundance of fish species in Aimaokatalok Lake. The hydroacoustic fish density estimates were then apportioned using the relative abundance of fish species captured in the gillnet surveys. Concentrations of fish were typically associated with deep water habitat (e.g., 10 to 15 m). Based on gillnet relative abundance, lake cisco were found in higher proportion, particularly in the greater depth ranges.

Gill nets set in Aimaokatalok Lake caught 78 lake trout, 24 lake whitefish and 130 cisco. Lake trout in Aimaokatalok Lake tended to be large (mean FL = 573 mm) but in relatively poor condition (mean k = 0.92). Mean age of lake trout was 19 years. Lake trout diet by weight was about 55% salmonid fishes and 41% aquatic invertebrates (*Saduria entomon*). Lake whitefish were also large (mean FL = 427 mm) but had higher condition (mean k = 1.27). Mean age of lake whitefish was 20 years. Lake whitefish fed primarily on mysid shrimp. Cisco had a mean length of 221 mm and were in good condition (mean k = 1.16). Mean age of cisco was 8 years.

Tissue metal analysis indicated that of the 13 lake trout sampled for mercury, 12 had levels of muscle tissue mercury higher than the Health Canada muscle tissue guideline of 0.5 mg/kg wet weight.

Stickleback Lake

A single Arctic grayling (FL = 380, k = 1.23) was captured by gillnetting in Stickleback Lake. Minnow traps captured 34 ninespine stickleback.

Trout Lake

Only two lake trout were caught in Trout Lake. Both were large (mean FL = 658 mm) and in good condition (mean k = 1.41). No other species were caught in Trout Lake.

Reference B Lake

Lake trout was the only species captured in Reference B Lake. The 12 fish captured were of moderate size (mean FL = 512 mm) and moderate condition (mean k = 1.05). Mean age of lake trout was 17 years.

Reference D Lake

Gillnets set in Reference D Lake caught two cisco and one lake whitefish, all of which were juveniles. In addition, seven lake trout were caught in gill nets. Lake trout in Reference D Lake were smaller than in the other lakes (mean FL = 398 mm) and were in moderate condition (k = 1.07). Lake trout fed primarily on ninespine stickleback (66% by weight), with the remainder of the diet comprised of aquatic invertebrates.

Tissue metal analysis indicated that lake trout in Reference D Lake were accumulating mercury in muscle tissue. However, all tested lake trout had muscle tissue mercury levels below the Health Canada guideline of 0.5 mg/kg wet weight.

4.3 STREAM FISH HABITAT

Detailed fish habitat assessments were conducted at 59 sites in streams, ponds and surface waters adjacent to potential quarry sites. A total of 15,199 linear metres of fish habitat was assessed, with 9,460 m assessed in high freshet flows and 5,739 m in low summer flows. These sites were broken down into a total of 352 habitat units. Each unit was classified as a glide, riffle, pool, cascade or other (e.g. lake, underground) habitat type. Pools were the most common habitat type (36%) followed by glides (31%) and riffles (25%) while other habitat types and cascades made up a small portion of the total (5% and 3% respectively).

Fine substrate was by far the most common substrate type (72%) followed by boulder (9%), cobble (7%), bedrock (6%) and gravel (6%). No large woody debris (LWD) was found at any site and small woody debris (SWD) was found at only one site (Site S16, summer sample) where it provided cover to 2.5% of that site.

Average cover for fish at each site was 76%, with instream vegetation and pool making up 61% of the total (34% and 27% respectively). Boulder cover was next most common (9%), followed by undercut bank (5%), overhanging vegetation (2%) and finally SWD made up less than 1% of the total. Sites downstream of potential quarries had the best cover for fish with an average of 110%, followed by the Aimaokatalok and Koignuk Rivers, which had 87% and 80% cover, respectively. Reference D Lake, Reference B Lake and inflows to Roberts Bay had the lowest cover (26%, 20% and 16% respectively).

4.4 STREAM AND POND FISH COMMUNITY

A total of 366 fish were collected by electrofishing from 15 stream locations, six pond locations and seven areas adjacent to proposed quarry locations. The total number of fish collected per site ranged from one to 50. A total of six different fish species were identified utilizing stream habitat. Ninespine stickleback was the predominant fish species found, as they accounted for 90.1% of all fish caught. The next most abundant species were Arctic grayling and slimy sculpin, which made up 7.1% and 1.4% of the total respectively. Ninespine stickleback were common throughout the study area, whereas Arctic grayling were found only in the central and southern areas of Hope Bay Belt. Lake trout (n=2), Arctic char (n=2) and burbot (n=1) constituted the remaining 1.4% of fish captured from stream and pond sites.

Whole-body tissue metal analysis of ninespine stickleback in streams downstream of potential tailings impoundment areas indicated that both arsenic and mercury were well below Health Canada guidelines.

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Appendix 2.1-1
Field Data Sheet Template

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Appendix 2.1-1. Field data sheet template (front)

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: _____ Survey Date (d/m/y): _____ Coordinates: _____ Coordinates: _____

SITE: _____ Survey Crew: _____

Survey Distance (m) _____

Temperature (˚C): _____ Transparency: _____ Comments

Channel Velocity (m/s): _____ Conductivity (uS/cm): _____

Current Flow Conditions: _____ pH: _____ Weather:

Discharge estimate (m˙/s) _____

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Depth (m) Max	Depth (m) Crest	Type	T/P
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: _____

Rearing: _____

Adult Feeding: _____

Over-wintering: _____

Migration: _____

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: _____ **SITE:** _____ **DATE:** _____ **CREW:** _____

Hab Unit No.	Banks of Channel				Instream Cover							Photos	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %	#		Canopy %	LB %	RB %
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

Data Entered ☐ **QA/QC** ☐

Appendix 2.2-1

Lake Fishing Effort, Hope Bay Belt Project, 29010

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Appendix 2.2-1. Lake Fishing Effort, Hope Bay Belt Project, 2010

Date	Lake	Method	Gillnet #	Depth 1 (m)	Time IN	Time OUT	Total Time Set	# Minnow Traps	Total Effort	Lake Trout	Lake Whitefish	Cisco	Ninespine Stickleback	Arctic Grayling	Waypoint #	Easting 1	Northing 1	Depth 2 (m)	Waypoint #	Easting 2	Northing 2	Substrate					Habitat	Comment
																						Bedrock	Boulder	Cobble	Gravel	Fines		
26-Aug-10	Reference B	GN (F)	1	3.2	11:00	13:00	2:00	-	-	0	0	0	0	0	144	425672	7529672	3.6	145	425707	7529576	0	20	40	10	20	boulder/cobble	-
26-Aug-10	Reference B	GN (S)	2	1.8	11:36	13:30	1:54	-	-	3	0	0	0	0	147	425325	7529802	6.5	148	425394	7529721	0	50	50	0	0	bedrock/boulder outcropping shoal	-
26-Aug-10	Reference B	GN (S)	3	10.4	14:28	15:41	1:13	-	-	3	0	0	0	0	150	424245	7531569	7.6	151	424310	7531524	0	70	30	0	0	large boulder substrate	1 lost during net retrieve
26-Aug-10	Reference B	GN (F)	4	2.4	14:40	16:30	1:50	-	-	9	0	0	0	0	152	425128	7532084	1.9	153	425023	7532071	0	50	50	0	0	large boulder substrate	2 lost during net retrieve, most fish captured actively spawning
26-Aug-10	Reference B	MT	MT1	0.3	11:10	13:10	2:00	5	-	0	0	0	0	0	146	425800	7529714	0.5	-	-	-	0	40	60	0	0	boulder/cobble	-
26-Aug-10	Reference B	MT	MT2	0.5	11:45	12:40	0:55	5	-	0	0	0	0	0	149	425474	7529871	0.8	-	-	-	20	70	10	0	0	Angular boulder/bedrock	-
26-Aug-10	Reference B	MT	MT3	0.4	14:50	16:10	1:20	5	-	0	0	0	0	0	154	425238	7532158	1.0	-	-	-	10	70	20	0	0	Angular boulder/bedrock	surface water temp = 10.8C at 15:00
24-Aug-10	Reference D	GN (F)	1	1.5	15:45	16:46	1:01	-	-	1	0	0	0	0	127	447607	7560923	0.9	128	447534	7560982	-	-	-	-	-	silt bottom with boulders	inlet stream estuary
24-Aug-10	Reference D	GN (S)	2	1.9	16:15	17:15	1:00	-	-	2	0	2	0	0	129	447677	7561543	4.5	130	447596	7561577	-	-	-	-	-	boulder/cobble	inlet stream estuary
24-Aug-10	Reference D	MT	MT1	0.5	16:20	17:20	1:00	2	-	0	0	0	0	0	131	447409	7561621	0.5	-	-	-	-	-	-	-	-	boulder/cobble	-
24-Aug-10	Reference D	MT	MT2	0.4	16:35	17:35	1:00	3	-	0	0	0	2	0	132	447628	7560730	0.4	-	-	-	-	-	-	-	-	silt/moss bank, submerge veg and macrophytes	-
25-Aug-10	Reference D	GN (S)	3	1.8	12:40	14:16	1:36	-	-	1	1	0	0	0	134	447705	7562430	1.8	133	447796	7562456	-	-	-	-	-	boulder/cobble	-
25-Aug-10	Reference D	GN (F)	4	1.2	12:55	14:30	1:35	-	-	0	0	0	0	0	135	447983	7562527	1.3	136	447941	7562444	-	-	-	-	-	boulder/cobble	-
25-Aug-10	Reference D	MT	MT3	0.3	13:10	15:15	2:05	5	-	0	0	0	1	0	141	448102	7562682	0.6	-	-	-	-	-	-	-	-	boulder/cobble	stream habitat in first rifffle in outlet stream
25-Aug-10	Reference D	MT	MT4	0.3	13:30	15:45	2:15	5	-	0	0	0	0	0	137	447646	7562628	0.6	-	-	-	-	-	-	-	-	boulder/cobble + silt and underwater veg	-
25-Aug-10	Reference D	GN (F)	5	0.9	14:43	16:11	1:28	-	-	1	0	0	0	0	138	447567	7561902	2.4	142	447508	7561829	-	-	-	-	-	boulder/cobble	-
25-Aug-10	Reference D	GN (S)	6	2.4	14:52	16:30	1:38	-	-	2	0	0	0	0	139	447705	7561856	2.6	140	447650	7561779	-	-	-	-	-	boulder/cobble + silt and macrophytes	-
25-Aug-10	Reference D	MT	MT5	0.5	16:35	17:15	0:40	3	-	0	0	0	0	0	143	447675	7560954	0.5	-	-	-	-	-	-	-	-	silt bottom with boulders	-
23-Aug-10	Trout	MT	MT1	0.3	9:07	10:35	1:28	5	-	0	0	0	16	0	100	442463	7503720	0.5	-	-	-	-	-	-	-	-	silt bottom, submerged willow/birch sedge, macrophytes	outlet stream area, observed > 40 cm adult fish swimming
23-Aug-10	Trout	GN (F)	1	1.2	9:30	11:10	1:40	-	-	2	0	0	0	0	101	442470	7503613	1.5	102	442574	7503586	-	-	-	-	-	silt bottom, macrophytes	surface water temp = 13.0 C at 11:00
23-Aug-10	Trout	GN (S)	2	1.3	9:50	11:44	1:54	-	-	0	0	0	0	0	106	442838	7503073	2.0	107	442921	7503032	-	-	-	-	-	boulder/cobble/silt	-
23-Aug-10	Trout	MT	MT2	0.3	10:00	11:55	1:55	5	-	0	0	0	24	0	109	443040	7503006	0.6	-	-	-	-	-	-	-	-	boulder/cobble/silt	-
23-Aug-10	Trout	GN (S)	3	2.5	12:19	14:46	2:27	-	-	0	0	0	0	0	111	442894	7502755	3.5	123	442760	7502339	-	-	-	-	-	silt bottom, submerged willow/birch sedge, macrophytes	inlet stream estuary
23-Aug-10	Trout	MT	MT3	0.3	12:30	15:00	2:30	5	-	0	0	0	32	0	115	442707	7502226	0.6	-	-	-	-	-	-	-	-	boulder/cobble/silt	-
23-Aug-10	Trout	GN (F)	4	2.0	12:50	13:41	0:51	-	-	0	0	0	0	0	116	442503	7502458	2.0	117	442523	7502553	-	-	-	-	-	boulder/cobble/silt	-
23-Aug-10	Trout	GN (F)	5	2.0	13:53	15:20	1:27	-	-	0	0	0	0	0	118	442436	7503156	2.5	119	442541	7503197	-	-	-	-	-	boulder/cobble/silt	-
23-Aug-10	Trout	MT	MT4	0.4	14:05	15:36	1:31	5	-	0	0	0	7	0	120	442423	7503195	0.7	121	442407	7503121	-	-	-	-	-	boulder/cobble/gravel	-
22-Aug-10	Stickleback	GN (S)	1	1.5	9:50	11:11	1:21	-	-	0	0	0	0	0	67	441322	7503899	2.0	66	441352	7503826	-	-	-	-	-	silt bottom, submerged willow/birch sedge, macrophytes	-
22-Aug-10	Stickleback	MT	MT1	0.3	10:10	11:40	1:30	5	-	0	0	0	34	0	83	441528	7504354	0.5	84	441527	7504353	-	-	-	-	-	silt bottom, submerged willow/birch sedge	-
22-Aug-10	Stickleback	MT	MT2	0.4	10:30	12:48	2:18	5	-	0	0	0	18	0	72	441931	7504118	0.8	73	441912	7504076	-	-	-	-	-	silt bottom, submerged willow/birch sedge, macrophytes	outlet stream area, no size data collected
22-Aug-10	Stickleback	GN (F)	2	2.5	10:50	13:05	2:15	-	-	0	0	0	0	0	74	441965	7504086	1.5	75	442046	7504051	-	-	-	-	-	silt bottom, macrophytes	-
22-Aug-10	Stickleback	GN (S)	3	3.0	11:26	14:20	2:54	-	-	0	0	0	0	0	80	441813	7503511	3.0	81	441896	7503474	-	-	-	-	-	unknown bottom substrate	-
22-Aug-10	Stickleback	GN (F)	4	2.4	13:45	15:17	1:32	-	-	0	0	0	0	0	88	441524	7503286	2.0	89	441550	7503170	-	-	-	-	-	boulder/cobble	-
22-Aug-10	Stickleback	MT	MT3	0.4	14:00	15:03	1:03	5	-	0	0	0	15	0	90	441495	7503253	0.8	81	441896	7503474	-	-	-	-	-	boulder/cobble	no size data collected
22-Aug-10	Stickleback	GN (S)	5	2.0	14:30	15:33	1:03	-	-	0	0	0	0	1	92	442048	7502946	2.4	93	442066	7503034	-	-	-	-	-	boulder/cobble	-
17-Aug-10	Aimaokatalok	GN (S)	1	2.7	10:00	11:22	1:22	-	-	0	2	0	0	0	1	440853	7505262	2.9	2	440820	7505160	0	45	50	5	0	boulder/cobble	-
17-Aug-10	Aimaokatalok	GN (F)	2	2.5	10:13	12:15	2:02	-	-	1	0	0	0	0	3	440833	7505042	2.0	4	440864	7504934	0	45	50	5	0	boulder/cobble	-
17-Aug-10	Aimaokatalok	GN (S)	3	10.5	12:00	19:20	7:20	-	-	13	7	87	0	0	7	440350	7505213	13.5	8	440343	7505142	-	-	-	-	-	boulder/cobble	GN sets 3 and 4 were unintentionally long
17-Aug-10	Aimaokatalok	GN (F)	4	1.5	12:48	20:10	7:22	-	-	4	1	0	0	0	10	440801	7504697	3.5	9	440698	7504752	-	-	-	-	-	boulder/cobble	-
17-Aug-10	Aimaokatalok	MT	MT1	0.5	10:40	30 hr set	30:00	10	-	0	0	0	0	0	15	440942	7504980	1.0	16	440928	7505151	0	40	50	5	5	boulder/cobble	-
18-Aug-10	Aimaokatalok	GN (S)	5	3.9	15:30	16:50	1:20	-	-	3	0	0	0	0	6	440177	7503997	1.7	11	440126	7503896	0	10	70	20	0	-	surface water temp = 11.0 C at 15:00
18-Aug-10	Aimaokatalok	GN (F)	6	5.7	15:42	17:38	1:56	-	-	2	0	0	0	0	12	440285	7504099	6.3	13	440196	7504031	0	10	70	20	0	-	-
18-Aug-10	Aimaokatalok	MT	MT2	0.5	18:30	8:20	17:50	10	-	0	0	0	0	0	17	440082	7503976	1.0	18	440029	7504088	0	10	70	20	0	-	-
19-Aug-10	Aimaokatalok	GN (F)	7	2.5	10:00	12:02	2:02	-	-	0	0	0	0	0	19	440471	7510727	5.5	20	440503	7510626	-	-	-	-	-	boulder/cobble	-
19-Aug-10	Aimaokatalok	GN (S)	8	5.0	10:20	11:35	1:15	-	-	2	2	0	0	0	21	440719	7510173	6.0	22	440749	7510086	-	-	-	-	-	boulder/cobble	-
19-Aug-10	Aimaokatalok	MT	MT3	0.3	10:40	13:15	2:35	10	-	0	0	0	0	0	23	440930	7510211	0.8	24	440948	7509986	0	40	60	0	0	boulder/cobble	-
19-Aug-10	Aimaokatalok	GN (S)	9	13.0	11:48	14:07	2:19	-	-	2	1	3	0	0	25	440761	7509275	14.0	26	440790	7509167	-	-	-	-	-	boulder/cobble	-
19-Aug-10	Aimaokatalok	GN (F)	10	1.5	12:22	14:30	2:08	-	-	1	0	0	0	0	27	440331	7511026	2.5	28	440283	7510936	-	-	-	-	-	boulder/cobble	-
19-Aug-10	Aimaokatalok	MT	MT4	0.5	14:45	17:35	2:50	5	-	0	0	0	0	0	31	441206	7509306	0.3	-	-	-	-	-	-	-	-	boulder/cobble	-
19-Aug-10	Aimaokatalok	GN (S)	11	2.0	14:30	17:25	2:55	-	-	2	1	0	0	0	30	441163	7509332	4.0	29	441083	7509291	-	-	-	-	-	boulder/cobble	-
19-Aug-10	Aimaokatalok	GN (F)	12	15.0	15:30	16:50	1:20	-	-	1	0	0	0	0	33	439793	7510617	9.0	32	439799	7510511	-	-	-	-	-	boulder/cobble	-
20-Aug-10	Aimaokatalok	GN (F)	13	2.0	10:10	15:30	5:20	-	-	9	0	0	0	0	34	441118	7505970	1.0	35	441092	7505862	-	-	-	-	-	boulder/cobble	-
20-Aug-10	Aimaokatalok	GN (S)	14	9.0	10:30	14:00	3:30	-	-	17	8	13	0	0	36	440270	7505721	12.0	37	440236	7505629	-	-	-	-	-	boulder/cobble	-
20-Aug-10	Aimaokatalok	GN (F)	15	10.0	16:05	17:20	1:15	-	-	1	0	0	0	0	38	440463	7506260	5.0	39	440356	7506234	-	-	-	-	-	boulder/cobble	-
20-Aug-10	Aimaokatalok	GN (S)	16	2.5	16:35	17:40	1:05	-	-	2	0	0	0	0	40	440567	7504079	1.5	41	440635	7504143	-	-	-	-	-	boulder/cobble	-
20-Aug-10	Aimaokatalok	MT	MT5	0.5	18:00	8:00	14:00	5	-	0	0	0	0	0	42	440959	7505623	0.5	-	-	-	-	-	-	-	-	boulder/cobble	-
21-Aug-10	Aimaokatalok	GN (S)	17	15.0	8:25	9:40	1:15	-	-	1	1	20	0	0	43	439791	7509374	13.2	44	439706	7509386	-	-	-	-	-	boulder/cobble	-
21-Aug-10	Aimaokatalok	GN (F)	18	7.0	8:38	10:42	1:04	-	-	0	0	0	0	0	45	440101	7510078	8.2	46	440062	7510178	-	-	-	-	-	boulder/cobble	-
21-Aug-10	Aimaokatalok	GN (S)	19	1.5	10:31	11:42	1:11	-	-	2	0	0	0	0	47	440093	7510889	2.5	48	440065	7510789	-	-	-	-	-	boulder/cobble	-
21-Aug-10	Aimaokatalok	GN (F)	20	1.5	10:54	12:24	1:30	-	-	6	0	0	0	0	49	441046	7509725	3.1	50	440956	7509773	-	-	-	-	-	boulder/cobble	-
21-Aug-10	Aimaokatalok	GN (S)	21	17.4	12:05	13:55	1:50	-	-	8	0	0	0	0	51	440352	7509389	17.5	52	440300	7509451	-	-	-	-	-	boulder/cobble	-
21-Aug-10	Aimaokatalok	GN (F)	22	3.4	13:12	14:37	1:25	-	-	1	1	27	0	0	53	440420	7510246	5.4	54	440523	7510187	-	-	-	-	-	boulder/cobble	-
21-Aug-10	Aimaokatalok	GN (F)	22	3.4	13:12	14:37	1:25	-	-	1	1	27	0	0	53	440420	7510246	5.4	54	440523	7510187	-	-	-	-	-	boulder/cobble	-

Appendix 2.2-2

Quality Control Tests of Fish Tissue Metal Concentrations, Hope Bay Belt Project, 2010

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Appendix 2.2-2. Quality Control Tests of Fish Tissue Metal Concentrations, Hope Bay Belt Project, 2010

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	CRM	Arsenic (As)-Total	WG1209789-6	VA-NRC-TORT2	24.2	21.6	mg/kg wwt	112	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1209789-6	VA-NRC-TORT2	28.7	26.7	mg/kg wwt	108	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1209789-6	VA-NRC-TORT2	0.46	0.77	mg/kg wwt	0.46	0-1.77	
Tissue	CRM	Cobalt (Co)-Total	WG1209789-6	VA-NRC-TORT2	0.518	0.510	mg/kg wwt	102	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1209789-6	VA-NRC-TORT2	101	106	mg/kg wwt	95.7	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1209789-6	VA-NRC-TORT2	0.384	0.350	mg/kg wwt	0.384	.15-.55	
Tissue	CRM	Manganese (Mn)-Total	WG1209789-6	VA-NRC-TORT2	13.6	13.6	mg/kg wwt	100	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1209789-6	VA-NRC-TORT2	0.257	0.270	mg/kg wwt	95	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1209789-6	VA-NRC-TORT2	1.00	0.950	mg/kg wwt	105	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1209789-6	VA-NRC-TORT2	2.24	2.50	mg/kg wwt	90	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1209789-6	VA-NRC-TORT2	7.01	5.63	mg/kg wwt	125	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1209789-6	VA-NRC-TORT2	42.1	45.2	mg/kg wwt	93	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1209789-6	VA-NRC-TORT2	1.76	1.64	mg/kg wwt	1.76	.64-2.64	
Tissue	CRM	Zinc (Zn)-Total	WG1209789-6	VA-NRC-TORT2	191	180	mg/kg wwt	106	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1209789-7	VA-NRC-DOLT4	9.99	9.66	mg/kg wwt	103	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1209789-7	VA-NRC-DOLT4	24.7	24.3	mg/kg wwt	102	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1209789-7	VA-NRC-DOLT4	31.8	31.2	mg/kg wwt	102	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1209789-7	VA-NRC-DOLT4	0.160	0.160	mg/kg wwt	0.160	.06-.26	
Tissue	CRM	Mercury (Hg)-Total	WG1209789-7	VA-NRC-DOLT4	2.38	2.58	mg/kg wwt	92	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1209789-7	VA-NRC-DOLT4	0.81	0.97	mg/kg wwt	0.81	.47-1.47	
Tissue	CRM	Selenium (Se)-Total	WG1209789-7	VA-NRC-DOLT4	9.87	8.30	mg/kg wwt	119	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1209789-7	VA-NRC-DOLT4	124	116	mg/kg wwt	107	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1209789-8	VA-NRC-TORT2	23.3	21.6	mg/kg wwt	108	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1209789-8	VA-NRC-TORT2	27.8	26.7	mg/kg wwt	104	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1209789-8	VA-NRC-TORT2	0.41	0.77	mg/kg wwt	0.41	0-1.77	
Tissue	CRM	Cobalt (Co)-Total	WG1209789-8	VA-NRC-TORT2	0.488	0.510	mg/kg wwt	96	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1209789-8	VA-NRC-TORT2	97.1	106	mg/kg wwt	91.6	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1209789-8	VA-NRC-TORT2	0.375	0.350	mg/kg wwt	0.375	.15-.55	
Tissue	CRM	Manganese (Mn)-Total	WG1209789-8	VA-NRC-TORT2	13.0	13.6	mg/kg wwt	96	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1209789-8	VA-NRC-TORT2	0.241	0.270	mg/kg wwt	89	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1209789-8	VA-NRC-TORT2	0.972	0.950	mg/kg wwt	102	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1209789-8	VA-NRC-TORT2	2.09	2.50	mg/kg wwt	84	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1209789-8	VA-NRC-TORT2	6.57	5.63	mg/kg wwt	117	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1209789-8	VA-NRC-TORT2	40.1	45.2	mg/kg wwt	89	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1209789-8	VA-NRC-TORT2	1.73	1.64	mg/kg wwt	1.73	.64-2.64	
Tissue	CRM	Zinc (Zn)-Total	WG1209789-8	VA-NRC-TORT2	185	180	mg/kg wwt	103	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1210513-7	VA-NRC-TORT2	21.9	21.6	mg/kg	101	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1210513-7	VA-NRC-TORT2	27.4	26.7	mg/kg	103	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1210513-7	VA-NRC-TORT2	0.47	0.77	mg/kg	0.47	0-1.77	
Tissue	CRM	Cobalt (Co)-Total	WG1210513-7	VA-NRC-TORT2	0.468	0.510	mg/kg	92	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1210513-7	VA-NRC-TORT2	96.5	106	mg/kg	91.0	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1210513-7	VA-NRC-TORT2	0.312	0.350	mg/kg	0.312	.15-.55	
Tissue	CRM	Manganese (Mn)-Total	WG1210513-7	VA-NRC-TORT2	12.7	13.6	mg/kg	93	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1210513-7	VA-NRC-TORT2	0.229	0.270	mg/kg	85	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1210513-7	VA-NRC-TORT2	0.929	0.950	mg/kg	98	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1210513-7	VA-NRC-TORT2	2.21	2.50	mg/kg	88	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1210513-7	VA-NRC-TORT2	6.04	5.63	mg/kg	107	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1210513-7	VA-NRC-TORT2	40.7	45.2	mg/kg	90	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1210513-7	VA-NRC-TORT2	1.67	1.64	mg/kg	1.67	.64-2.64	
Tissue	CRM	Zinc (Zn)-Total	WG1210513-7	VA-NRC-TORT2	181	180	mg/kg	100	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1210513-8	VA-NRC-DOLT4	9.33	9.66	mg/kg	97	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1210513-8	VA-NRC-DOLT4	23.4	24.3	mg/kg	96	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1210513-8	VA-NRC-DOLT4	30.6	31.2	mg/kg	98	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1210513-8	VA-NRC-DOLT4	0.148	0.160	mg/kg	0.148	.06-.26	
Tissue	CRM	Mercury (Hg)-Total	WG1210513-8	VA-NRC-DOLT4	2.03	2.58	mg/kg	79	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1210513-8	VA-NRC-DOLT4	0.91	0.97	mg/kg	0.91	.47-1.47	
Tissue	CRM	Selenium (Se)-Total	WG1210513-8	VA-NRC-DOLT4	9.32	8.30	mg/kg	112	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1210513-8	VA-NRC-DOLT4	118	116	mg/kg	101	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1210513-9	VA-NRC-TORT2	21.9	21.6	mg/kg	101	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1210513-9	VA-NRC-TORT2	26.9	26.7	mg/kg	101	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1210513-9	VA-NRC-TORT2	0.47	0.77	mg/kg	0.47	0-1.77	
Tissue	CRM	Cobalt (Co)-Total	WG1210513-9	VA-NRC-TORT2	0.498	0.510	mg/kg	98	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1210513-9	VA-NRC-TORT2	97.3	106	mg/kg	91.8	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1210513-9	VA-NRC-TORT2	0.320	0.350	mg/kg	0.320	.15-.55	

Appendix 2.2-2. Quality Control Tests of Fish Tissue Metal Concentrations, Hope Bay Belt Project, 2010

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	CRM	Manganese (Mn)-Total	WG1210513-9	VA-NRC-TORT2	12.6	13.6	mg/kg	92	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1210513-9	VA-NRC-TORT2	0.232	0.270	mg/kg	86	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1210513-9	VA-NRC-TORT2	0.947	0.950	mg/kg	100	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1210513-9	VA-NRC-TORT2	2.14	2.50	mg/kg	86	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1210513-9	VA-NRC-TORT2	6.21	5.63	mg/kg	110	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1210513-9	VA-NRC-TORT2	40.3	45.2	mg/kg	89	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1210513-9	VA-NRC-TORT2	1.63	1.64	mg/kg	1.63	.64-2.64	
Tissue	CRM	Zinc (Zn)-Total	WG1210513-9	VA-NRC-TORT2	181	180	mg/kg	100	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1211203-4	VA-NRC-TORT2	23.7	21.6	mg/kg	110	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1211203-4	VA-NRC-TORT2	29.6	26.7	mg/kg	111	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1211203-4	VA-NRC-TORT2	0.57	0.77	mg/kg	0.57	0-1.77	
Tissue	CRM	Cobalt (Co)-Total	WG1211203-4	VA-NRC-TORT2	0.572	0.510	mg/kg	112	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1211203-4	VA-NRC-TORT2	105	106	mg/kg	105	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1211203-4	VA-NRC-TORT2	0.323	0.350	mg/kg	0.323	.15-.55	
Tissue	CRM	Manganese (Mn)-Total	WG1211203-4	VA-NRC-TORT2	13.4	13.6	mg/kg	98	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1211203-4	VA-NRC-TORT2	0.283	0.270	mg/kg	105	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1211203-4	VA-NRC-TORT2	1.07	0.950	mg/kg	113	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1211203-4	VA-NRC-TORT2	2.31	2.50	mg/kg	92	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1211203-4	VA-NRC-TORT2	7.10	5.63	mg/kg	126	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1211203-4	VA-NRC-TORT2	42.2	45.2	mg/kg	93	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1211203-4	VA-NRC-TORT2	1.86	1.64	mg/kg	1.86	.64-2.64	
Tissue	CRM	Zinc (Zn)-Total	WG1211203-4	VA-NRC-TORT2	198	180	mg/kg	110	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1211203-5	VA-NRC-TORT2	23.9	21.6	mg/kg	111	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1211203-5	VA-NRC-TORT2	28.8	26.7	mg/kg	108	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1211203-5	VA-NRC-TORT2	0.61	0.77	mg/kg	0.61	0-1.77	
Tissue	CRM	Cobalt (Co)-Total	WG1211203-5	VA-NRC-TORT2	0.531	0.510	mg/kg	104	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1211203-5	VA-NRC-TORT2	102	106	mg/kg	102	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1211203-5	VA-NRC-TORT2	0.404	0.350	mg/kg	0.404	.15-.55	
Tissue	CRM	Manganese (Mn)-Total	WG1211203-5	VA-NRC-TORT2	13.1	13.6	mg/kg	96	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1211203-5	VA-NRC-TORT2	0.274	0.270	mg/kg	101	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1211203-5	VA-NRC-TORT2	1.04	0.950	mg/kg	109	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1211203-5	VA-NRC-TORT2	2.40	2.50	mg/kg	96	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1211203-5	VA-NRC-TORT2	6.78	5.63	mg/kg	120	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1211203-5	VA-NRC-TORT2	43.1	45.2	mg/kg	95	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1211203-5	VA-NRC-TORT2	1.85	1.64	mg/kg	1.85	.64-2.64	
Tissue	CRM	Zinc (Zn)-Total	WG1211203-5	VA-NRC-TORT2	192	180	mg/kg	107	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1211203-6	VA-NRC-DOLT4	9.77	9.66	mg/kg	101	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1211203-6	VA-NRC-DOLT4	24.7	24.3	mg/kg	102	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1211203-6	VA-NRC-DOLT4	32.8	31.2	mg/kg	105	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1211203-6	VA-NRC-DOLT4	0.154	0.160	mg/kg	0.154	.06-.26	
Tissue	CRM	Mercury (Hg)-Total	WG1211203-6	VA-NRC-DOLT4	2.14	2.58	mg/kg	83	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1211203-6	VA-NRC-DOLT4	0.74	0.97	mg/kg	0.74	.47-1.47	
Tissue	CRM	Selenium (Se)-Total	WG1211203-6	VA-NRC-DOLT4	9.83	8.30	mg/kg	118	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1211203-6	VA-NRC-DOLT4	122	116	mg/kg	105	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1220142-4	VA-NRC-TORT2	23.8	21.6	mg/kg wwt	110	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1220142-4	VA-NRC-TORT2	28.5	26.7	mg/kg wwt	107	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1220142-4	VA-NRC-TORT2	0.77	0.77	mg/kg wwt	0.77	0-1.77	
Tissue	CRM	Cobalt (Co)-Total	WG1220142-4	VA-NRC-TORT2	0.553	0.510	mg/kg wwt	109	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1220142-4	VA-NRC-TORT2	101	106	mg/kg wwt	101	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1220142-4	VA-NRC-TORT2	0.331	0.350	mg/kg wwt	0.331	.15-.55	
Tissue	CRM	Manganese (Mn)-Total	WG1220142-4	VA-NRC-TORT2	13.7	13.6	mg/kg wwt	101	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1220142-4	VA-NRC-TORT2	0.248	0.270	mg/kg wwt	92	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1220142-4	VA-NRC-TORT2	0.998	0.950	mg/kg wwt	105	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1220142-4	VA-NRC-TORT2	2.33	2.50	mg/kg wwt	93	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1220142-4	VA-NRC-TORT2	6.43	5.63	mg/kg wwt	114	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1220142-4	VA-NRC-TORT2	42.4	45.2	mg/kg wwt	94	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1220142-4	VA-NRC-TORT2	1.88	1.64	mg/kg wwt	1.88	.64-2.64	
Tissue	CRM	Zinc (Zn)-Total	WG1220142-4	VA-NRC-TORT2	182	180	mg/kg wwt	101	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1220142-5	VA-NRC-DOLT4	9.94	9.66	mg/kg wwt	103	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1220142-5	VA-NRC-DOLT4	24.1	24.3	mg/kg wwt	99	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1220142-5	VA-NRC-DOLT4	32.0	31.2	mg/kg wwt	102	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1220142-5	VA-NRC-DOLT4	0.132	0.160	mg/kg wwt	0.132	.06-.26	
Tissue	CRM	Mercury (Hg)-Total	WG1220142-5	VA-NRC-DOLT4	1.84	2.58	mg/kg wwt	71	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1220142-5	VA-NRC-DOLT4	0.80	0.97	mg/kg wwt	0.80	.47-1.47	

Appendix 2.2-2. Quality Control Tests of Fish Tissue Metal Concentrations, Hope Bay Belt Project, 2010

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	CRM	Selenium (Se)-Total	WG1220142-5	VA-NRC-DOLT4	9.69	8.30	mg/kg wwt	117	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1220142-5	VA-NRC-DOLT4	119	116	mg/kg wwt	103	70-130	
Tissue	MB	Aluminum (Al)-Total	WG1209789-1		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1209789-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1209789-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1209789-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1209789-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1209789-1		<0.030	<0.03	mg/kg wwt	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1209789-1		<0.0050	<0.005	mg/kg wwt	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1209789-1		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Chromium (Cr)-Total	WG1209789-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1209789-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1209789-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Lead (Pb)-Total	WG1209789-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1209789-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1209789-1		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1209789-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1209789-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1209789-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1209789-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1209789-1		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1209789-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Thallium (Tl)-Total	WG1209789-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1209789-1		<0.050	<0.05	mg/kg wwt	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1209789-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1209789-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1209789-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1209789-2		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1209789-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1209789-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1209789-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1209789-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1209789-2		<0.030	<0.03	mg/kg wwt	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1209789-2		<0.0050	<0.005	mg/kg wwt	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1209789-2		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Chromium (Cr)-Total	WG1209789-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1209789-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1209789-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Lead (Pb)-Total	WG1209789-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1209789-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1209789-2		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1209789-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1209789-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1209789-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1209789-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1209789-2		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1209789-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Thallium (Tl)-Total	WG1209789-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1209789-2		<0.050	<0.05	mg/kg wwt	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1209789-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1209789-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1209789-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1209789-9		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1209789-9		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1209789-9		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1209789-9		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1209789-9		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1209789-9		<0.030	<0.03	mg/kg wwt	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1209789-9		<0.0050	<0.005	mg/kg wwt	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1209789-9		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Chromium (Cr)-Total	WG1209789-9		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1209789-9		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1209789-9		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Lead (Pb)-Total	WG1209789-9		<0.020	<0.02	mg/kg wwt	-	0.02	

Appendix 2.2-2. Quality Control Tests of Fish Tissue Metal Concentrations, Hope Bay Belt Project, 2010

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	MB	Lithium (Li)-Total	WG1209789-9		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1209789-9		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1209789-9		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1209789-9		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1209789-9		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1209789-9		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1209789-9		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1209789-9		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Thallium (Tl)-Total	WG1209789-9		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1209789-9		<0.050	<0.05	mg/kg wwt	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1209789-9		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1209789-9		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1209789-9		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1210513-1		<2.0	<2	mg/kg	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1210513-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1210513-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1210513-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1210513-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1210513-1		<0.030	<0.03	mg/kg	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1210513-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1210513-1		2.1	<2	mg/kg	-	2	MB-LOR
Tissue	MB	Chromium (Cr)-Total	WG1210513-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1210513-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1210513-1		0.039	<0.01	mg/kg	-	0.01	MB-LOR
Tissue	MB	Lead (Pb)-Total	WG1210513-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1210513-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1210513-1		<1.0	<1	mg/kg	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1210513-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1210513-1		<0.0010	<0.001	mg/kg	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1210513-1		0.015	<0.01	mg/kg	-	0.01	MB-LOR
Tissue	MB	Nickel (Ni)-Total	WG1210513-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1210513-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1210513-1		0.017	<0.01	mg/kg	-	0.01	MB-LOR
Tissue	MB	Thallium (Tl)-Total	WG1210513-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1210513-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1210513-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1210513-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1210513-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1210513-2		<2.0	<2	mg/kg	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1210513-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1210513-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1210513-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1210513-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1210513-2		<0.030	<0.03	mg/kg	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1210513-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1210513-2		<2.0	<2	mg/kg	-	2	
Tissue	MB	Chromium (Cr)-Total	WG1210513-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1210513-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1210513-2		0.021	<0.01	mg/kg	-	0.01	MB-LOR
Tissue	MB	Lead (Pb)-Total	WG1210513-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1210513-2		0.25	<0.1	mg/kg	-	0.1	MB-LOR
Tissue	MB	Magnesium (Mg)-Total	WG1210513-2		<1.0	<1	mg/kg	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1210513-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1210513-2		<0.0010	<0.001	mg/kg	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1210513-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1210513-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1210513-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1210513-2		0.016	<0.01	mg/kg	-	0.01	MB-LOR
Tissue	MB	Thallium (Tl)-Total	WG1210513-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1210513-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1210513-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1210513-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1210513-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1210513-3		<2.0	<2	mg/kg	-	2	

Appendix 2.2-2. Quality Control Tests of Fish Tissue Metal Concentrations, Hope Bay Belt Project, 2010

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	MB	Antimony (Sb)-Total	WG1210513-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1210513-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1210513-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1210513-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1210513-3		<0.030	<0.03	mg/kg	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1210513-3		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1210513-3		<2.0	<2	mg/kg	-	2	
Tissue	MB	Chromium (Cr)-Total	WG1210513-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1210513-3		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1210513-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Lead (Pb)-Total	WG1210513-3		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1210513-3		0.15	<0.1	mg/kg	-	0.1	MB-LOR
Tissue	MB	Magnesium (Mg)-Total	WG1210513-3		<1.0	<1	mg/kg	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1210513-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1210513-3		<0.0010	<0.001	mg/kg	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1210513-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1210513-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1210513-3		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1210513-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Thallium (Tl)-Total	WG1210513-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1210513-3		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1210513-3		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1210513-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1210513-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1211203-1		<2.0	<2	mg/kg	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1211203-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1211203-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1211203-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1211203-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1211203-1		<0.030	<0.03	mg/kg	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1211203-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1211203-1		4.3	<2	mg/kg	-	2	MB-LOR
Tissue	MB	Chromium (Cr)-Total	WG1211203-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1211203-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1211203-1		0.014	<0.01	mg/kg	-	0.01	MB-LOR
Tissue	MB	Lead (Pb)-Total	WG1211203-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1211203-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1211203-1		<1.0	<1	mg/kg	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1211203-1		0.022	<0.01	mg/kg	-	0.01	MB-LOR
Tissue	MB	Mercury (Hg)-Total	WG1211203-1		<0.0010	<0.001	mg/kg	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1211203-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1211203-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1211203-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1211203-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Thallium (Tl)-Total	WG1211203-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1211203-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1211203-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1211203-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1211203-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1211203-2		<2.0	<2	mg/kg	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1211203-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1211203-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1211203-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1211203-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1211203-2		<0.030	<0.03	mg/kg	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1211203-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1211203-2		4.4	<2	mg/kg	-	2	MB-LOR
Tissue	MB	Chromium (Cr)-Total	WG1211203-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1211203-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1211203-2		0.011	<0.01	mg/kg	-	0.01	MB-LOR
Tissue	MB	Lead (Pb)-Total	WG1211203-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1211203-2		0.27	<0.1	mg/kg	-	0.1	MB-LOR
Tissue	MB	Magnesium (Mg)-Total	WG1211203-2		<1.0	<1	mg/kg	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1211203-2		0.051	<0.01	mg/kg	-	0.01	MB-LOR

Appendix 2.2-2. Quality Control Tests of Fish Tissue Metal Concentrations, Hope Bay Belt Project, 2010

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	MB	Mercury (Hg)-Total	WG1211203-2		<0.0010	<0.001	mg/kg	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1211203-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1211203-2		1.27	<0.1	mg/kg	-	0.1	MB-LOR
Tissue	MB	Selenium (Se)-Total	WG1211203-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1211203-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Thallium (Tl)-Total	WG1211203-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1211203-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1211203-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1211203-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1211203-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1211203-3		<2.0	<2	mg/kg	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1211203-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1211203-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1211203-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1211203-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1211203-3		<0.030	<0.03	mg/kg	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1211203-3		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1211203-3		3.5	<2	mg/kg	-	2	MB-LOR
Tissue	MB	Chromium (Cr)-Total	WG1211203-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1211203-3		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1211203-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Lead (Pb)-Total	WG1211203-3		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1211203-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1211203-3		<1.0	<1	mg/kg	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1211203-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1211203-3		<0.0010	<0.001	mg/kg	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1211203-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1211203-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1211203-3		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1211203-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Thallium (Tl)-Total	WG1211203-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1211203-3		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1211203-3		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1211203-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1211203-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1220142-1		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1220142-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1220142-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1220142-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1220142-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1220142-1		<0.030	<0.03	mg/kg wwt	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1220142-1		<0.0050	<0.005	mg/kg wwt	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1220142-1		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Chromium (Cr)-Total	WG1220142-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1220142-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1220142-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Lead (Pb)-Total	WG1220142-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1220142-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1220142-1		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1220142-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1220142-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1220142-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1220142-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1220142-1		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1220142-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Thallium (Tl)-Total	WG1220142-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1220142-1		<0.050	<0.05	mg/kg wwt	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1220142-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1220142-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1220142-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Aluminum (Al)-Total	WG1220142-2		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1220142-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1220142-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1220142-2		<0.010	<0.01	mg/kg wwt	-	0.01	

Appendix 2.2-2. Quality Control Tests of Fish Tissue Metal Concentrations, Hope Bay Belt Project, 2010

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	MB	Beryllium (Be)-Total	WG1220142-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Bismuth (Bi)-Total	WG1220142-2		<0.030	<0.03	mg/kg wwt	-	0.03	
Tissue	MB	Cadmium (Cd)-Total	WG1220142-2		<0.0050	<0.005	mg/kg wwt	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1220142-2		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Chromium (Cr)-Total	WG1220142-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Cobalt (Co)-Total	WG1220142-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1220142-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Lead (Pb)-Total	WG1220142-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1220142-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1220142-2		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Manganese (Mn)-Total	WG1220142-2		0.015	<0.01	mg/kg wwt	-	0.01	MB-LOR
Tissue	MB	Mercury (Hg)-Total	WG1220142-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1220142-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Nickel (Ni)-Total	WG1220142-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1220142-2		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Strontium (Sr)-Total	WG1220142-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Thallium (Tl)-Total	WG1220142-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Tin (Sn)-Total	WG1220142-2		<0.050	<0.05	mg/kg wwt	-	0.05	
Tissue	MB	Uranium (U)-Total	WG1220142-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1220142-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1220142-2		<0.10	<0.1	mg/kg wwt	-	0.1	

Appendix 2.2-3

Fish Tissue Replicate Metals Concentrations, Hope Bay Belt Project, 2010

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Appendix 2.2-3. Fish Tissue Replicate Metals Concentrations, Hope Bay Belt Project, 2010

Sample ID	Matrix	ALS ID	Analyte	Replicate 1	Replicate 2	Units	RPD	RPD Limit	Diff	Diff Limit	Qualifier
Physical Tests											
L941447-70	Tissue	WG1220157-1	% Moisture	76.5	77.2	%	0.93	20	-	-	-
L941447-102	Tissue	WG1208854-2	% Moisture	79.5	80.3	%	0.98	20	-	-	-
L941447-121	Tissue	WG1208854-5	% Moisture	76.6	76.8	%	0.34	20	-	-	-
L941447-123	Tissue	WG1208854-6	% Moisture	76.0	75.6	%	0.48	20	-	-	-
L941447-129	Tissue	WG1208854-4	% Moisture	76.2	76.4	%	0.27	20	-	-	-
L941447-148	Tissue	WG1208854-3	% Moisture	72.3	72.5	%	0.21	20	-	-	-
Metals											
L941447-70	Tissue	WG1220142-3	Aluminum (Al)-Total	7.5	<4.0	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Aluminum (Al)-Total	<2.0	<2.0	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Aluminum (Al)-Total	<2.0	<2.0	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Aluminum (Al)-Total	2.1	2.1	mg/kg wwt	1.1	30	-	-	-
L941447-139	Tissue	WG1220142-6	Aluminum (Al)-Total	6.6	6.0	mg/kg wwt	9.6	30	-	-	-
L941447-151	Tissue	WG1209789-5	Aluminum (Al)-Total	<2.0	<2.0	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-70	Tissue	WG1220142-3	Antimony (Sb)-Total	<0.020	<0.020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Antimony (Sb)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Antimony (Sb)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Antimony (Sb)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-139	Tissue	WG1220142-6	Antimony (Sb)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-151	Tissue	WG1209789-5	Antimony (Sb)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-70	Tissue	WG1220142-3	Arsenic (As)-Total	0.034	0.028	mg/kg wwt	20	30	-	-	-
L941447-97	Tissue	WG1210513-4	Arsenic (As)-Total	0.074	0.074	mg/kg wwt	0.79	30	-	-	-
L941447-106	Tissue	WG1210513-5	Arsenic (As)-Total	0.067	0.172	mg/kg wwt	88	30	-	-	DUP-H
L941447-129	Tissue	WG1210513-6	Arsenic (As)-Total	0.031	0.036	mg/kg wwt	15	30	-	-	-
L941447-139	Tissue	WG1220142-6	Arsenic (As)-Total	0.439	0.395	mg/kg wwt	11	30	-	-	-
L941447-151	Tissue	WG1209789-5	Arsenic (As)-Total	0.051	0.056	mg/kg wwt	8.3	30	-	-	-
L941447-70	Tissue	WG1220142-3	Barium (Ba)-Total	1.77	1.05	mg/kg wwt	52	30	-	-	DUP-H
L941447-97	Tissue	WG1210513-4	Barium (Ba)-Total	0.020	0.082	mg/kg wwt	122	30	-	-	DUP-H
L941447-106	Tissue	WG1210513-5	Barium (Ba)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Barium (Ba)-Total	0.011	0.010	mg/kg wwt	11	30	-	-	-
L941447-139	Tissue	WG1220142-6	Barium (Ba)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-151	Tissue	WG1209789-5	Barium (Ba)-Total	0.030	0.028	mg/kg wwt	9.0	30	-	-	-
L941447-70	Tissue	WG1220142-3	Beryllium (Be)-Total	<0.20	<0.20	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Beryllium (Be)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Beryllium (Be)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Beryllium (Be)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-139	Tissue	WG1220142-6	Beryllium (Be)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-151	Tissue	WG1209789-5	Beryllium (Be)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-70	Tissue	WG1220142-3	Bismuth (Bi)-Total	<0.060	<0.060	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Bismuth (Bi)-Total	<0.030	<0.030	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Bismuth (Bi)-Total	<0.030	<0.030	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Bismuth (Bi)-Total	<0.030	<0.030	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-139	Tissue	WG1220142-6	Bismuth (Bi)-Total	<0.030	<0.030	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-151	Tissue	WG1209789-5	Bismuth (Bi)-Total	<0.030	<0.030	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-70	Tissue	WG1220142-3	Cadmium (Cd)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Cadmium (Cd)-Total	<0.0050	<0.0050	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Cadmium (Cd)-Total	<0.0050	<0.0050	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Cadmium (Cd)-Total	0.0460	0.0458	mg/kg wwt	0.54	30	-	-	-
L941447-139	Tissue	WG1220142-6	Cadmium (Cd)-Total	0.329	0.303	mg/kg wwt	8.4	30	-	-	-
L941447-151	Tissue	WG1209789-5	Cadmium (Cd)-Total	0.0150	0.0150	mg/kg wwt	0.33	30	-	-	-
L941447-70	Tissue	WG1220142-3	Calcium (Ca)-Total	13000	7750	mg/kg wwt	50	50	-	-	DUP-H
L941447-97	Tissue	WG1210513-4	Calcium (Ca)-Total	59.0	76.4	mg/kg wwt	26	50	-	-	-
L941447-106	Tissue	WG1210513-5	Calcium (Ca)-Total	40.3	28.6	mg/kg wwt	34	50	-	-	-
L941447-129	Tissue	WG1210513-6	Calcium (Ca)-Total	51.9	56.3	mg/kg wwt	8.1	50	-	-	-
L941447-139	Tissue	WG1220142-6	Calcium (Ca)-Total	88.1	68.8	mg/kg wwt	25	50	-	-	-
L941447-151	Tissue	WG1209789-5	Calcium (Ca)-Total	66.4	60.6	mg/kg wwt	9.0	50	-	-	-
L941447-70	Tissue	WG1220142-3	Chromium (Cr)-Total	<0.20	<0.20	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Chromium (Cr)-Total	0.32	0.34	mg/kg wwt	5.5	30	-	-	-
L941447-106	Tissue	WG1210513-5	Chromium (Cr)-Total	0.19	0.20	mg/kg wwt	1.4	30	-	-	-
L941447-129	Tissue	WG1210513-6	Chromium (Cr)-Total	0.11	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA

Appendix 2.2-3. Fish Tissue Replicate Metals Concentrations, Hope Bay Belt Project, 2010

Sample ID	Matrix	ALS ID	Analyte	Replicate 1	Replicate 2	Units	RPD	RPD Limit	Diff	Diff Limit	Qualifier
L941447-139	Tissue	WG1220142-6	Chromium (Cr)-Total	0.30	0.23	mg/kg wwt	27	30	-	-	-
L941447-151	Tissue	WG1209789-5	Chromium (Cr)-Total	0.56	0.41	mg/kg wwt	-	-	0.15	0.2	J
L941447-70	Tissue	WG1220142-3	Cobalt (Co)-Total	<0.040	<0.040	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Cobalt (Co)-Total	<0.020	<0.020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Cobalt (Co)-Total	<0.020	<0.020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Cobalt (Co)-Total	0.117	0.127	mg/kg wwt	8.4	30	-	-	-
L941447-139	Tissue	WG1220142-6	Cobalt (Co)-Total	0.170	0.156	mg/kg wwt	8.2	30	-	-	-
L941447-151	Tissue	WG1209789-5	Cobalt (Co)-Total	0.044	0.040	mg/kg wwt	9.3	30	-	-	-
L941447-70	Tissue	WG1220142-3	Copper (Cu)-Total	0.589	0.517	mg/kg wwt	13	30	-	-	-
L941447-97	Tissue	WG1210513-4	Copper (Cu)-Total	0.172	0.185	mg/kg wwt	7.1	30	-	-	-
L941447-106	Tissue	WG1210513-5	Copper (Cu)-Total	0.300	0.286	mg/kg wwt	4.9	30	-	-	-
L941447-129	Tissue	WG1210513-6	Copper (Cu)-Total	17.3	18.2	mg/kg wwt	5.1	30	-	-	-
L941447-139	Tissue	WG1220142-6	Copper (Cu)-Total	5.75	5.14	mg/kg wwt	11	30	-	-	-
L941447-151	Tissue	WG1209789-5	Copper (Cu)-Total	13.9	13.5	mg/kg wwt	2.7	30	-	-	-
L941447-70	Tissue	WG1220142-3	Lead (Pb)-Total	<0.040	<0.040	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Lead (Pb)-Total	<0.020	<0.020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Lead (Pb)-Total	<0.020	<0.020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Lead (Pb)-Total	<0.020	<0.020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-139	Tissue	WG1220142-6	Lead (Pb)-Total	<0.020	<0.020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-151	Tissue	WG1209789-5	Lead (Pb)-Total	<0.020	<0.020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-70	Tissue	WG1220142-3	Lithium (Li)-Total	<0.20	<0.20	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-139	Tissue	WG1220142-6	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-151	Tissue	WG1209789-5	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-70	Tissue	WG1220142-3	Magnesium (Mg)-Total	296	236	mg/kg wwt	23	30	-	-	-
L941447-97	Tissue	WG1210513-4	Magnesium (Mg)-Total	209	217	mg/kg wwt	3.8	30	-	-	-
L941447-106	Tissue	WG1210513-5	Magnesium (Mg)-Total	227	219	mg/kg wwt	3.9	30	-	-	-
L941447-129	Tissue	WG1210513-6	Magnesium (Mg)-Total	128	130	mg/kg wwt	1.2	30	-	-	-
L941447-139	Tissue	WG1220142-6	Magnesium (Mg)-Total	148	134	mg/kg wwt	9.6	30	-	-	-
L941447-151	Tissue	WG1209789-5	Magnesium (Mg)-Total	187	180	mg/kg wwt	3.6	30	-	-	-
L941447-70	Tissue	WG1220142-3	Manganese (Mn)-Total	6.52	3.74	mg/kg wwt	54	30	-	-	DUP-H
L941447-97	Tissue	WG1210513-4	Manganese (Mn)-Total	0.140	0.166	mg/kg wwt	17	30	-	-	-
L941447-106	Tissue	WG1210513-5	Manganese (Mn)-Total	0.118	0.114	mg/kg wwt	3.4	30	-	-	-
L941447-129	Tissue	WG1210513-6	Manganese (Mn)-Total	1.11	1.14	mg/kg wwt	2.9	30	-	-	-
L941447-139	Tissue	WG1220142-6	Manganese (Mn)-Total	1.45	1.34	mg/kg wwt	8.3	30	-	-	-
L941447-151	Tissue	WG1209789-5	Manganese (Mn)-Total	1.59	1.56	mg/kg wwt	2.0	30	-	-	-
L941447-70	Tissue	WG1220142-3	Mercury (Hg)-Total	0.0732	0.0648	mg/kg wwt	12	30	-	-	-
L941447-97	Tissue	WG1210513-4	Mercury (Hg)-Total	1.07	1.06	mg/kg wwt	0.96	30	-	-	-
L941447-106	Tissue	WG1210513-5	Mercury (Hg)-Total	1.09	1.15	mg/kg wwt	4.6	30	-	-	-
L941447-129	Tissue	WG1210513-6	Mercury (Hg)-Total	3.02	3.31	mg/kg wwt	9.3	30	-	-	-
L941447-139	Tissue	WG1220142-6	Mercury (Hg)-Total	1.57	1.60	mg/kg wwt	2.3	30	-	-	-
L941447-151	Tissue	WG1209789-5	Mercury (Hg)-Total	0.104	0.104	mg/kg wwt	0.24	30	-	-	-
L941447-70	Tissue	WG1220142-3	Molybdenum (Mo)-Total	<0.020	0.021	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Molybdenum (Mo)-Total	0.018	0.021	mg/kg wwt	15	30	-	-	-
L941447-106	Tissue	WG1210513-5	Molybdenum (Mo)-Total	0.014	0.017	mg/kg wwt	21	30	-	-	-
L941447-129	Tissue	WG1210513-6	Molybdenum (Mo)-Total	0.116	0.122	mg/kg wwt	4.9	30	-	-	-
L941447-139	Tissue	WG1220142-6	Molybdenum (Mo)-Total	0.177	0.166	mg/kg wwt	6.5	30	-	-	-
L941447-151	Tissue	WG1209789-5	Molybdenum (Mo)-Total	0.172	0.160	mg/kg wwt	7.2	30	-	-	-
L941447-70	Tissue	WG1220142-3	Nickel (Ni)-Total	<0.20	<0.20	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Nickel (Ni)-Total	0.20	0.20	mg/kg wwt	2.4	30	-	-	-
L941447-106	Tissue	WG1210513-5	Nickel (Ni)-Total	0.11	0.16	mg/kg wwt	-	-	0.05	0.2	J
L941447-129	Tissue	WG1210513-6	Nickel (Ni)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-139	Tissue	WG1220142-6	Nickel (Ni)-Total	0.21	0.19	mg/kg wwt	11	30	-	-	-
L941447-151	Tissue	WG1209789-5	Nickel (Ni)-Total	0.23	0.15	mg/kg wwt	-	-	0.08	0.2	J
L941447-70	Tissue	WG1220142-3	Selenium (Se)-Total	<0.40	<0.40	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Selenium (Se)-Total	<0.20	<0.20	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Selenium (Se)-Total	<0.20	<0.20	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Selenium (Se)-Total	1.86	1.99	mg/kg wwt	6.8	30	-	-	-

Appendix 2.2-3. Fish Tissue Replicate Metals Concentrations, Hope Bay Belt Project, 2010

Sample ID	Matrix	ALS ID	Analyte	Replicate 1	Replicate 2	Units	RPD	RPD Limit	Diff	Diff Limit	Qualifier
L941447-139	Tissue	WG1220142-6	Selenium (Se)-Total	2.97	2.61	mg/kg wwt	13	30	-	-	-
L941447-151	Tissue	WG1209789-5	Selenium (Se)-Total	1.76	1.60	mg/kg wwt	9.8	30	-	-	-
L941447-70	Tissue	WG1220142-3	Strontium (Sr)-Total	20.8	12.9	mg/kg wwt	47	50	-	-	-
L941447-97	Tissue	WG1210513-4	Strontium (Sr)-Total	0.056	0.084	mg/kg wwt	40	50	-	-	-
L941447-106	Tissue	WG1210513-5	Strontium (Sr)-Total	0.039	0.028	mg/kg wwt	34	50	-	-	-
L941447-129	Tissue	WG1210513-6	Strontium (Sr)-Total	0.074	0.079	mg/kg wwt	6.5	50	-	-	-
L941447-139	Tissue	WG1220142-6	Strontium (Sr)-Total	0.186	0.159	mg/kg wwt	16	50	-	-	-
L941447-151	Tissue	WG1209789-5	Strontium (Sr)-Total	0.129	0.125	mg/kg wwt	3.6	50	-	-	-
L941447-70	Tissue	WG1220142-3	Thallium (Tl)-Total	<0.020	<0.020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Thallium (Tl)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Thallium (Tl)-Total	<0.010	<0.010	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Thallium (Tl)-Total	0.021	0.021	mg/kg wwt	0.30	30	-	-	-
L941447-139	Tissue	WG1220142-6	Thallium (Tl)-Total	0.048	0.043	mg/kg wwt	11	30	-	-	-
L941447-151	Tissue	WG1209789-5	Thallium (Tl)-Total	0.047	0.047	mg/kg wwt	0.090	30	-	-	-
L941447-70	Tissue	WG1220142-3	Tin (Sn)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Tin (Sn)-Total	<0.050	<0.050	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Tin (Sn)-Total	<0.050	<0.050	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Tin (Sn)-Total	<0.050	<0.050	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-139	Tissue	WG1220142-6	Tin (Sn)-Total	0.180	0.186	mg/kg wwt	3.4	30	-	-	-
L941447-151	Tissue	WG1209789-5	Tin (Sn)-Total	0.109	0.095	mg/kg wwt	14	30	-	-	-
L941447-70	Tissue	WG1220142-3	Uranium (U)-Total	0.0045	<0.0040	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Uranium (U)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Uranium (U)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Uranium (U)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-139	Tissue	WG1220142-6	Uranium (U)-Total	0.0159	0.0152	mg/kg wwt	4.5	30	-	-	-
L941447-151	Tissue	WG1209789-5	Uranium (U)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-70	Tissue	WG1220142-3	Vanadium (V)-Total	0.23	<0.20	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-97	Tissue	WG1210513-4	Vanadium (V)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-106	Tissue	WG1210513-5	Vanadium (V)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-129	Tissue	WG1210513-6	Vanadium (V)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-139	Tissue	WG1220142-6	Vanadium (V)-Total	0.66	0.60	mg/kg wwt	9.1	30	-	-	-
L941447-151	Tissue	WG1209789-5	Vanadium (V)-Total	<0.10	<0.10	mg/kg wwt	N/A	30	-	-	RPD-NA
L941447-70	Tissue	WG1220142-3	Zinc (Zn)-Total	39.6	29.6	mg/kg wwt	29	30	-	-	-
L941447-97	Tissue	WG1210513-4	Zinc (Zn)-Total	2.52	2.63	mg/kg wwt	4.3	30	-	-	-
L941447-106	Tissue	WG1210513-5	Zinc (Zn)-Total	3.04	2.96	mg/kg wwt	2.6	30	-	-	-
L941447-129	Tissue	WG1210513-6	Zinc (Zn)-Total	28.9	30.1	mg/kg wwt	3.8	30	-	-	-
L941447-139	Tissue	WG1220142-6	Zinc (Zn)-Total	34.7	31.4	mg/kg wwt	9.9	30	-	-	-
L941447-151	Tissue	WG1209789-5	Zinc (Zn)-Total	32.6	31.6	mg/kg wwt	3.0	30	-	-	-

Appendix 3.1-1

Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Rescan™
Engineers and Scientists

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.41194	67.66007	3
04/08/2010	-106.41193	67.66008	3
04/08/2010	-106.41190	67.66008	2
04/08/2010	-106.41189	67.66008	2
04/08/2010	-106.41187	67.66009	3
04/08/2010	-106.41180	67.66009	3
04/08/2010	-106.41175	67.66009	3
04/08/2010	-106.41168	67.66009	3
04/08/2010	-106.41161	67.66009	3
04/08/2010	-106.41146	67.66009	3
04/08/2010	-106.41138	67.66010	4
04/08/2010	-106.41130	67.66010	2
04/08/2010	-106.41114	67.66010	1
04/08/2010	-106.41106	67.66011	4
04/08/2010	-106.41099	67.66011	2
04/08/2010	-106.41091	67.66011	1
04/08/2010	-106.41075	67.66012	3
04/08/2010	-106.41067	67.66012	4
04/08/2010	-106.41059	67.66012	2
04/08/2010	-106.41052	67.66012	2
04/08/2010	-106.41044	67.66012	2
04/08/2010	-106.41028	67.66012	2
04/08/2010	-106.41020	67.66013	2
04/08/2010	-106.41012	67.66013	2
04/08/2010	-106.41004	67.66013	2
04/08/2010	-106.40989	67.66014	2
04/08/2010	-106.40981	67.66014	2
04/08/2010	-106.40973	67.66014	2
04/08/2010	-106.40965	67.66015	2
04/08/2010	-106.40957	67.66015	2
04/08/2010	-106.40941	67.66015	2
04/08/2010	-106.40933	67.66015	2
04/08/2010	-106.40925	67.66016	2
04/08/2010	-106.40917	67.66016	2
04/08/2010	-106.40902	67.66017	2
04/08/2010	-106.40894	67.66017	2
04/08/2010	-106.40886	67.66017	2
04/08/2010	-106.40878	67.66017	2
04/08/2010	-106.40862	67.66018	2
04/08/2010	-106.40855	67.66018	2
04/08/2010	-106.40847	67.66018	1
04/08/2010	-106.40839	67.66019	1
04/08/2010	-106.40823	67.66019	2
04/08/2010	-106.40815	67.66019	1
04/08/2010	-106.40807	67.66020	2
04/08/2010	-106.40799	67.66020	2
04/08/2010	-106.40784	67.66020	2
04/08/2010	-106.40776	67.66021	2
04/08/2010	-106.40767	67.66021	2
04/08/2010	-106.40760	67.66021	2
04/08/2010	-106.40744	67.66022	2
04/08/2010	-106.40736	67.66022	2
04/08/2010	-106.40728	67.66022	2
04/08/2010	-106.40720	67.66022	2
04/08/2010	-106.40704	67.66022	2

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.40696	67.66022	2
04/08/2010	-106.40688	67.66023	2
04/08/2010	-106.40680	67.66023	2
04/08/2010	-106.40664	67.66023	4
04/08/2010	-106.40656	67.66024	2
04/08/2010	-106.40648	67.66024	2
04/08/2010	-106.40640	67.66024	2
04/08/2010	-106.40624	67.66025	2
04/08/2010	-106.40617	67.66025	2
04/08/2010	-106.40609	67.66025	2
04/08/2010	-106.40601	67.66025	2
04/08/2010	-106.40585	67.66026	2
04/08/2010	-106.40577	67.66026	2
04/08/2010	-106.40569	67.66026	2
04/08/2010	-106.40553	67.66027	2
04/08/2010	-106.40545	67.66027	2
04/08/2010	-106.40537	67.66027	2
04/08/2010	-106.40529	67.66027	2
04/08/2010	-106.40513	67.66027	2
04/08/2010	-106.40505	67.66028	2
04/08/2010	-106.40497	67.66028	2
04/08/2010	-106.40489	67.66028	2
04/08/2010	-106.40474	67.66028	2
04/08/2010	-106.40466	67.66028	3
04/08/2010	-106.40458	67.66028	3
04/08/2010	-106.40442	67.66029	3
04/08/2010	-106.40434	67.66029	2
04/08/2010	-106.40427	67.66029	3
04/08/2010	-106.40419	67.66029	2
04/08/2010	-106.40403	67.66029	3
04/08/2010	-106.40395	67.66029	4
04/08/2010	-106.40387	67.66029	2
04/08/2010	-106.40379	67.66029	2
04/08/2010	-106.40364	67.66030	3
04/08/2010	-106.40356	67.66030	3
04/08/2010	-106.40348	67.66030	2
04/08/2010	-106.40340	67.66031	2
04/08/2010	-106.40324	67.66031	2
04/08/2010	-106.40316	67.66031	2
04/08/2010	-106.40308	67.66031	2
04/08/2010	-106.40292	67.66032	2
04/08/2010	-106.40284	67.66032	2
04/08/2010	-106.40276	67.66032	2
04/08/2010	-106.40268	67.66032	2
04/08/2010	-106.40252	67.66032	2
04/08/2010	-106.40244	67.66032	3
04/08/2010	-106.40236	67.66032	2
04/08/2010	-106.40228	67.66033	3
04/08/2010	-106.40212	67.66033	4
04/08/2010	-106.40204	67.66033	2
04/08/2010	-106.40196	67.66033	2
04/08/2010	-106.40180	67.66033	2
04/08/2010	-106.40172	67.66033	4
04/08/2010	-106.40164	67.66033	4
04/08/2010	-106.40156	67.66033	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.40140	67.66033	2
04/08/2010	-106.40132	67.66033	2
04/08/2010	-106.40124	67.66033	2
04/08/2010	-106.40116	67.66033	2
04/08/2010	-106.40100	67.66034	2
04/08/2010	-106.40092	67.66034	3
04/08/2010	-106.40084	67.66034	3
04/08/2010	-106.40068	67.66034	3
04/08/2010	-106.40060	67.66033	4
04/08/2010	-106.40052	67.66033	4
04/08/2010	-106.40036	67.66033	4
04/08/2010	-106.40028	67.66033	4
04/08/2010	-106.40020	67.66033	4
04/08/2010	-106.40012	67.66033	4
04/08/2010	-106.39997	67.66033	4
04/08/2010	-106.39991	67.66033	4
04/08/2010	-106.39986	67.66033	4
04/08/2010	-106.39973	67.66033	4
04/08/2010	-106.39966	67.66033	4
04/08/2010	-106.39959	67.66033	4
04/08/2010	-106.39945	67.66033	4
04/08/2010	-106.39938	67.66033	4
04/08/2010	-106.39931	67.66032	4
04/08/2010	-106.39924	67.66032	4
04/08/2010	-106.39910	67.66032	4
04/08/2010	-106.39903	67.66032	4
04/08/2010	-106.39895	67.66032	4
04/08/2010	-106.39881	67.66032	4
04/08/2010	-106.39874	67.66032	4
04/08/2010	-106.39867	67.66032	4
04/08/2010	-106.39853	67.66032	4
04/08/2010	-106.39846	67.66032	4
04/08/2010	-106.39839	67.66032	4
04/08/2010	-106.39831	67.66032	4
04/08/2010	-106.39814	67.66031	3
04/08/2010	-106.39805	67.66031	2
04/08/2010	-106.39797	67.66031	2
04/08/2010	-106.39780	67.66031	2
04/08/2010	-106.39772	67.66031	2
04/08/2010	-106.39764	67.66031	3
04/08/2010	-106.39756	67.66031	3
04/08/2010	-106.39739	67.66031	4
04/08/2010	-106.39731	67.66031	3
04/08/2010	-106.39723	67.66032	4
04/08/2010	-106.39706	67.66032	4
04/08/2010	-106.39698	67.66032	4
04/08/2010	-106.39689	67.66033	4
04/08/2010	-106.39681	67.66033	4
04/08/2010	-106.39664	67.66033	4
04/08/2010	-106.39656	67.66033	4
04/08/2010	-106.39648	67.66033	3
04/08/2010	-106.39631	67.66033	3
04/08/2010	-106.39623	67.66034	4
04/08/2010	-106.39615	67.66034	4
04/08/2010	-106.39598	67.66034	2

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.39590	67.66034	3
04/08/2010	-106.39582	67.66034	2
04/08/2010	-106.39574	67.66035	4
04/08/2010	-106.39557	67.66036	3
04/08/2010	-106.39549	67.66036	3
04/08/2010	-106.39541	67.66036	4
04/08/2010	-106.39524	67.66037	4
04/08/2010	-106.39516	67.66037	3
04/08/2010	-106.39508	67.66037	4
04/08/2010	-106.39500	67.66037	3
04/08/2010	-106.39483	67.66037	3
04/08/2010	-106.39475	67.66038	3
04/08/2010	-106.39467	67.66038	2
04/08/2010	-106.39451	67.66038	3
04/08/2010	-106.39444	67.66038	3
04/08/2010	-106.39436	67.66038	3
04/08/2010	-106.39428	67.66038	3
04/08/2010	-106.39413	67.66039	4
04/08/2010	-106.39405	67.66039	2
04/08/2010	-106.39397	67.66039	3
04/08/2010	-106.39382	67.66040	3
04/08/2010	-106.39374	67.66040	4
04/08/2010	-106.39366	67.66040	4
04/08/2010	-106.39351	67.66041	4
04/08/2010	-106.39344	67.66041	4
04/08/2010	-106.39339	67.66042	4
04/08/2010	-106.41131	67.66205	4
04/08/2010	-106.41130	67.66208	4
04/08/2010	-106.41129	67.66209	2
04/08/2010	-106.41128	67.66210	2
04/08/2010	-106.41127	67.66212	3
04/08/2010	-106.41123	67.66216	4
04/08/2010	-106.41121	67.66218	3
04/08/2010	-106.41119	67.66221	2
04/08/2010	-106.41115	67.66225	2
04/08/2010	-106.41113	67.66228	2
04/08/2010	-106.41111	67.66230	2
04/08/2010	-106.41109	67.66232	2
04/08/2010	-106.41106	67.66237	1
04/08/2010	-106.41105	67.66239	1
04/08/2010	-106.41103	67.66242	1
04/08/2010	-106.41100	67.66247	1
04/08/2010	-106.41099	67.66249	1
04/08/2010	-106.41098	67.66252	1
04/08/2010	-106.41096	67.66254	1
04/08/2010	-106.41094	67.66259	1
04/08/2010	-106.41093	67.66261	1
04/08/2010	-106.41092	67.66264	1
04/08/2010	-106.41091	67.66266	1
04/08/2010	-106.41088	67.66272	1
04/08/2010	-106.41087	67.66275	1
04/08/2010	-106.41086	67.66278	1
04/08/2010	-106.41084	67.66284	1
04/08/2010	-106.41083	67.66287	1
04/08/2010	-106.41081	67.66290	1

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.41080	67.66293	1
04/08/2010	-106.41078	67.66299	1
04/08/2010	-106.41077	67.66302	1
04/08/2010	-106.41076	67.66305	1
04/08/2010	-106.41076	67.66308	1
04/08/2010	-106.41075	67.66312	1
04/08/2010	-106.41075	67.66314	2
04/08/2010	-106.41074	67.66317	2
04/08/2010	-106.41074	67.66322	2
04/08/2010	-106.41074	67.66324	2
04/08/2010	-106.41073	67.66326	2
04/08/2010	-106.41074	67.66329	2
04/08/2010	-106.41074	67.66334	2
04/08/2010	-106.41075	67.66336	2
04/08/2010	-106.41075	67.66339	3
04/08/2010	-106.41075	67.66341	3
04/08/2010	-106.41075	67.66346	3
04/08/2010	-106.41075	67.66348	4
04/08/2010	-106.41075	67.66351	4
04/08/2010	-106.41075	67.66353	2
04/08/2010	-106.41073	67.66358	2
04/08/2010	-106.41072	67.66361	2
04/08/2010	-106.41072	67.66363	2
04/08/2010	-106.41072	67.66364	2
04/08/2010	-106.41074	67.66366	3
04/08/2010	-106.41076	67.66366	3
04/08/2010	-106.41078	67.66367	2
04/08/2010	-106.41080	67.66367	2
04/08/2010	-106.41085	67.66368	1
04/08/2010	-106.41088	67.66368	1
04/08/2010	-106.41091	67.66368	1
04/08/2010	-106.41094	67.66368	1
04/08/2010	-106.41101	67.66369	1
04/08/2010	-106.41104	67.66369	1
04/08/2010	-106.41108	67.66369	2
04/08/2010	-106.41111	67.66368	2
04/08/2010	-106.41118	67.66369	4
04/08/2010	-106.41121	67.66369	3
04/08/2010	-106.41123	67.66369	3
04/08/2010	-106.41125	67.66371	3
04/08/2010	-106.41124	67.66372	3
04/08/2010	-106.41123	67.66372	2
04/08/2010	-106.41122	67.66372	2
04/08/2010	-106.41118	67.66373	3
04/08/2010	-106.41114	67.66373	3
04/08/2010	-106.41109	67.66374	2
04/08/2010	-106.41098	67.66375	1
04/08/2010	-106.41093	67.66376	1
04/08/2010	-106.41087	67.66376	2
04/08/2010	-106.41080	67.66377	2
04/08/2010	-106.41065	67.66379	4
04/08/2010	-106.41058	67.66380	2
04/08/2010	-106.41050	67.66380	4
04/08/2010	-106.41043	67.66381	2
04/08/2010	-106.41035	67.66381	2
04/08/2010	-106.41020	67.66382	2
04/08/2010	-106.41013	67.66383	2
04/08/2010	-106.41005	67.66383	4
04/08/2010	-106.40997	67.66384	4
04/08/2010	-106.40981	67.66384	2
04/08/2010	-106.40974	67.66385	4
04/08/2010	-106.40966	67.66385	4
04/08/2010	-106.40958	67.66385	4
04/08/2010	-106.40950	67.66386	2
04/08/2010	-106.40934	67.66386	2
04/08/2010	-106.40926	67.66386	2
04/08/2010	-106.40918	67.66387	2
04/08/2010	-106.40910	67.66387	2
04/08/2010	-106.40894	67.66387	3
04/08/2010	-106.40886	67.66387	2
04/08/2010	-106.40879	67.66387	2
04/08/2010	-106.40871	67.66387	2
04/08/2010	-106.40864	67.66387	2
04/08/2010	-106.40848	67.66386	2
04/08/2010	-106.40841	67.66386	2
04/08/2010	-106.40833	67.66386	4
04/08/2010	-106.40825	67.66386	2
04/08/2010	-106.40810	67.66386	4
04/08/2010	-106.40802	67.66386	2
04/08/2010	-106.40795	67.66386	2
04/08/2010	-106.40787	67.66386	2
04/08/2010	-106.40772	67.66386	4
04/08/2010	-106.40765	67.66386	4
04/08/2010	-106.40757	67.66387	2
04/08/2010	-106.40742	67.66387	4
04/08/2010	-106.40734	67.66387	2
04/08/2010	-106.40727	67.66387	2
04/08/2010	-106.40719	67.66387	2
04/08/2010	-106.40704	67.66388	2
04/08/2010	-106.40696	67.66388	2
04/08/2010	-106.40689	67.66388	2
04/08/2010	-106.40681	67.66388	1
04/08/2010	-106.40666	67.66389	2
04/08/2010	-106.40658	67.66389	2
04/08/2010	-106.40651	67.66389	2
04/08/2010	-106.40643	67.66389	2
04/08/2010	-106.40627	67.66390	2
04/08/2010	-106.40620	67.66390	2
04/08/2010	-106.40612	67.66390	2
04/08/2010	-106.40604	67.66391	2
04/08/2010	-106.40589	67.66391	2
04/08/2010	-106.40581	67.66391	2
04/08/2010	-106.40574	67.66391	2
04/08/2010	-106.40558	67.66392	2
04/08/2010	-106.40551	67.66392	3
04/08/2010	-106.40543	67.66392	2
04/08/2010	-106.40536	67.66392	3
04/08/2010	-106.40521	67.66393	2
04/08/2010	-106.40513	67.66393	2
04/08/2010	-106.40506	67.66394	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.40498	67.66394	2
04/08/2010	-106.40482	67.66394	2
04/08/2010	-106.40475	67.66395	2
04/08/2010	-106.40467	67.66395	2
04/08/2010	-106.40459	67.66395	3
04/08/2010	-106.40444	67.66396	4
04/08/2010	-106.40436	67.66396	4
04/08/2010	-106.40428	67.66396	4
04/08/2010	-106.40413	67.66397	4
04/08/2010	-106.40405	67.66397	4
04/08/2010	-106.40397	67.66397	2
04/08/2010	-106.40390	67.66397	2
04/08/2010	-106.40374	67.66398	2
04/08/2010	-106.40366	67.66398	2
04/08/2010	-106.40359	67.66398	4
04/08/2010	-106.40351	67.66399	4
04/08/2010	-106.40335	67.66399	2
04/08/2010	-106.40328	67.66399	2
04/08/2010	-106.40320	67.66399	2
04/08/2010	-106.40304	67.66399	2
04/08/2010	-106.40297	67.66399	2
04/08/2010	-106.40289	67.66399	2
04/08/2010	-106.40282	67.66399	2
04/08/2010	-106.40266	67.66399	2
04/08/2010	-106.40259	67.66399	2
04/08/2010	-106.40251	67.66399	4
04/08/2010	-106.40243	67.66399	4
04/08/2010	-106.40228	67.66399	4
04/08/2010	-106.40221	67.66399	2
04/08/2010	-106.40213	67.66398	2
04/08/2010	-106.40198	67.66398	2
04/08/2010	-106.40190	67.66398	4
04/08/2010	-106.40183	67.66397	4
04/08/2010	-106.40175	67.66397	4
04/08/2010	-106.40160	67.66397	4
04/08/2010	-106.40152	67.66397	3
04/08/2010	-106.40145	67.66397	4
04/08/2010	-106.40137	67.66397	4
04/08/2010	-106.40121	67.66397	4
04/08/2010	-106.40114	67.66396	2
04/08/2010	-106.40106	67.66396	2
04/08/2010	-106.40090	67.66396	2
04/08/2010	-106.40082	67.66396	2
04/08/2010	-106.40075	67.66395	2
04/08/2010	-106.40067	67.66396	4
04/08/2010	-106.40051	67.66396	2
04/08/2010	-106.40044	67.66396	2
04/08/2010	-106.40036	67.66396	2
04/08/2010	-106.40028	67.66396	2
04/08/2010	-106.40013	67.66396	2
04/08/2010	-106.40005	67.66396	2
04/08/2010	-106.39998	67.66396	2
04/08/2010	-106.39982	67.66396	2
04/08/2010	-106.39974	67.66396	3
04/08/2010	-106.39967	67.66396	4
04/08/2010	-106.39959	67.66396	4
04/08/2010	-106.39944	67.66396	3
04/08/2010	-106.39936	67.66396	3
04/08/2010	-106.39928	67.66396	3
04/08/2010	-106.39912	67.66396	2
04/08/2010	-106.39905	67.66395	3
04/08/2010	-106.39897	67.66395	2
04/08/2010	-106.39889	67.66395	2
04/08/2010	-106.39873	67.66395	2
04/08/2010	-106.39866	67.66395	4
04/08/2010	-106.39858	67.66395	3
04/08/2010	-106.39843	67.66395	2
04/08/2010	-106.39835	67.66395	4
04/08/2010	-106.39827	67.66395	4
04/08/2010	-106.39820	67.66395	3
04/08/2010	-106.39805	67.66395	2
04/08/2010	-106.39797	67.66395	4
04/08/2010	-106.39790	67.66395	4
04/08/2010	-106.39775	67.66395	3
04/08/2010	-106.39767	67.66395	4
04/08/2010	-106.39760	67.66395	4
04/08/2010	-106.39752	67.66395	4
04/08/2010	-106.39737	67.66395	4
04/08/2010	-106.39729	67.66395	4
04/08/2010	-106.39721	67.66395	4
04/08/2010	-106.39706	67.66395	3
04/08/2010	-106.39698	67.66395	4
04/08/2010	-106.39690	67.66395	4
04/08/2010	-106.39683	67.66395	4
04/08/2010	-106.39667	67.66396	4
04/08/2010	-106.39660	67.66396	4
04/08/2010	-106.39652	67.66396	4
04/08/2010	-106.39637	67.66396	4
04/08/2010	-106.39629	67.66396	4
04/08/2010	-106.39622	67.66396	4
04/08/2010	-106.39614	67.66396	3
04/08/2010	-106.39599	67.66397	4
04/08/2010	-106.39592	67.66397	4
04/08/2010	-106.39584	67.66397	3
04/08/2010	-106.39569	67.66398	3
04/08/2010	-106.39561	67.66398	2
04/08/2010	-106.39554	67.66398	2
04/08/2010	-106.39546	67.66398	3
04/08/2010	-106.39530	67.66398	3
04/08/2010	-106.39523	67.66398	3
04/08/2010	-106.39515	67.66398	2
04/08/2010	-106.39500	67.66399	2
04/08/2010	-106.39492	67.66399	3
04/08/2010	-106.39485	67.66399	3
04/08/2010	-106.39477	67.66399	3
04/08/2010	-106.39462	67.66399	3
04/08/2010	-106.39455	67.66399	3
04/08/2010	-106.39447	67.66399	3
04/08/2010	-106.39432	67.66400	3
04/08/2010	-106.39424	67.66400	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.39417	67.66401	3
04/08/2010	-106.39409	67.66401	3
04/08/2010	-106.39394	67.66401	4
04/08/2010	-106.39387	67.66401	2
04/08/2010	-106.39379	67.66402	3
04/08/2010	-106.39364	67.66402	3
04/08/2010	-106.39356	67.66402	3
04/08/2010	-106.39348	67.66402	3
04/08/2010	-106.39335	67.66402	4
04/08/2010	-106.39330	67.66402	4
04/08/2010	-106.39325	67.66403	3
04/08/2010	-106.39320	67.66403	3
04/08/2010	-106.39310	67.66403	3
04/08/2010	-106.39305	67.66403	2
04/08/2010	-106.39300	67.66403	3
04/08/2010	-106.39290	67.66403	4
04/08/2010	-106.39285	67.66403	3
04/08/2010	-106.39280	67.66403	3
04/08/2010	-106.39275	67.66404	3
04/08/2010	-106.39265	67.66404	4
04/08/2010	-106.39260	67.66404	4
04/08/2010	-106.39255	67.66404	4
04/08/2010	-106.39245	67.66404	3
04/08/2010	-106.39240	67.66404	3
04/08/2010	-106.39235	67.66404	3
04/08/2010	-106.39229	67.66404	3
04/08/2010	-106.39220	67.66404	3
04/08/2010	-106.39215	67.66405	2
04/08/2010	-106.39209	67.66405	2
04/08/2010	-106.39204	67.66405	2
04/08/2010	-106.39194	67.66405	2
04/08/2010	-106.39189	67.66405	2
04/08/2010	-106.39184	67.66405	3
04/08/2010	-106.39174	67.66405	3
04/08/2010	-106.39169	67.66405	2
04/08/2010	-106.39164	67.66405	2
04/08/2010	-106.39159	67.66405	3
04/08/2010	-106.39149	67.66405	3
04/08/2010	-106.39145	67.66405	3
04/08/2010	-106.39141	67.66406	4
04/08/2010	-106.39132	67.66406	3
04/08/2010	-106.39128	67.66406	4
04/08/2010	-106.39124	67.66406	4
04/08/2010	-106.39121	67.66406	3
04/08/2010	-106.39115	67.66406	4
04/08/2010	-106.39113	67.66406	4
04/08/2010	-106.39111	67.66406	4
04/08/2010	-106.39107	67.66406	4
04/08/2010	-106.39105	67.66407	4
04/08/2010	-106.39102	67.66407	4
04/08/2010	-106.39096	67.66407	4
04/08/2010	-106.39094	67.66407	4
04/08/2010	-106.39091	67.66407	4
04/08/2010	-106.39084	67.66407	4
04/08/2010	-106.39084	67.66407	4

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.39076	67.66407	0
04/08/2010	-106.39072	67.66407	4
04/08/2010	-106.39064	67.66407	3
04/08/2010	-106.39059	67.66408	4
04/08/2010	-106.39055	67.66408	4
04/08/2010	-106.39047	67.66408	4
04/08/2010	-106.39044	67.66408	4
04/08/2010	-106.39041	67.66408	4
04/08/2010	-106.39034	67.66408	4
04/08/2010	-106.39031	67.66408	4
04/08/2010	-106.39028	67.66408	4
04/08/2010	-106.39022	67.66408	4
04/08/2010	-106.39019	67.66408	4
04/08/2010	-106.39016	67.66408	4
04/08/2010	-106.39013	67.66408	3
04/08/2010	-106.39007	67.66408	4
04/08/2010	-106.39004	67.66408	4
04/08/2010	-106.39000	67.66408	4
04/08/2010	-106.38994	67.66408	4
04/08/2010	-106.38991	67.66408	4
04/08/2010	-106.38988	67.66408	4
04/08/2010	-106.38985	67.66408	3
04/08/2010	-106.38978	67.66408	4
04/08/2010	-106.38975	67.66408	3
04/08/2010	-106.38971	67.66409	4
04/08/2010	-106.38963	67.66409	3
04/08/2010	-106.38959	67.66409	3
04/08/2010	-106.38954	67.66409	3
04/08/2010	-106.38943	67.66409	3
04/08/2010	-106.38937	67.66409	4
04/08/2010	-106.38931	67.66409	4
04/08/2010	-106.38924	67.66409	3
04/08/2010	-106.38912	67.66410	3
04/08/2010	-106.38905	67.66410	3
04/08/2010	-106.38899	67.66410	2
04/08/2010	-106.38886	67.66410	2
04/08/2010	-106.38880	67.66410	2
04/08/2010	-106.38874	67.66410	2
04/08/2010	-106.38867	67.66410	4
04/08/2010	-106.38852	67.66410	3
04/08/2010	-106.38844	67.66410	3
04/08/2010	-106.38836	67.66410	3
04/08/2010	-106.38828	67.66410	3
04/08/2010	-106.38812	67.66409	3
04/08/2010	-106.38805	67.66409	2
04/08/2010	-106.38797	67.66409	3
04/08/2010	-106.38781	67.66409	2
04/08/2010	-106.38773	67.66409	3
04/08/2010	-106.38765	67.66409	3
04/08/2010	-106.38757	67.66409	4
04/08/2010	-106.38679	67.66410	4
04/08/2010	-106.38671	67.66410	3
04/08/2010	-106.38655	67.66411	3
04/08/2010	-106.38648	67.66411	3
04/08/2010	-106.38640	67.66411	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.38624	67.66412	2
04/08/2010	-106.38616	67.66412	3
04/08/2010	-106.38608	67.66412	4
04/08/2010	-106.38592	67.66412	3
04/08/2010	-106.38585	67.66412	3
04/08/2010	-106.38577	67.66413	3
04/08/2010	-106.38569	67.66413	4
04/08/2010	-106.38553	67.66413	3
04/08/2010	-106.38545	67.66413	2
04/08/2010	-106.38538	67.66414	3
04/08/2010	-106.38524	67.66414	3
04/08/2010	-106.38517	67.66414	3
04/08/2010	-106.38510	67.66414	3
04/08/2010	-106.38503	67.66414	4
04/08/2010	-106.38489	67.66415	4
04/08/2010	-106.38482	67.66415	3
04/08/2010	-106.38475	67.66415	3
04/08/2010	-106.38461	67.66415	3
04/08/2010	-106.38461	67.66415	3
04/08/2010	-106.38447	67.66416	4
04/08/2010	-106.38440	67.66416	4
04/08/2010	-106.38426	67.66417	4
04/08/2010	-106.38420	67.66417	3
04/08/2010	-106.38413	67.66417	3
04/08/2010	-106.38399	67.66418	3
04/08/2010	-106.38392	67.66418	4
04/08/2010	-106.38385	67.66418	3
04/08/2010	-106.38378	67.66418	4
04/08/2010	-106.38365	67.66418	3
04/08/2010	-106.38358	67.66419	3
04/08/2010	-106.38351	67.66419	3
04/08/2010	-106.38337	67.66419	4
04/08/2010	-106.38330	67.66419	3
04/08/2010	-106.38323	67.66419	3
04/08/2010	-106.38316	67.66419	3
04/08/2010	-106.38304	67.66419	4
04/08/2010	-106.38298	67.66420	3
04/08/2010	-106.38292	67.66420	3
04/08/2010	-106.38279	67.66420	3
04/08/2010	-106.38273	67.66420	3
04/08/2010	-106.38266	67.66420	3
04/08/2010	-106.38260	67.66420	4
04/08/2010	-106.38247	67.66420	4
04/08/2010	-106.38241	67.66420	4
04/08/2010	-106.38235	67.66420	3
04/08/2010	-106.38222	67.66420	4
04/08/2010	-106.38216	67.66421	4
04/08/2010	-106.38210	67.66421	4
04/08/2010	-106.38203	67.66421	3
04/08/2010	-106.38191	67.66422	2
04/08/2010	-106.38185	67.66422	4
04/08/2010	-106.38179	67.66423	3
04/08/2010	-106.38166	67.66423	4
04/08/2010	-106.38160	67.66424	4
04/08/2010	-106.38155	67.66424	3

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.38150	67.66425	4
04/08/2010	-106.38141	67.66425	3
04/08/2010	-106.38136	67.66426	4
04/08/2010	-106.38131	67.66426	4
04/08/2010	-106.38121	67.66427	4
04/08/2010	-106.38116	67.66427	4
04/08/2010	-106.38111	67.66428	4
04/08/2010	-106.38101	67.66429	4
04/08/2010	-106.38096	67.66429	0
04/08/2010	-106.38091	67.66430	0
04/08/2010	-106.38089	67.66430	0
04/08/2010	-106.38086	67.66431	0
04/08/2010	-106.38086	67.66431	0
04/08/2010	-106.38085	67.66431	0
04/08/2010	-106.38083	67.66432	0
04/08/2010	-106.38103	67.66432	4
04/08/2010	-106.38106	67.66431	4
04/08/2010	-106.38111	67.66431	3
04/08/2010	-106.38114	67.66430	4
04/08/2010	-106.38116	67.66430	4
04/08/2010	-106.38121	67.66430	4
04/08/2010	-106.38124	67.66430	4
04/08/2010	-106.38126	67.66431	3
04/08/2010	-106.38129	67.66431	4
04/08/2010	-106.38132	67.66433	4
04/08/2010	-106.38133	67.66433	4
04/08/2010	-106.38134	67.66434	4
04/08/2010	-106.38135	67.66436	3
04/08/2010	-106.38135	67.66437	4
04/08/2010	-106.38136	67.66438	4
04/08/2010	-106.38137	67.66439	4
04/08/2010	-106.38140	67.66442	4
04/08/2010	-106.38142	67.66444	2
04/08/2010	-106.38144	67.66445	2
04/08/2010	-106.38148	67.66449	3
04/08/2010	-106.38150	67.66451	4
04/08/2010	-106.38152	67.66453	2
04/08/2010	-106.38156	67.66457	2
04/08/2010	-106.38158	67.66459	2
04/08/2010	-106.38161	67.66460	3
04/08/2010	-106.38163	67.66462	4
04/08/2010	-106.38167	67.66466	4
04/08/2010	-106.38169	67.66468	4
04/08/2010	-106.38171	67.66470	3
04/08/2010	-106.38173	67.66472	2
04/08/2010	-106.38176	67.66476	2
04/08/2010	-106.38178	67.66478	2
04/08/2010	-106.38180	67.66480	3
04/08/2010	-106.38184	67.66484	2
04/08/2010	-106.38186	67.66486	2
04/08/2010	-106.38187	67.66488	2
04/08/2010	-106.38189	67.66490	2
04/08/2010	-106.38192	67.66494	3
04/08/2010	-106.38194	67.66496	3
04/08/2010	-106.38195	67.66498	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.38199	67.66502	2
04/08/2010	-106.38201	67.66504	4
04/08/2010	-106.38202	67.66506	3
04/08/2010	-106.38204	67.66508	3
04/08/2010	-106.38207	67.66512	3
04/08/2010	-106.38209	67.66514	4
04/08/2010	-106.38210	67.66516	4
04/08/2010	-106.38211	67.66518	3
04/08/2010	-106.38214	67.66522	4
04/08/2010	-106.38215	67.66524	4
04/08/2010	-106.38216	67.66526	4
04/08/2010	-106.38220	67.66529	4
04/08/2010	-106.38220	67.66529	4
04/08/2010	-106.38223	67.66533	4
04/08/2010	-106.38224	67.66535	4
04/08/2010	-106.38228	67.66539	3
04/08/2010	-106.38230	67.66541	4
04/08/2010	-106.38232	67.66543	3
04/08/2010	-106.38236	67.66547	4
04/08/2010	-106.38238	67.66549	4
04/08/2010	-106.38240	67.66551	4
04/08/2010	-106.38242	67.66553	2
04/08/2010	-106.38247	67.66556	2
04/08/2010	-106.38249	67.66558	2
04/08/2010	-106.38252	67.66560	2
04/08/2010	-106.38255	67.66562	2
04/08/2010	-106.38259	67.66565	2
04/08/2010	-106.38260	67.66567	3
04/08/2010	-106.38262	67.66568	4
04/08/2010	-106.38262	67.66569	3
04/08/2010	-106.38262	67.66572	2
04/08/2010	-106.38260	67.66572	3
04/08/2010	-106.38259	67.66573	3
04/08/2010	-106.38257	67.66574	2
04/08/2010	-106.38255	67.66575	3
04/08/2010	-106.38253	67.66576	2
04/08/2010	-106.38251	67.66577	3
04/08/2010	-106.38246	67.66580	2
04/08/2010	-106.38243	67.66581	2
04/08/2010	-106.38240	67.66583	2
04/08/2010	-106.38237	67.66584	3
04/08/2010	-106.38231	67.66587	2
04/08/2010	-106.38228	67.66588	2
04/08/2010	-106.38224	67.66590	2
04/08/2010	-106.38217	67.66592	4
04/08/2010	-106.38213	67.66593	3
04/08/2010	-106.38209	67.66595	3
04/08/2010	-106.38206	67.66596	4
04/08/2010	-106.38200	67.66598	4
04/08/2010	-106.38197	67.66599	3
04/08/2010	-106.38193	67.66600	4
04/08/2010	-106.38187	67.66602	3
04/08/2010	-106.38184	67.66602	3
04/08/2010	-106.38180	67.66603	3
04/08/2010	-106.38177	67.66604	2
04/08/2010	-106.38171	67.66606	3
04/08/2010	-106.38168	67.66606	2
04/08/2010	-106.38166	67.66607	4
04/08/2010	-106.38160	67.66608	3
04/08/2010	-106.38157	67.66609	3
04/08/2010	-106.38155	67.66610	2
04/08/2010	-106.38152	67.66610	2
04/08/2010	-106.38150	67.66611	2
04/08/2010	-106.38149	67.66612	3
04/08/2010	-106.38148	67.66612	3
04/08/2010	-106.38147	67.66612	3
04/08/2010	-106.38146	67.66612	2
04/08/2010	-106.38146	67.66612	2
04/08/2010	-106.38146	67.66612	2
04/08/2010	-106.38148	67.66612	3
04/08/2010	-106.38149	67.66612	3
04/08/2010	-106.38150	67.66612	2
04/08/2010	-106.38154	67.66611	2
04/08/2010	-106.38156	67.66610	3
04/08/2010	-106.38159	67.66609	3
04/08/2010	-106.38162	67.66608	3
04/08/2010	-106.38170	67.66606	2
04/08/2010	-106.38173	67.66606	3
04/08/2010	-106.38177	67.66605	3
04/08/2010	-106.38185	67.66603	3
04/08/2010	-106.38189	67.66602	3
04/08/2010	-106.38194	67.66601	4
04/08/2010	-106.38198	67.66601	4
04/08/2010	-106.38207	67.66599	4
04/08/2010	-106.38211	67.66599	3
04/08/2010	-106.38215	67.66598	4
04/08/2010	-106.38224	67.66597	3
04/08/2010	-106.38229	67.66597	4
04/08/2010	-106.38233	67.66596	4
04/08/2010	-106.38237	67.66596	3
04/08/2010	-106.38247	67.66595	2
04/08/2010	-106.38253	67.66594	2
04/08/2010	-106.38258	67.66593	2
04/08/2010	-106.38271	67.66592	3
04/08/2010	-106.38277	67.66592	3
04/08/2010	-106.38284	67.66591	2
04/08/2010	-106.38290	67.66590	3
04/08/2010	-106.38303	67.66589	4
04/08/2010	-106.38309	67.66588	3
04/08/2010	-106.38316	67.66588	4
04/08/2010	-106.38322	67.66587	3
04/08/2010	-106.38335	67.66586	3
04/08/2010	-106.38342	67.66585	3
04/08/2010	-106.38348	67.66585	3
04/08/2010	-106.38361	67.66583	4
04/08/2010	-106.38368	67.66583	2
04/08/2010	-106.38374	67.66582	2
04/08/2010	-106.38381	67.66582	3
04/08/2010	-106.38394	67.66581	2
04/08/2010	-106.38400	67.66580	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.38407	67.66580	3
04/08/2010	-106.38413	67.66579	3
04/08/2010	-106.38426	67.66578	3
04/08/2010	-106.38433	67.66578	2
04/08/2010	-106.38439	67.66577	3
04/08/2010	-106.38452	67.66577	4
04/08/2010	-106.38459	67.66576	3
04/08/2010	-106.38466	67.66576	2
04/08/2010	-106.38472	67.66575	2
04/08/2010	-106.38485	67.66574	3
04/08/2010	-106.38491	67.66574	3
04/08/2010	-106.38498	67.66573	4
04/08/2010	-106.38511	67.66573	3
04/08/2010	-106.38517	67.66572	4
04/08/2010	-106.38523	67.66572	3
04/08/2010	-106.38527	67.66571	3
04/08/2010	-106.38535	67.66571	4
04/08/2010	-106.38539	67.66571	4
04/08/2010	-106.38542	67.66571	4
04/08/2010	-106.38549	67.66571	4
04/08/2010	-106.38552	67.66571	4
04/08/2010	-106.38555	67.66571	4
04/08/2010	-106.38560	67.66573	4
04/08/2010	-106.38562	67.66573	4
04/08/2010	-106.38564	67.66574	4
04/08/2010	-106.38566	67.66575	4
04/08/2010	-106.38568	67.66577	4
04/08/2010	-106.38569	67.66578	4
04/08/2010	-106.38569	67.66579	4
04/08/2010	-106.38568	67.66581	4
04/08/2010	-106.38567	67.66582	4
04/08/2010	-106.38565	67.66583	4
04/08/2010	-106.38564	67.66584	4
04/08/2010	-106.38561	67.66586	4
04/08/2010	-106.38559	67.66587	4
04/08/2010	-106.38558	67.66588	4
04/08/2010	-106.38556	67.66590	4
04/08/2010	-106.38555	67.66590	4
04/08/2010	-106.38554	67.66590	4
04/08/2010	-106.38554	67.66590	4
04/08/2010	-106.38552	67.66591	3
04/08/2010	-106.38552	67.66591	4
04/08/2010	-106.38553	67.66591	4
04/08/2010	-106.38554	67.66590	4
04/08/2010	-106.38554	67.66590	4
04/08/2010	-106.38555	67.66590	4
04/08/2010	-106.38557	67.66588	4
04/08/2010	-106.38559	67.66588	4
04/08/2010	-106.38560	67.66588	3
04/08/2010	-106.38562	67.66587	4
04/08/2010	-106.38566	67.66587	4
04/08/2010	-106.38569	67.66586	4
04/08/2010	-106.38572	67.66586	4
04/08/2010	-106.38579	67.66585	4
04/08/2010	-106.38583	67.66584	4

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.38587	67.66584	4
04/08/2010	-106.38591	67.66583	4
04/08/2010	-106.38600	67.66582	3
04/08/2010	-106.38604	67.66582	4
04/08/2010	-106.38608	67.66581	4
04/08/2010	-106.38617	67.66580	4
04/08/2010	-106.38621	67.66579	4
04/08/2010	-106.38626	67.66579	4
04/08/2010	-106.38635	67.66578	4
04/08/2010	-106.38639	67.66577	4
04/08/2010	-106.38643	67.66577	4
04/08/2010	-106.38648	67.66576	4
04/08/2010	-106.38656	67.66575	4
04/08/2010	-106.38661	67.66575	4
04/08/2010	-106.38665	67.66574	3
04/08/2010	-106.38674	67.66573	4
04/08/2010	-106.38679	67.66573	4
04/08/2010	-106.38684	67.66573	3
04/08/2010	-106.38688	67.66573	4
04/08/2010	-106.38698	67.66572	4
04/08/2010	-106.38702	67.66572	4
04/08/2010	-106.38707	67.66572	4
04/08/2010	-106.38716	67.66572	4
04/08/2010	-106.38721	67.66572	4
04/08/2010	-106.38725	67.66572	3
04/08/2010	-106.38730	67.66571	4
04/08/2010	-106.38740	67.66571	4
04/08/2010	-106.38744	67.66571	4
04/08/2010	-106.38749	67.66571	4
04/08/2010	-106.38758	67.66572	4
04/08/2010	-106.38763	67.66572	4
04/08/2010	-106.38768	67.66572	4
04/08/2010	-106.38772	67.66572	4
04/08/2010	-106.38782	67.66572	3
04/08/2010	-106.38786	67.66573	4
04/08/2010	-106.38791	67.66573	3
04/08/2010	-106.38796	67.66573	4
04/08/2010	-106.38805	67.66573	3
04/08/2010	-106.38810	67.66573	3
04/08/2010	-106.38815	67.66573	4
04/08/2010	-106.38824	67.66573	4
04/08/2010	-106.38829	67.66572	2
04/08/2010	-106.38834	67.66572	4
04/08/2010	-106.38839	67.66572	4
04/08/2010	-106.38848	67.66572	3
04/08/2010	-106.38853	67.66572	4
04/08/2010	-106.38858	67.66572	4
04/08/2010	-106.38863	67.66572	4
04/08/2010	-106.38872	67.66572	4
04/08/2010	-106.38877	67.66572	4
04/08/2010	-106.38881	67.66572	4
04/08/2010	-106.38891	67.66572	3
04/08/2010	-106.38896	67.66572	4
04/08/2010	-106.38900	67.66572	3
04/08/2010	-106.38905	67.66571	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.38915	67.66571	4
04/08/2010	-106.38920	67.66571	4
04/08/2010	-106.38924	67.66571	4
04/08/2010	-106.38934	67.66571	4
04/08/2010	-106.38939	67.66571	4
04/08/2010	-106.38943	67.66571	4
04/08/2010	-106.38948	67.66571	4
04/08/2010	-106.38958	67.66571	4
04/08/2010	-106.38962	67.66571	3
04/08/2010	-106.38965	67.66571	3
04/08/2010	-106.38969	67.66570	4
04/08/2010	-106.38976	67.66570	4
04/08/2010	-106.38980	67.66570	3
04/08/2010	-106.38984	67.66570	2
04/08/2010	-106.38993	67.66570	4
04/08/2010	-106.38997	67.66570	4
04/08/2010	-106.39001	67.66570	3
04/08/2010	-106.39006	67.66570	4
04/08/2010	-106.39014	67.66570	4
04/08/2010	-106.39018	67.66571	4
04/08/2010	-106.39022	67.66570	3
04/08/2010	-106.39027	67.66570	4
04/08/2010	-106.39035	67.66570	4
04/08/2010	-106.39039	67.66570	2
04/08/2010	-106.39043	67.66570	2
04/08/2010	-106.39047	67.66570	4
04/08/2010	-106.39056	67.66570	4
04/08/2010	-106.39060	67.66570	4
04/08/2010	-106.39065	67.66570	4
04/08/2010	-106.39073	67.66570	3
04/08/2010	-106.39077	67.66570	3
04/08/2010	-106.39082	67.66570	2
04/08/2010	-106.39085	67.66570	2
04/08/2010	-106.39092	67.66570	3
04/08/2010	-106.39095	67.66570	2
04/08/2010	-106.39098	67.66570	4
04/08/2010	-106.39100	67.66569	3
04/08/2010	-106.39100	67.66569	4
04/08/2010	-106.39100	67.66569	4
04/08/2010	-106.39100	67.66569	3
04/08/2010	-106.38980	67.65701	3
04/08/2010	-106.38985	67.65701	3
04/08/2010	-106.38988	67.65701	3
04/08/2010	-106.38991	67.65701	3
04/08/2010	-106.38998	67.65701	3
04/08/2010	-106.39001	67.65701	2
04/08/2010	-106.39004	67.65701	3
04/08/2010	-106.39007	67.65702	3
04/08/2010	-106.39010	67.65704	4
04/08/2010	-106.39010	67.65704	4
04/08/2010	-106.39010	67.65703	4
04/08/2010	-106.39011	67.65700	3
04/08/2010	-106.39011	67.65699	3
04/08/2010	-106.39012	67.65697	4
04/08/2010	-106.39014	67.65695	3

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.39019	67.65692	4
04/08/2010	-106.39023	67.65691	3
04/08/2010	-106.39027	67.65689	4
04/08/2010	-106.39039	67.65686	4
04/08/2010	-106.39044	67.65684	4
04/08/2010	-106.39050	67.65682	3
04/08/2010	-106.39056	67.65681	3
04/08/2010	-106.39068	67.65678	4
04/08/2010	-106.39074	67.65676	4
04/08/2010	-106.39079	67.65675	4
04/08/2010	-106.39089	67.65671	4
04/08/2010	-106.39095	67.65669	4
04/08/2010	-106.39100	67.65667	3
04/08/2010	-106.39110	67.65663	4
04/08/2010	-106.39115	67.65661	4
04/08/2010	-106.39120	67.65659	3
04/08/2010	-106.39126	67.65657	4
04/08/2010	-106.39136	67.65653	4
04/08/2010	-106.39141	67.65651	3
04/08/2010	-106.39147	67.65649	4
04/08/2010	-106.39157	67.65645	3
04/08/2010	-106.39162	67.65642	3
04/08/2010	-106.39167	67.65640	3
04/08/2010	-106.39177	67.65636	4
04/08/2010	-106.39183	67.65634	4
04/08/2010	-106.39189	67.65632	3
04/08/2010	-106.39195	67.65630	4
04/08/2010	-106.39207	67.65627	4
04/08/2010	-106.39213	67.65626	4
04/08/2010	-106.39220	67.65624	4
04/08/2010	-106.39233	67.65621	4
04/08/2010	-106.39239	67.65620	4
04/08/2010	-106.39246	67.65618	4
04/08/2010	-106.39259	67.65615	3
04/08/2010	-106.39259	67.65615	4
04/08/2010	-106.39272	67.65612	4
04/08/2010	-106.39286	67.65610	3
04/08/2010	-106.39293	67.65609	3
04/08/2010	-106.39299	67.65608	3
04/08/2010	-106.39306	67.65606	4
04/08/2010	-106.39319	67.65604	3
04/08/2010	-106.39326	67.65602	4
04/08/2010	-106.39332	67.65601	3
04/08/2010	-106.39345	67.65598	4
04/08/2010	-106.39352	67.65596	4
04/08/2010	-106.39358	67.65595	4
04/08/2010	-106.39371	67.65592	4
04/08/2010	-106.39377	67.65590	4
04/08/2010	-106.39383	67.65589	4
04/08/2010	-106.39389	67.65587	4
04/08/2010	-106.39401	67.65583	4
04/08/2010	-106.39407	67.65581	4
04/08/2010	-106.39412	67.65578	4
04/08/2010	-106.39422	67.65574	3
04/08/2010	-106.39426	67.65571	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.39430	67.65569	4
04/08/2010	-106.39434	67.65567	3
04/08/2010	-106.39440	67.65562	4
04/08/2010	-106.39442	67.65559	4
04/08/2010	-106.39444	67.65557	4
04/08/2010	-106.39450	67.65552	3
04/08/2010	-106.39453	67.65549	3
04/08/2010	-106.39456	67.65547	4
04/08/2010	-106.39462	67.65542	3
04/08/2010	-106.39465	67.65539	4
04/08/2010	-106.39469	67.65537	4
04/08/2010	-106.39473	67.65535	4
04/08/2010	-106.39482	67.65530	2
04/08/2010	-106.39488	67.65529	4
04/08/2010	-106.39493	67.65527	3
04/08/2010	-106.39505	67.65524	3
04/08/2010	-106.39511	67.65523	4
04/08/2010	-106.39517	67.65522	3
04/08/2010	-106.39523	67.65521	4
04/08/2010	-106.39536	67.65518	4
04/08/2010	-106.39543	67.65517	4
04/08/2010	-106.39549	67.65516	2
04/08/2010	-106.39562	67.65514	3
04/08/2010	-106.39569	67.65513	4
04/08/2010	-106.39577	67.65512	2
04/08/2010	-106.39585	67.65511	3
04/08/2010	-106.39600	67.65508	2
04/08/2010	-106.39607	67.65507	2
04/08/2010	-106.39615	67.65506	2
04/08/2010	-106.39630	67.65504	2
04/08/2010	-106.39638	67.65503	2
04/08/2010	-106.39646	67.65502	2
04/08/2010	-106.39654	67.65501	2
04/08/2010	-106.39669	67.65499	2
04/08/2010	-106.39677	67.65498	2
04/08/2010	-106.39685	67.65497	2
04/08/2010	-106.39692	67.65496	2
04/08/2010	-106.39707	67.65494	2
04/08/2010	-106.39715	67.65493	2
04/08/2010	-106.39722	67.65492	2
04/08/2010	-106.39730	67.65491	2
04/08/2010	-106.39746	67.65489	2
04/08/2010	-106.39754	67.65488	2
04/08/2010	-106.39761	67.65487	2
04/08/2010	-106.39777	67.65486	2
04/08/2010	-106.39785	67.65485	2
04/08/2010	-106.39793	67.65484	4
04/08/2010	-106.39801	67.65484	2
04/08/2010	-106.39817	67.65483	2
04/08/2010	-106.39824	67.65482	2
04/08/2010	-106.39832	67.65481	4
04/08/2010	-106.39840	67.65481	2
04/08/2010	-106.39856	67.65480	2
04/08/2010	-106.39864	67.65479	2
04/08/2010	-106.39872	67.65479	4
04/08/2010	-106.39887	67.65478	2
04/08/2010	-106.39895	67.65477	2
04/08/2010	-106.39903	67.65477	2
04/08/2010	-106.39911	67.65477	3
04/08/2010	-106.39927	67.65476	2
04/08/2010	-106.39934	67.65476	2
04/08/2010	-106.39942	67.65476	4
04/08/2010	-106.39950	67.65476	2
04/08/2010	-106.39965	67.65476	3
04/08/2010	-106.39973	67.65475	4
04/08/2010	-106.39981	67.65475	4
04/08/2010	-106.39988	67.65475	2
04/08/2010	-106.40004	67.65474	2
04/08/2010	-106.40011	67.65474	4
04/08/2010	-106.40019	67.65474	2
04/08/2010	-106.40035	67.65473	2
04/08/2010	-106.40043	67.65473	2
04/08/2010	-106.40051	67.65473	2
04/08/2010	-106.40059	67.65473	2
04/08/2010	-106.40075	67.65473	2
04/08/2010	-106.40083	67.65473	4
04/08/2010	-106.40091	67.65473	2
04/08/2010	-106.40099	67.65473	2
04/08/2010	-106.40115	67.65473	2
04/08/2010	-106.40123	67.65473	2
04/08/2010	-106.40130	67.65473	2
04/08/2010	-106.40138	67.65474	2
04/08/2010	-106.40154	67.65474	2
04/08/2010	-106.40161	67.65474	2
04/08/2010	-106.40169	67.65475	2
04/08/2010	-106.40184	67.65475	2
04/08/2010	-106.40192	67.65475	3
04/08/2010	-106.40200	67.65475	2
04/08/2010	-106.40207	67.65476	4
04/08/2010	-106.40223	67.65477	4
04/08/2010	-106.40231	67.65477	2
04/08/2010	-106.40238	67.65478	2
04/08/2010	-106.40246	67.65478	2
04/08/2010	-106.40261	67.65479	2
04/08/2010	-106.40269	67.65479	4
04/08/2010	-106.40276	67.65480	2
04/08/2010	-106.40284	67.65480	4
04/08/2010	-106.40299	67.65481	2
04/08/2010	-106.40307	67.65481	3
04/08/2010	-106.40314	67.65481	2
04/08/2010	-106.40330	67.65482	4
04/08/2010	-106.40338	67.65482	4
04/08/2010	-106.40346	67.65482	2
04/08/2010	-106.40354	67.65483	2
04/08/2010	-106.40369	67.65483	4
04/08/2010	-106.40377	67.65483	2
04/08/2010	-106.40385	67.65484	4
04/08/2010	-106.40393	67.65484	2
04/08/2010	-106.40408	67.65484	2
04/08/2010	-106.40416	67.65485	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.40424	67.65485	2
04/08/2010	-106.40432	67.65485	2
04/08/2010	-106.40448	67.65485	2
04/08/2010	-106.40456	67.65485	2
04/08/2010	-106.40464	67.65485	3
04/08/2010	-106.40479	67.65486	2
04/08/2010	-106.40487	67.65486	4
04/08/2010	-106.40495	67.65486	4
04/08/2010	-106.40503	67.65486	4
04/08/2010	-106.40519	67.65486	4
04/08/2010	-106.40527	67.65486	4
04/08/2010	-106.40533	67.65486	2
04/08/2010	-106.40540	67.65486	2
04/08/2010	-106.40552	67.65486	2
04/08/2010	-106.40558	67.65486	2
04/08/2010	-106.40564	67.65486	2
04/08/2010	-106.40570	67.65486	2
04/08/2010	-106.40582	67.65487	2
04/08/2010	-106.40588	67.65487	1
04/08/2010	-106.40594	67.65487	1
04/08/2010	-106.40600	67.65487	1
04/08/2010	-106.40612	67.65487	1
04/08/2010	-106.40618	67.65487	1
04/08/2010	-106.40624	67.65487	1
04/08/2010	-106.40630	67.65487	1
04/08/2010	-106.40642	67.65488	1
04/08/2010	-106.40648	67.65488	2
04/08/2010	-106.40654	67.65488	2
04/08/2010	-106.40660	67.65488	2
04/08/2010	-106.40672	67.65489	2
04/08/2010	-106.40679	67.65489	2
04/08/2010	-106.40685	67.65489	2
04/08/2010	-106.40691	67.65489	2
04/08/2010	-106.40703	67.65490	2
04/08/2010	-106.40709	67.65490	2
04/08/2010	-106.40715	67.65491	2
04/08/2010	-106.40721	67.65491	2
04/08/2010	-106.40733	67.65492	2
04/08/2010	-106.40739	67.65492	2
04/08/2010	-106.40745	67.65493	2
04/08/2010	-106.40750	67.65493	2
04/08/2010	-106.40760	67.65494	3
04/08/2010	-106.40765	67.65494	2
04/08/2010	-106.40769	67.65495	2
04/08/2010	-106.40779	67.65496	2
04/08/2010	-106.40783	67.65496	2
04/08/2010	-106.40788	67.65496	2
04/08/2010	-106.40792	67.65497	2
04/08/2010	-106.40801	67.65497	2
04/08/2010	-106.40806	67.65498	2
04/08/2010	-106.40811	67.65498	2
04/08/2010	-106.40815	67.65498	2
04/08/2010	-106.40824	67.65499	2
04/08/2010	-106.40829	67.65499	2
04/08/2010	-106.40833	67.65499	2
04/08/2010	-106.40843	67.65499	2
04/08/2010	-106.40847	67.65499	2
04/08/2010	-106.40852	67.65499	4
04/08/2010	-106.40857	67.65499	4
04/08/2010	-106.40866	67.65499	2
04/08/2010	-106.40871	67.65499	1
04/08/2010	-106.40875	67.65499	1
04/08/2010	-106.40879	67.65499	1
04/08/2010	-106.40888	67.65499	1
04/08/2010	-106.40892	67.65499	1
04/08/2010	-106.40896	67.65499	1
04/08/2010	-106.40904	67.65499	1
04/08/2010	-106.40908	67.65499	2
04/08/2010	-106.40912	67.65499	4
04/08/2010	-106.40916	67.65499	4
04/08/2010	-106.40921	67.65498	1
04/08/2010	-106.40922	67.65498	1
04/08/2010	-106.40922	67.65498	2
04/08/2010	-106.40922	67.65497	1
04/08/2010	-106.40921	67.65496	2
04/08/2010	-106.39365	67.65284	3
04/08/2010	-106.39367	67.65283	4
04/08/2010	-106.39368	67.65282	3
04/08/2010	-106.39371	67.65281	3
04/08/2010	-106.39373	67.65279	3
04/08/2010	-106.39379	67.65277	3
04/08/2010	-106.39382	67.65276	3
04/08/2010	-106.39387	67.65273	3
04/08/2010	-106.39390	67.65271	3
04/08/2010	-106.39393	67.65270	3
04/08/2010	-106.39396	67.65269	4
04/08/2010	-106.39402	67.65267	4
04/08/2010	-106.39405	67.65266	3
04/08/2010	-106.39408	67.65265	3
04/08/2010	-106.39414	67.65262	3
04/08/2010	-106.39418	67.65261	3
04/08/2010	-106.39421	67.65260	3
04/08/2010	-106.39424	67.65259	3
04/08/2010	-106.39431	67.65257	3
04/08/2010	-106.39435	67.65256	3
04/08/2010	-106.39439	67.65255	3
04/08/2010	-106.39447	67.65253	4
04/08/2010	-106.39452	67.65252	4
04/08/2010	-106.39456	67.65250	3
04/08/2010	-106.39461	67.65249	4
04/08/2010	-106.39469	67.65247	3
04/08/2010	-106.39473	67.65246	4
04/08/2010	-106.39477	67.65245	3
04/08/2010	-106.39485	67.65242	2
04/08/2010	-106.39489	67.65240	3
04/08/2010	-106.39493	67.65239	4
04/08/2010	-106.39496	67.65238	3
04/08/2010	-106.39503	67.65234	4
04/08/2010	-106.39505	67.65233	4
04/08/2010	-106.39508	67.65231	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.39511	67.65227	3
04/08/2010	-106.39513	67.65225	3
04/08/2010	-106.39514	67.65223	3
04/08/2010	-106.39518	67.65220	4
04/08/2010	-106.39520	67.65218	4
04/08/2010	-106.39521	67.65216	3
04/08/2010	-106.39523	67.65214	4
04/08/2010	-106.39527	67.65210	3
04/08/2010	-106.39528	67.65208	4
04/08/2010	-106.39530	67.65206	4
04/08/2010	-106.39535	67.65203	4
04/08/2010	-106.39536	67.65201	4
04/08/2010	-106.39538	67.65199	3
04/08/2010	-106.39541	67.65195	3
04/08/2010	-106.39543	67.65194	4
04/08/2010	-106.39545	67.65192	4
04/08/2010	-106.39548	67.65190	4
04/08/2010	-106.39550	67.65189	4
04/08/2010	-106.39555	67.65185	4
04/08/2010	-106.39557	67.65184	4
04/08/2010	-106.39563	67.65181	4
04/08/2010	-106.39566	67.65180	4
04/08/2010	-106.39568	67.65178	4
04/08/2010	-106.39572	67.65176	4
04/08/2010	-106.39574	67.65175	4
04/08/2010	-106.39576	67.65174	0
04/08/2010	-106.39580	67.65171	3
04/08/2010	-106.39583	67.65170	4
04/08/2010	-106.39585	67.65169	0
04/08/2010	-106.39587	67.65167	3
04/08/2010	-106.39592	67.65165	0
04/08/2010	-106.39594	67.65163	0
04/08/2010	-106.39596	67.65162	4
04/08/2010	-106.39600	67.65160	0
04/08/2010	-106.39603	67.65158	0
04/08/2010	-106.39606	67.65157	0
04/08/2010	-106.39611	67.65155	0
04/08/2010	-106.39614	67.65154	0
04/08/2010	-106.39617	67.65153	4
04/08/2010	-106.39623	67.65151	4
04/08/2010	-106.39626	67.65150	4
04/08/2010	-106.39629	67.65149	4
04/08/2010	-106.39633	67.65148	4
04/08/2010	-106.39641	67.65147	4
04/08/2010	-106.39644	67.65146	3
04/08/2010	-106.39648	67.65146	3
04/08/2010	-106.39656	67.65145	4
04/08/2010	-106.39660	67.65144	2
04/08/2010	-106.39664	67.65144	3
04/08/2010	-106.39671	67.65143	3
04/08/2010	-106.39675	67.65142	3
04/08/2010	-106.39679	67.65142	3
04/08/2010	-106.39683	67.65141	2
04/08/2010	-106.39690	67.65140	3
04/08/2010	-106.39694	67.65140	3

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.39698	67.65139	4
04/08/2010	-106.39706	67.65138	3
04/08/2010	-106.39712	67.65137	2
04/08/2010	-106.39717	67.65137	4
04/08/2010	-106.39723	67.65136	2
04/08/2010	-106.39736	67.65136	2
04/08/2010	-106.39742	67.65135	4
04/08/2010	-106.39748	67.65135	3
04/08/2010	-106.39761	67.65134	2
04/08/2010	-106.39768	67.65134	2
04/08/2010	-106.39774	67.65134	3
04/08/2010	-106.39780	67.65133	2
04/08/2010	-106.39793	67.65133	2
04/08/2010	-106.39799	67.65133	2
04/08/2010	-106.39806	67.65132	4
04/08/2010	-106.39818	67.65132	3
04/08/2010	-106.39825	67.65131	3
04/08/2010	-106.39831	67.65131	3
04/08/2010	-106.39844	67.65130	3
04/08/2010	-106.39850	67.65130	3
04/08/2010	-106.39857	67.65129	2
04/08/2010	-106.39863	67.65129	3
04/08/2010	-106.39876	67.65128	2
04/08/2010	-106.39882	67.65127	3
04/08/2010	-106.39889	67.65127	2
04/08/2010	-106.39902	67.65126	3
04/08/2010	-106.39908	67.65125	3
04/08/2010	-106.39915	67.65125	3
04/08/2010	-106.39921	67.65124	4
04/08/2010	-106.39934	67.65123	3
04/08/2010	-106.39940	67.65122	3
04/08/2010	-106.39947	67.65121	3
04/08/2010	-106.39960	67.65120	4
04/08/2010	-106.39966	67.65120	4
04/08/2010	-106.39972	67.65119	4
04/08/2010	-106.39979	67.65118	3
04/08/2010	-106.39991	67.65116	4
04/08/2010	-106.39997	67.65115	2
04/08/2010	-106.40003	67.65114	4
04/08/2010	-106.40010	67.65114	4
04/08/2010	-106.40023	67.65112	2
04/08/2010	-106.40030	67.65112	2
04/08/2010	-106.40037	67.65111	2
04/08/2010	-106.40051	67.65109	2
04/08/2010	-106.40058	67.65108	2
04/08/2010	-106.40065	67.65108	2
04/08/2010	-106.40073	67.65107	2
04/08/2010	-106.40088	67.65105	2
04/08/2010	-106.40095	67.65105	2
04/08/2010	-106.40102	67.65104	2
04/08/2010	-106.40109	67.65103	2
04/08/2010	-106.40124	67.65102	2
04/08/2010	-106.40132	67.65102	2
04/08/2010	-106.40139	67.65101	2
04/08/2010	-106.40147	67.65101	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.40162	67.65100	2
04/08/2010	-106.40169	67.65100	2
04/08/2010	-106.40177	67.65100	2
04/08/2010	-106.40184	67.65099	2
04/08/2010	-106.40199	67.65099	2
04/08/2010	-106.40207	67.65098	2
04/08/2010	-106.40214	67.65098	4
04/08/2010	-106.40222	67.65098	2
04/08/2010	-106.40236	67.65098	2
04/08/2010	-106.40244	67.65097	2
04/08/2010	-106.40251	67.65097	2
04/08/2010	-106.40267	67.65096	2
04/08/2010	-106.40274	67.65096	2
04/08/2010	-106.40282	67.65096	2
04/08/2010	-106.40289	67.65096	2
04/08/2010	-106.40304	67.65096	2
04/08/2010	-106.40312	67.65095	2
04/08/2010	-106.40320	67.65095	2
04/08/2010	-106.40328	67.65095	2
04/08/2010	-106.40344	67.65095	3
04/08/2010	-106.40352	67.65095	2
04/08/2010	-106.40360	67.65095	2
04/08/2010	-106.40368	67.65096	2
04/08/2010	-106.40384	67.65097	2
04/08/2010	-106.40392	67.65097	2
04/08/2010	-106.40400	67.65098	2
04/08/2010	-106.40408	67.65098	2
04/08/2010	-106.40424	67.65099	2
04/08/2010	-106.40433	67.65100	1
04/08/2010	-106.40441	67.65100	2
04/08/2010	-106.40449	67.65100	2
04/08/2010	-106.40466	67.65101	2
04/08/2010	-106.40474	67.65101	2
04/08/2010	-106.40482	67.65102	2
04/08/2010	-106.40491	67.65102	2
04/08/2010	-106.40507	67.65103	2
04/08/2010	-106.40514	67.65104	2
04/08/2010	-106.40522	67.65104	2
04/08/2010	-106.40529	67.65104	2
04/08/2010	-106.40545	67.65106	2
04/08/2010	-106.40553	67.65106	2
04/08/2010	-106.40561	67.65106	2
04/08/2010	-106.40569	67.65106	2
04/08/2010	-106.40585	67.65107	2
04/08/2010	-106.40594	67.65107	2
04/08/2010	-106.40602	67.65107	1
04/08/2010	-106.40610	67.65107	1
04/08/2010	-106.40626	67.65107	2
04/08/2010	-106.40635	67.65107	1
04/08/2010	-106.40643	67.65107	2
04/08/2010	-106.40651	67.65107	2
04/08/2010	-106.40668	67.65108	2
04/08/2010	-106.40676	67.65108	2
04/08/2010	-106.40684	67.65108	2
04/08/2010	-106.40692	67.65108	2

Date	Longitude	Latitude	Substrate Type
04/08/2010	-106.40709	67.65109	2
04/08/2010	-106.40717	67.65109	2
04/08/2010	-106.40725	67.65109	2
04/08/2010	-106.40733	67.65110	2
04/08/2010	-106.40749	67.65110	2
04/08/2010	-106.40757	67.65110	2
04/08/2010	-106.40765	67.65110	2
04/08/2010	-106.40773	67.65110	2
04/08/2010	-106.40782	67.65110	4
04/08/2010	-106.40798	67.65111	2
04/08/2010	-106.40806	67.65111	4
04/08/2010	-106.40814	67.65111	2
04/08/2010	-106.40822	67.65111	4
04/08/2010	-106.40838	67.65111	2
04/08/2010	-106.40845	67.65111	2
04/08/2010	-106.40852	67.65111	2
04/08/2010	-106.40859	67.65111	2
04/08/2010	-106.40872	67.65111	2
04/08/2010	-106.40879	67.65111	2
04/08/2010	-106.40885	67.65111	1
04/08/2010	-106.40892	67.65111	1
04/08/2010	-106.40905	67.65111	2
04/08/2010	-106.40910	67.65111	2
04/08/2010	-106.40916	67.65111	3
04/08/2010	-106.40921	67.65111	4
04/08/2010	-106.40931	67.65111	3
04/08/2010	-106.40936	67.65111	4
04/08/2010	-106.40941	67.65111	4
04/08/2010	-106.40949	67.65111	4
04/08/2010	-106.40949	67.65111	4
04/08/2010	-106.40958	67.65112	4
04/08/2010	-106.40965	67.65112	4
04/08/2010	-106.40968	67.65112	4
04/08/2010	-106.40971	67.65112	4
06/08/2010	-106.41071	67.65869	2
06/08/2010	-106.41078	67.65868	2
06/08/2010	-106.41093	67.65867	2
06/08/2010	-106.41101	67.65867	2
06/08/2010	-106.41108	67.65866	2
06/08/2010	-106.41116	67.65866	2
06/08/2010	-106.41131	67.65865	2
06/08/2010	-106.41138	67.65864	2
06/08/2010	-106.41146	67.65864	2
06/08/2010	-106.41153	67.65863	3
06/08/2010	-106.41168	67.65862	2
06/08/2010	-106.41176	67.65861	2
06/08/2010	-106.41183	67.65861	2
06/08/2010	-106.41191	67.65860	2
06/08/2010	-106.41198	67.65859	2
06/08/2010	-106.41213	67.65859	2
06/08/2010	-106.41221	67.65858	2
06/08/2010	-106.41228	67.65858	2
06/08/2010	-106.41235	67.65858	3
06/08/2010	-106.41241	67.65857	2
06/08/2010	-106.41253	67.65857	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41259	67.65857	2
06/08/2010	-106.41265	67.65857	3
06/08/2010	-106.41271	67.65857	2
06/08/2010	-106.41283	67.65857	1
06/08/2010	-106.41289	67.65857	2
06/08/2010	-106.41295	67.65857	1
06/08/2010	-106.41300	67.65857	4
06/08/2010	-106.41309	67.65857	4
06/08/2010	-106.41313	67.65857	1
06/08/2010	-106.41317	67.65857	1
06/08/2010	-106.41321	67.65857	1
06/08/2010	-106.41330	67.65857	2
06/08/2010	-106.41334	67.65857	3
06/08/2010	-106.41338	67.65858	2
06/08/2010	-106.41342	67.65858	3
06/08/2010	-106.41350	67.65858	2
06/08/2010	-106.41354	67.65858	2
06/08/2010	-106.41359	67.65858	3
06/08/2010	-106.41367	67.65858	3
06/08/2010	-106.41370	67.65858	3
06/08/2010	-106.41372	67.65858	3
06/08/2010	-106.41374	67.65857	3
06/08/2010	-106.41374	67.65857	3
06/08/2010	-106.41374	67.65857	3
06/08/2010	-106.41373	67.65857	3
06/08/2010	-106.41372	67.65857	3
06/08/2010	-106.41371	67.65857	4
06/08/2010	-106.41369	67.65857	3
06/08/2010	-106.41365	67.65857	3
06/08/2010	-106.41362	67.65857	3
06/08/2010	-106.41360	67.65857	4
06/08/2010	-106.41357	67.65857	4
06/08/2010	-106.41351	67.65857	2
06/08/2010	-106.41348	67.65857	2
06/08/2010	-106.41345	67.65858	2
06/08/2010	-106.41337	67.65858	2
06/08/2010	-106.41332	67.65858	4
06/08/2010	-106.41327	67.65858	1
06/08/2010	-106.41321	67.65858	1
06/08/2010	-106.41305	67.65858	2
06/08/2010	-106.41296	67.65858	1
06/08/2010	-106.41288	67.65858	1
06/08/2010	-106.41279	67.65858	2
06/08/2010	-106.41262	67.65858	2
06/08/2010	-106.41254	67.65858	2
06/08/2010	-106.41247	67.65858	2
06/08/2010	-106.41240	67.65858	2
06/08/2010	-106.41226	67.65859	2
06/08/2010	-106.41218	67.65859	2
06/08/2010	-106.41211	67.65859	2
06/08/2010	-106.41203	67.65860	2
06/08/2010	-106.41188	67.65860	4
06/08/2010	-106.41180	67.65860	2
06/08/2010	-106.41172	67.65861	2
06/08/2010	-106.41164	67.65861	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41157	67.65862	3
06/08/2010	-106.41141	67.65862	2
06/08/2010	-106.41133	67.65862	2
06/08/2010	-106.41125	67.65863	3
06/08/2010	-106.41118	67.65863	2
06/08/2010	-106.41102	67.65863	2
06/08/2010	-106.41094	67.65863	2
06/08/2010	-106.41086	67.65863	2
06/08/2010	-106.41079	67.65864	2
06/08/2010	-106.41063	67.65864	2
06/08/2010	-106.41055	67.65864	2
06/08/2010	-106.41048	67.65864	2
06/08/2010	-106.41040	67.65864	2
06/08/2010	-106.41024	67.65864	2
06/08/2010	-106.41016	67.65864	2
06/08/2010	-106.41009	67.65864	2
06/08/2010	-106.41001	67.65864	2
06/08/2010	-106.40985	67.65864	2
06/08/2010	-106.40978	67.65864	2
06/08/2010	-106.40970	67.65864	2
06/08/2010	-106.40962	67.65864	2
06/08/2010	-106.40946	67.65864	2
06/08/2010	-106.40938	67.65864	2
06/08/2010	-106.40931	67.65864	2
06/08/2010	-106.40923	67.65864	2
06/08/2010	-106.40908	67.65864	2
06/08/2010	-106.40900	67.65864	2
06/08/2010	-106.40892	67.65864	2
06/08/2010	-106.40884	67.65864	2
06/08/2010	-106.40868	67.65863	2
06/08/2010	-106.40861	67.65863	2
06/08/2010	-106.40853	67.65863	2
06/08/2010	-106.40837	67.65862	2
06/08/2010	-106.40829	67.65862	2
06/08/2010	-106.40821	67.65862	2
06/08/2010	-106.40814	67.65862	1
06/08/2010	-106.40798	67.65861	1
06/08/2010	-106.40790	67.65861	2
06/08/2010	-106.40782	67.65861	1
06/08/2010	-106.40775	67.65861	2
06/08/2010	-106.40759	67.65861	2
06/08/2010	-106.40751	67.65861	2
06/08/2010	-106.40744	67.65861	4
06/08/2010	-106.40736	67.65861	3
06/08/2010	-106.40720	67.65861	3
06/08/2010	-106.40712	67.65861	4
06/08/2010	-106.40705	67.65861	3
06/08/2010	-106.40689	67.65861	3
06/08/2010	-106.40681	67.65861	4
06/08/2010	-106.40674	67.65860	4
06/08/2010	-106.40666	67.65860	4
06/08/2010	-106.40651	67.65860	4
06/08/2010	-106.40643	67.65860	4
06/08/2010	-106.40635	67.65860	4
06/08/2010	-106.40627	67.65860	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40611	67.65859	3
06/08/2010	-106.40604	67.65859	2
06/08/2010	-106.40596	67.65859	3
06/08/2010	-106.40580	67.65858	4
06/08/2010	-106.40573	67.65858	4
06/08/2010	-106.40565	67.65858	2
06/08/2010	-106.40557	67.65858	2
06/08/2010	-106.40542	67.65858	2
06/08/2010	-106.40534	67.65857	2
06/08/2010	-106.40526	67.65857	1
06/08/2010	-106.40519	67.65857	1
06/08/2010	-106.40503	67.65858	1
06/08/2010	-106.40496	67.65858	1
06/08/2010	-106.40488	67.65858	1
06/08/2010	-106.40473	67.65858	1
06/08/2010	-106.40465	67.65858	1
06/08/2010	-106.40457	67.65858	1
06/08/2010	-106.40449	67.65858	1
06/08/2010	-106.40434	67.65858	1
06/08/2010	-106.40426	67.65858	1
06/08/2010	-106.40418	67.65858	2
06/08/2010	-106.40411	67.65858	1
06/08/2010	-106.40395	67.65858	1
06/08/2010	-106.40387	67.65857	1
06/08/2010	-106.40380	67.65857	1
06/08/2010	-106.40364	67.65857	2
06/08/2010	-106.40356	67.65857	2
06/08/2010	-106.40348	67.65856	2
06/08/2010	-106.40341	67.65856	2
06/08/2010	-106.40325	67.65856	2
06/08/2010	-106.40317	67.65855	1
06/08/2010	-106.40310	67.65855	1
06/08/2010	-106.40302	67.65855	1
06/08/2010	-106.40287	67.65855	1
06/08/2010	-106.40279	67.65855	2
06/08/2010	-106.40271	67.65855	2
06/08/2010	-106.40264	67.65855	2
06/08/2010	-106.40248	67.65855	2
06/08/2010	-106.40241	67.65855	2
06/08/2010	-106.40233	67.65855	2
06/08/2010	-106.40218	67.65855	2
06/08/2010	-106.40210	67.65855	2
06/08/2010	-106.40202	67.65855	2
06/08/2010	-106.40195	67.65855	2
06/08/2010	-106.40179	67.65855	2
06/08/2010	-106.40172	67.65855	2
06/08/2010	-106.40164	67.65855	2
06/08/2010	-106.40157	67.65854	2
06/08/2010	-106.40142	67.65854	2
06/08/2010	-106.40134	67.65855	2
06/08/2010	-106.40126	67.65855	2
06/08/2010	-106.40119	67.65855	2
06/08/2010	-106.40104	67.65856	3
06/08/2010	-106.40096	67.65856	3
06/08/2010	-106.40088	67.65856	2
06/08/2010	-106.40073	67.65857	4
06/08/2010	-106.40066	67.65857	4
06/08/2010	-106.40058	67.65857	3
06/08/2010	-106.40050	67.65858	3
06/08/2010	-106.40035	67.65858	2
06/08/2010	-106.40027	67.65858	3
06/08/2010	-106.40020	67.65858	4
06/08/2010	-106.40004	67.65859	3
06/08/2010	-106.39997	67.65859	3
06/08/2010	-106.39989	67.65860	3
06/08/2010	-106.39981	67.65860	3
06/08/2010	-106.39966	67.65860	3
06/08/2010	-106.39959	67.65860	3
06/08/2010	-106.39951	67.65861	2
06/08/2010	-106.39936	67.65861	3
06/08/2010	-106.39928	67.65861	3
06/08/2010	-106.39921	67.65862	2
06/08/2010	-106.39913	67.65862	3
06/08/2010	-106.39898	67.65863	2
06/08/2010	-106.39891	67.65863	3
06/08/2010	-106.39883	67.65863	2
06/08/2010	-106.39868	67.65864	2
06/08/2010	-106.39861	67.65864	2
06/08/2010	-106.39853	67.65864	2
06/08/2010	-106.39846	67.65864	2
06/08/2010	-106.39831	67.65865	3
06/08/2010	-106.39823	67.65865	2
06/08/2010	-106.39815	67.65865	2
06/08/2010	-106.39808	67.65866	2
06/08/2010	-106.39793	67.65866	2
06/08/2010	-106.39785	67.65866	4
06/08/2010	-106.39778	67.65867	4
06/08/2010	-106.39763	67.65867	3
06/08/2010	-106.39755	67.65868	3
06/08/2010	-106.39747	67.65868	3
06/08/2010	-106.39732	67.65868	3
06/08/2010	-106.39725	67.65868	3
06/08/2010	-106.39717	67.65868	3
06/08/2010	-106.39710	67.65869	4
06/08/2010	-106.39695	67.65869	2
06/08/2010	-106.39687	67.65870	2
06/08/2010	-106.39680	67.65870	3
06/08/2010	-106.39665	67.65870	4
06/08/2010	-106.39657	67.65870	3
06/08/2010	-106.39650	67.65871	4
06/08/2010	-106.39635	67.65871	3
06/08/2010	-106.39627	67.65871	4
06/08/2010	-106.39620	67.65871	4
06/08/2010	-106.39612	67.65872	4
06/08/2010	-106.39597	67.65872	4
06/08/2010	-106.39590	67.65872	4
06/08/2010	-106.39582	67.65873	4
06/08/2010	-106.39567	67.65874	4
06/08/2010	-106.39560	67.65874	4
06/08/2010	-106.39552	67.65874	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39538	67.65874	4
06/08/2010	-106.39530	67.65874	4
06/08/2010	-106.39523	67.65874	4
06/08/2010	-106.39508	67.65875	4
06/08/2010	-106.39500	67.65875	4
06/08/2010	-106.39493	67.65876	4
06/08/2010	-106.39486	67.65876	3
06/08/2010	-106.39471	67.65877	3
06/08/2010	-106.39464	67.65877	3
06/08/2010	-106.39456	67.65878	2
06/08/2010	-106.39441	67.65878	3
06/08/2010	-106.39434	67.65879	3
06/08/2010	-106.39426	67.65879	4
06/08/2010	-106.39412	67.65880	3
06/08/2010	-106.39404	67.65880	4
06/08/2010	-106.39397	67.65881	2
06/08/2010	-106.39389	67.65881	3
06/08/2010	-106.39374	67.65882	3
06/08/2010	-106.39368	67.65883	4
06/08/2010	-106.39361	67.65883	2
06/08/2010	-106.39347	67.65884	3
06/08/2010	-106.39340	67.65884	3
06/08/2010	-106.39333	67.65884	2
06/08/2010	-106.39327	67.65885	2
06/08/2010	-106.39313	67.65886	4
06/08/2010	-106.39306	67.65886	2
06/08/2010	-106.39299	67.65886	2
06/08/2010	-106.39286	67.65887	3
06/08/2010	-106.39279	67.65887	2
06/08/2010	-106.39272	67.65887	4
06/08/2010	-106.39266	67.65888	3
06/08/2010	-106.39256	67.65889	2
06/08/2010	-106.39251	67.65889	3
06/08/2010	-106.39246	67.65889	4
06/08/2010	-106.39235	67.65890	2
06/08/2010	-106.39230	67.65890	3
06/08/2010	-106.39224	67.65891	3
06/08/2010	-106.39219	67.65891	3
06/08/2010	-106.39209	67.65890	3
06/08/2010	-106.39205	67.65889	2
06/08/2010	-106.39201	67.65887	2
06/08/2010	-106.39196	67.65884	2
06/08/2010	-106.39194	67.65882	2
06/08/2010	-106.39193	67.65880	3
06/08/2010	-106.39193	67.65879	2
06/08/2010	-106.39192	67.65875	2
06/08/2010	-106.39192	67.65873	3
06/08/2010	-106.39191	67.65871	2
06/08/2010	-106.39190	67.65869	3
06/08/2010	-106.39190	67.65865	3
06/08/2010	-106.39191	67.65863	2
06/08/2010	-106.39191	67.65861	3
06/08/2010	-106.39191	67.65856	4
06/08/2010	-106.39191	67.65854	2
06/08/2010	-106.39192	67.65852	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39193	67.65850	2
06/08/2010	-106.39194	67.65846	3
06/08/2010	-106.39194	67.65844	3
06/08/2010	-106.39194	67.65842	3
06/08/2010	-106.39194	67.65838	2
06/08/2010	-106.39193	67.65836	2
06/08/2010	-106.39192	67.65834	2
06/08/2010	-106.39191	67.65832	2
06/08/2010	-106.39189	67.65828	2
06/08/2010	-106.39185	67.65824	3
06/08/2010	-106.39182	67.65822	2
06/08/2010	-106.39178	67.65818	3
06/08/2010	-106.39177	67.65816	2
06/08/2010	-106.39175	67.65814	2
06/08/2010	-106.39174	67.65812	3
06/08/2010	-106.39171	67.65808	3
06/08/2010	-106.39170	67.65806	2
06/08/2010	-106.39170	67.65804	3
06/08/2010	-106.39169	67.65800	3
06/08/2010	-106.39169	67.65798	3
06/08/2010	-106.39168	67.65796	3
06/08/2010	-106.39168	67.65794	4
06/08/2010	-106.39168	67.65789	4
06/08/2010	-106.39169	67.65787	4
06/08/2010	-106.39169	67.65785	3
06/08/2010	-106.39169	67.65780	3
06/08/2010	-106.39169	67.65778	2
06/08/2010	-106.39169	67.65776	2
06/08/2010	-106.39169	67.65774	2
06/08/2010	-106.39170	67.65769	2
06/08/2010	-106.39170	67.65767	2
06/08/2010	-106.39170	67.65764	2
06/08/2010	-106.39171	67.65760	4
06/08/2010	-106.39172	67.65758	4
06/08/2010	-106.39173	67.65756	2
06/08/2010	-106.39175	67.65753	2
06/08/2010	-106.39177	67.65749	3
06/08/2010	-106.39178	67.65747	3
06/08/2010	-106.39179	67.65744	2
06/08/2010	-106.39180	67.65742	3
06/08/2010	-106.39183	67.65738	2
06/08/2010	-106.39185	67.65735	3
06/08/2010	-106.39186	67.65733	4
06/08/2010	-106.39190	67.65729	3
06/08/2010	-106.39192	67.65727	3
06/08/2010	-106.39195	67.65725	3
06/08/2010	-106.39203	67.65722	4
06/08/2010	-106.39203	67.65722	2
06/08/2010	-106.39212	67.65719	4
06/08/2010	-106.39218	67.65718	2
06/08/2010	-106.39229	67.65716	3
06/08/2010	-106.39234	67.65716	4
06/08/2010	-106.39234	67.65716	2
06/08/2010	-106.39253	67.65714	3
06/08/2010	-106.39260	67.65713	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39267	67.65712	2
06/08/2010	-106.39274	67.65712	2
06/08/2010	-106.39289	67.65711	2
06/08/2010	-106.39296	67.65710	2
06/08/2010	-106.39304	67.65710	2
06/08/2010	-106.39318	67.65709	4
06/08/2010	-106.39325	67.65708	3
06/08/2010	-106.39333	67.65708	3
06/08/2010	-106.39340	67.65707	2
06/08/2010	-106.39347	67.65707	3
06/08/2010	-106.39362	67.65706	2
06/08/2010	-106.39369	67.65706	3
06/08/2010	-106.39384	67.65705	2
06/08/2010	-106.39391	67.65704	3
06/08/2010	-106.39398	67.65704	3
06/08/2010	-106.39406	67.65704	2
06/08/2010	-106.39420	67.65703	2
06/08/2010	-106.39427	67.65703	2
06/08/2010	-106.39434	67.65702	2
06/08/2010	-106.39442	67.65702	2
06/08/2010	-106.39456	67.65701	2
06/08/2010	-106.39463	67.65701	2
06/08/2010	-106.39470	67.65700	2
06/08/2010	-106.39485	67.65700	2
06/08/2010	-106.39492	67.65699	2
06/08/2010	-106.39500	67.65699	2
06/08/2010	-106.39507	67.65698	4
06/08/2010	-106.39523	67.65697	2
06/08/2010	-106.39531	67.65697	2
06/08/2010	-106.39539	67.65696	2
06/08/2010	-106.39548	67.65696	2
06/08/2010	-106.39564	67.65695	2
06/08/2010	-106.39573	67.65695	1
06/08/2010	-106.39581	67.65694	2
06/08/2010	-106.39598	67.65694	2
06/08/2010	-106.39606	67.65693	2
06/08/2010	-106.39614	67.65693	2
06/08/2010	-106.39621	67.65692	2
06/08/2010	-106.39636	67.65692	2
06/08/2010	-106.39643	67.65692	2
06/08/2010	-106.39651	67.65692	2
06/08/2010	-106.39665	67.65693	2
06/08/2010	-106.39672	67.65693	2
06/08/2010	-106.39679	67.65693	2
06/08/2010	-106.39686	67.65693	2
06/08/2010	-106.39701	67.65693	2
06/08/2010	-106.39708	67.65693	2
06/08/2010	-106.39716	67.65693	2
06/08/2010	-106.39730	67.65693	3
06/08/2010	-106.39737	67.65692	3
06/08/2010	-106.39745	67.65692	2
06/08/2010	-106.39752	67.65692	3
06/08/2010	-106.39766	67.65692	3
06/08/2010	-106.39774	67.65691	4
06/08/2010	-106.39781	67.65691	3
06/08/2010	-106.39796	67.65691	2
06/08/2010	-106.39803	67.65691	2
06/08/2010	-106.39810	67.65691	4
06/08/2010	-106.39818	67.65691	3
06/08/2010	-106.39832	67.65690	4
06/08/2010	-106.39839	67.65689	3
06/08/2010	-106.39846	67.65689	3
06/08/2010	-106.39861	67.65687	4
06/08/2010	-106.39868	67.65687	4
06/08/2010	-106.39875	67.65687	2
06/08/2010	-106.39882	67.65686	4
06/08/2010	-106.39897	67.65686	4
06/08/2010	-106.39904	67.65686	3
06/08/2010	-106.39911	67.65685	2
06/08/2010	-106.39926	67.65685	2
06/08/2010	-106.39933	67.65685	2
06/08/2010	-106.39940	67.65685	3
06/08/2010	-106.39948	67.65685	2
06/08/2010	-106.39962	67.65684	3
06/08/2010	-106.39970	67.65684	4
06/08/2010	-106.39977	67.65684	3
06/08/2010	-106.39991	67.65683	2
06/08/2010	-106.39999	67.65683	3
06/08/2010	-106.40006	67.65682	3
06/08/2010	-106.40013	67.65682	3
06/08/2010	-106.40027	67.65681	2
06/08/2010	-106.40035	67.65681	3
06/08/2010	-106.40042	67.65681	4
06/08/2010	-106.40057	67.65681	3
06/08/2010	-106.40064	67.65681	4
06/08/2010	-106.40071	67.65681	3
06/08/2010	-106.40079	67.65681	4
06/08/2010	-106.40093	67.65681	4
06/08/2010	-106.40100	67.65681	3
06/08/2010	-106.40107	67.65681	3
06/08/2010	-106.40121	67.65681	2
06/08/2010	-106.40128	67.65680	4
06/08/2010	-106.40135	67.65680	4
06/08/2010	-106.40143	67.65680	3
06/08/2010	-106.40157	67.65679	2
06/08/2010	-106.40164	67.65679	2
06/08/2010	-106.40171	67.65679	2
06/08/2010	-106.40179	67.65678	2
06/08/2010	-106.40193	67.65678	2
06/08/2010	-106.40200	67.65677	2
06/08/2010	-106.40207	67.65677	2
06/08/2010	-106.40222	67.65677	2
06/08/2010	-106.40229	67.65676	2
06/08/2010	-106.40236	67.65676	2
06/08/2010	-106.40243	67.65676	2
06/08/2010	-106.40257	67.65675	3
06/08/2010	-106.40265	67.65675	2
06/08/2010	-106.40272	67.65675	2
06/08/2010	-106.40279	67.65674	2
06/08/2010	-106.40293	67.65674	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40301	67.65674	2
06/08/2010	-106.40308	67.65674	3
06/08/2010	-106.40315	67.65674	2
06/08/2010	-106.40329	67.65674	2
06/08/2010	-106.40336	67.65674	2
06/08/2010	-106.40344	67.65674	2
06/08/2010	-106.40358	67.65674	2
06/08/2010	-106.40365	67.65674	2
06/08/2010	-106.40372	67.65674	2
06/08/2010	-106.40379	67.65674	3
06/08/2010	-106.40393	67.65673	4
06/08/2010	-106.40400	67.65673	2
06/08/2010	-106.40407	67.65673	2
06/08/2010	-106.40415	67.65672	4
06/08/2010	-106.40429	67.65672	2
06/08/2010	-106.40436	67.65672	0
06/08/2010	-106.40443	67.65671	4
06/08/2010	-106.40450	67.65671	2
06/08/2010	-106.40465	67.65671	2
06/08/2010	-106.40472	67.65671	2
06/08/2010	-106.40479	67.65671	2
06/08/2010	-106.40487	67.65671	2
06/08/2010	-106.40501	67.65670	0
06/08/2010	-106.40508	67.65670	2
06/08/2010	-106.40515	67.65670	2
06/08/2010	-106.40530	67.65669	4
06/08/2010	-106.40537	67.65669	2
06/08/2010	-106.40544	67.65668	2
06/08/2010	-106.40551	67.65668	2
06/08/2010	-106.40565	67.65667	2
06/08/2010	-106.40573	67.65667	2
06/08/2010	-106.40580	67.65666	2
06/08/2010	-106.40594	67.65666	2
06/08/2010	-106.40601	67.65666	2
06/08/2010	-106.40608	67.65666	0
06/08/2010	-106.40616	67.65665	2
06/08/2010	-106.40630	67.65665	1
06/08/2010	-106.40637	67.65665	2
06/08/2010	-106.40644	67.65665	2
06/08/2010	-106.40651	67.65665	2
06/08/2010	-106.40666	67.65665	2
06/08/2010	-106.40673	67.65665	2
06/08/2010	-106.40681	67.65665	1
06/08/2010	-106.40695	67.65664	1
06/08/2010	-106.40702	67.65664	1
06/08/2010	-106.40710	67.65664	1
06/08/2010	-106.40717	67.65664	1
06/08/2010	-106.40732	67.65664	1
06/08/2010	-106.40739	67.65664	1
06/08/2010	-106.40747	67.65664	1
06/08/2010	-106.40754	67.65664	1
06/08/2010	-106.40769	67.65664	1
06/08/2010	-106.40776	67.65664	1
06/08/2010	-106.40784	67.65664	1
06/08/2010	-106.40791	67.65665	1
06/08/2010	-106.40806	67.65665	1
06/08/2010	-106.40813	67.65664	1
06/08/2010	-106.40820	67.65664	1
06/08/2010	-106.40828	67.65665	2
06/08/2010	-106.40842	67.65665	2
06/08/2010	-106.40849	67.65665	2
06/08/2010	-106.40855	67.65665	2
06/08/2010	-106.40861	67.65665	2
06/08/2010	-106.40867	67.65665	3
06/08/2010	-106.40879	67.65666	2
06/08/2010	-106.40885	67.65666	2
06/08/2010	-106.40891	67.65666	2
06/08/2010	-106.40896	67.65666	2
06/08/2010	-106.40908	67.65667	2
06/08/2010	-106.40914	67.65667	2
06/08/2010	-106.40920	67.65667	2
06/08/2010	-106.40926	67.65667	2
06/08/2010	-106.40937	67.65667	3
06/08/2010	-106.40942	67.65667	3
06/08/2010	-106.40947	67.65667	2
06/08/2010	-106.40952	67.65667	3
06/08/2010	-106.40961	67.65667	3
06/08/2010	-106.40965	67.65667	3
06/08/2010	-106.40968	67.65667	4
06/08/2010	-106.40975	67.65666	4
06/08/2010	-106.40979	67.65666	4
06/08/2010	-106.40983	67.65666	4
06/08/2010	-106.40990	67.65666	4
06/08/2010	-106.40991	67.65666	4
06/08/2010	-106.40991	67.65666	4
06/08/2010	-106.40990	67.65666	4
06/08/2010	-106.40834	67.65646	2
06/08/2010	-106.40828	67.65644	2
06/08/2010	-106.40822	67.65642	2
06/08/2010	-106.40817	67.65640	1
06/08/2010	-106.40807	67.65635	1
06/08/2010	-106.40803	67.65632	2
06/08/2010	-106.40799	67.65629	1
06/08/2010	-106.40796	67.65626	1
06/08/2010	-106.40790	67.65619	1
06/08/2010	-106.40787	67.65616	2
06/08/2010	-106.40784	67.65613	1
06/08/2010	-106.40781	67.65609	1
06/08/2010	-106.40776	67.65603	1
06/08/2010	-106.40774	67.65599	1
06/08/2010	-106.40772	67.65596	1
06/08/2010	-106.40770	67.65593	2
06/08/2010	-106.40765	67.65586	1
06/08/2010	-106.40762	67.65583	1
06/08/2010	-106.40761	67.65579	1
06/08/2010	-106.40760	67.65576	1
06/08/2010	-106.40762	67.65569	2
06/08/2010	-106.40763	67.65566	1
06/08/2010	-106.40765	67.65562	1
06/08/2010	-106.40767	67.65559	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40771	67.65553	1
06/08/2010	-106.40772	67.65549	2
06/08/2010	-106.40775	67.65546	2
06/08/2010	-106.40779	67.65539	2
06/08/2010	-106.40781	67.65536	2
06/08/2010	-106.40784	67.65532	2
06/08/2010	-106.40786	67.65529	2
06/08/2010	-106.40791	67.65523	2
06/08/2010	-106.40794	67.65519	1
06/08/2010	-106.40796	67.65516	2
06/08/2010	-106.40799	67.65513	2
06/08/2010	-106.40804	67.65506	2
06/08/2010	-106.40808	67.65503	2
06/08/2010	-106.40811	67.65500	2
06/08/2010	-106.40814	67.65497	2
06/08/2010	-106.40820	67.65490	2
06/08/2010	-106.40823	67.65487	2
06/08/2010	-106.40825	67.65484	2
06/08/2010	-106.40827	67.65480	3
06/08/2010	-106.40830	67.65473	2
06/08/2010	-106.40831	67.65470	2
06/08/2010	-106.40832	67.65467	2
06/08/2010	-106.40833	67.65463	2
06/08/2010	-106.40834	67.65460	2
06/08/2010	-106.40836	67.65453	2
06/08/2010	-106.40836	67.65449	2
06/08/2010	-106.40837	67.65446	3
06/08/2010	-106.40838	67.65442	2
06/08/2010	-106.40837	67.65435	2
06/08/2010	-106.40837	67.65432	2
06/08/2010	-106.40837	67.65428	2
06/08/2010	-106.40836	67.65425	3
06/08/2010	-106.40836	67.65418	3
06/08/2010	-106.40835	67.65414	2
06/08/2010	-106.40835	67.65411	4
06/08/2010	-106.40834	67.65407	2
06/08/2010	-106.40832	67.65401	3
06/08/2010	-106.40831	67.65397	3
06/08/2010	-106.40830	67.65394	4
06/08/2010	-106.40830	67.65390	4
06/08/2010	-106.40830	67.65387	4
06/08/2010	-106.40829	67.65380	3
06/08/2010	-106.40829	67.65376	4
06/08/2010	-106.40830	67.65373	3
06/08/2010	-106.40830	67.65369	3
06/08/2010	-106.40832	67.65362	4
06/08/2010	-106.40833	67.65359	3
06/08/2010	-106.40835	67.65355	3
06/08/2010	-106.40839	67.65352	2
06/08/2010	-106.40849	67.65349	3
06/08/2010	-106.40854	67.65348	4
06/08/2010	-106.40860	67.65347	3
06/08/2010	-106.40866	67.65345	3
06/08/2010	-106.40872	67.65344	2
06/08/2010	-106.40883	67.65342	3

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40888	67.65340	3
06/08/2010	-106.40893	67.65339	2
06/08/2010	-106.40899	67.65339	3
06/08/2010	-106.40904	67.65338	3
06/08/2010	-106.40914	67.65336	3
06/08/2010	-106.40918	67.65335	2
06/08/2010	-106.40922	67.65335	2
06/08/2010	-106.40926	67.65334	2
06/08/2010	-106.40932	67.65333	2
06/08/2010	-106.40935	67.65333	2
06/08/2010	-106.40938	67.65333	1
06/08/2010	-106.40940	67.65333	1
06/08/2010	-106.40941	67.65332	1
06/08/2010	-106.40942	67.65332	1
06/08/2010	-106.40941	67.65332	1
06/08/2010	-106.40941	67.65332	1
06/08/2010	-106.40940	67.65332	1
06/08/2010	-106.40939	67.65331	2
06/08/2010	-106.40935	67.65331	2
06/08/2010	-106.40933	67.65331	2
06/08/2010	-106.40930	67.65331	2
06/08/2010	-106.40928	67.65331	2
06/08/2010	-106.40925	67.65331	4
06/08/2010	-106.40922	67.65331	2
06/08/2010	-106.40916	67.65331	2
06/08/2010	-106.40913	67.65331	4
06/08/2010	-106.40910	67.65331	4
06/08/2010	-106.40907	67.65330	4
06/08/2010	-106.40901	67.65330	4
06/08/2010	-106.40898	67.65330	3
06/08/2010	-106.40895	67.65330	3
06/08/2010	-106.40891	67.65330	2
06/08/2010	-106.40885	67.65329	2
06/08/2010	-106.40881	67.65329	4
06/08/2010	-106.40878	67.65329	3
06/08/2010	-106.40875	67.65328	2
06/08/2010	-106.40868	67.65327	4
06/08/2010	-106.40865	67.65327	4
06/08/2010	-106.40862	67.65326	4
06/08/2010	-106.40859	67.65326	4
06/08/2010	-106.40856	67.65325	4
06/08/2010	-106.40850	67.65324	4
06/08/2010	-106.40847	67.65324	3
06/08/2010	-106.40844	67.65323	4
06/08/2010	-106.40841	67.65323	4
06/08/2010	-106.40838	67.65322	2
06/08/2010	-106.40832	67.65321	4
06/08/2010	-106.40829	67.65321	2
06/08/2010	-106.40826	67.65321	2
06/08/2010	-106.40823	67.65320	3
06/08/2010	-106.40820	67.65321	4
06/08/2010	-106.40817	67.65321	4
06/08/2010	-106.40810	67.65321	2
06/08/2010	-106.40807	67.65321	4
06/08/2010	-106.40804	67.65321	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40800	67.65322	2
06/08/2010	-106.40797	67.65322	2
06/08/2010	-106.40788	67.65322	2
06/08/2010	-106.40783	67.65322	2
06/08/2010	-106.40778	67.65322	2
06/08/2010	-106.40771	67.65321	2
06/08/2010	-106.40765	67.65320	1
06/08/2010	-106.40750	67.65319	2
06/08/2010	-106.40743	67.65318	2
06/08/2010	-106.40735	67.65318	2
06/08/2010	-106.40728	67.65317	2
06/08/2010	-106.40713	67.65316	2
06/08/2010	-106.40705	67.65316	2
06/08/2010	-106.40697	67.65315	4
06/08/2010	-106.40690	67.65315	0
06/08/2010	-106.40674	67.65314	2
06/08/2010	-106.40667	67.65313	4
06/08/2010	-106.40659	67.65313	2
06/08/2010	-106.40652	67.65312	2
06/08/2010	-106.40636	67.65312	2
06/08/2010	-106.40628	67.65311	2
06/08/2010	-106.40621	67.65311	2
06/08/2010	-106.40613	67.65311	2
06/08/2010	-106.40597	67.65310	2
06/08/2010	-106.40589	67.65310	1
06/08/2010	-106.40581	67.65310	1
06/08/2010	-106.40574	67.65310	2
06/08/2010	-106.40559	67.65310	2
06/08/2010	-106.40552	67.65310	2
06/08/2010	-106.40544	67.65310	2
06/08/2010	-106.40537	67.65310	2
06/08/2010	-106.40521	67.65310	2
06/08/2010	-106.40513	67.65310	2
06/08/2010	-106.40505	67.65310	2
06/08/2010	-106.40497	67.65310	2
06/08/2010	-106.40481	67.65310	3
06/08/2010	-106.40473	67.65310	2
06/08/2010	-106.40465	67.65310	3
06/08/2010	-106.40449	67.65310	2
06/08/2010	-106.40441	67.65310	3
06/08/2010	-106.40433	67.65310	4
06/08/2010	-106.40425	67.65311	4
06/08/2010	-106.40409	67.65311	2
06/08/2010	-106.40401	67.65311	2
06/08/2010	-106.40393	67.65311	4
06/08/2010	-106.40385	67.65311	2
06/08/2010	-106.40369	67.65310	0
06/08/2010	-106.40361	67.65310	2
06/08/2010	-106.40353	67.65310	2
06/08/2010	-106.40345	67.65310	1
06/08/2010	-106.40329	67.65310	1
06/08/2010	-106.40321	67.65310	1
06/08/2010	-106.40314	67.65309	2
06/08/2010	-106.40306	67.65309	2
06/08/2010	-106.40290	67.65309	1

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40282	67.65309	2
06/08/2010	-106.40274	67.65308	2
06/08/2010	-106.40259	67.65308	2
06/08/2010	-106.40251	67.65308	2
06/08/2010	-106.40243	67.65308	2
06/08/2010	-106.40235	67.65307	2
06/08/2010	-106.40220	67.65307	2
06/08/2010	-106.40211	67.65307	2
06/08/2010	-106.40203	67.65307	2
06/08/2010	-106.40195	67.65307	2
06/08/2010	-106.40179	67.65307	2
06/08/2010	-106.40171	67.65307	2
06/08/2010	-106.40163	67.65308	3
06/08/2010	-106.40147	67.65308	3
06/08/2010	-106.40139	67.65308	2
06/08/2010	-106.40131	67.65308	3
06/08/2010	-106.40124	67.65308	4
06/08/2010	-106.40107	67.65308	4
06/08/2010	-106.40099	67.65309	2
06/08/2010	-106.40091	67.65309	4
06/08/2010	-106.40083	67.65309	4
06/08/2010	-106.40067	67.65309	4
06/08/2010	-106.40059	67.65309	4
06/08/2010	-106.40052	67.65309	4
06/08/2010	-106.40044	67.65310	4
06/08/2010	-106.40028	67.65310	3
06/08/2010	-106.40021	67.65311	3
06/08/2010	-106.40013	67.65311	4
06/08/2010	-106.39998	67.65312	4
06/08/2010	-106.39990	67.65313	2
06/08/2010	-106.39982	67.65313	2
06/08/2010	-106.39975	67.65314	2
06/08/2010	-106.39960	67.65316	2
06/08/2010	-106.39953	67.65316	2
06/08/2010	-106.39945	67.65317	2
06/08/2010	-106.39938	67.65318	2
06/08/2010	-106.39922	67.65319	2
06/08/2010	-106.39915	67.65319	2
06/08/2010	-106.39907	67.65320	2
06/08/2010	-106.39899	67.65320	2
06/08/2010	-106.39884	67.65321	2
06/08/2010	-106.39876	67.65321	3
06/08/2010	-106.39868	67.65322	3
06/08/2010	-106.39853	67.65323	3
06/08/2010	-106.39845	67.65324	4
06/08/2010	-106.39837	67.65324	2
06/08/2010	-106.39829	67.65325	3
06/08/2010	-106.39814	67.65325	2
06/08/2010	-106.39806	67.65326	3
06/08/2010	-106.39798	67.65326	2
06/08/2010	-106.39782	67.65327	3
06/08/2010	-106.39774	67.65327	3
06/08/2010	-106.39767	67.65327	3
06/08/2010	-106.39759	67.65327	3
06/08/2010	-106.39743	67.65327	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39735	67.65327	4
06/08/2010	-106.39728	67.65327	4
06/08/2010	-106.39712	67.65328	3
06/08/2010	-106.39704	67.65328	2
06/08/2010	-106.39696	67.65328	4
06/08/2010	-106.39680	67.65328	3
06/08/2010	-106.39672	67.65327	3
06/08/2010	-106.39664	67.65327	3
06/08/2010	-106.39656	67.65328	2
06/08/2010	-106.39640	67.65328	2
06/08/2010	-106.39632	67.65327	4
06/08/2010	-106.39625	67.65327	2
06/08/2010	-106.39611	67.65328	2
06/08/2010	-106.39605	67.65328	3
06/08/2010	-106.39599	67.65328	2
06/08/2010	-106.39593	67.65328	2
06/08/2010	-106.39580	67.65328	3
06/08/2010	-106.39574	67.65328	2
06/08/2010	-106.39568	67.65328	3
06/08/2010	-106.39556	67.65328	3
06/08/2010	-106.39550	67.65328	3
06/08/2010	-106.39544	67.65328	2
06/08/2010	-106.39532	67.65328	3
06/08/2010	-106.39526	67.65329	3
06/08/2010	-106.39520	67.65329	2
06/08/2010	-106.39514	67.65329	3
06/08/2010	-106.39502	67.65329	2
06/08/2010	-106.39496	67.65329	2
06/08/2010	-106.39490	67.65329	3
06/08/2010	-106.39485	67.65328	2
06/08/2010	-106.39475	67.65328	2
06/08/2010	-106.39470	67.65328	3
06/08/2010	-106.39467	67.65328	2
06/08/2010	-106.39461	67.65328	3
06/08/2010	-106.39459	67.65327	2
06/08/2010	-106.39457	67.65327	3
06/08/2010	-106.39455	67.65327	3
06/08/2010	-106.39453	67.65326	2
06/08/2010	-106.39452	67.65325	2
06/08/2010	-106.39452	67.65324	3
06/08/2010	-106.39453	67.65323	3
06/08/2010	-106.39457	67.65320	2
06/08/2010	-106.39459	67.65318	2
06/08/2010	-106.39461	67.65316	3
06/08/2010	-106.39466	67.65312	2
06/08/2010	-106.39468	67.65310	2
06/08/2010	-106.39470	67.65308	2
06/08/2010	-106.39475	67.65303	2
06/08/2010	-106.39479	67.65301	3
06/08/2010	-106.39482	67.65299	3
06/08/2010	-106.39485	67.65297	3
06/08/2010	-106.39491	67.65293	2
06/08/2010	-106.39494	67.65291	2
06/08/2010	-106.39496	67.65289	3
06/08/2010	-106.39501	67.65285	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39504	67.65283	3
06/08/2010	-106.39507	67.65281	3
06/08/2010	-106.39510	67.65279	3
06/08/2010	-106.39516	67.65275	2
06/08/2010	-106.39518	67.65273	3
06/08/2010	-106.39520	67.65270	2
06/08/2010	-106.39523	67.65266	3
06/08/2010	-106.39523	67.65266	3
06/08/2010	-106.39527	67.65261	2
06/08/2010	-106.39529	67.65259	2
06/08/2010	-106.39533	67.65254	2
06/08/2010	-106.39535	67.65252	3
06/08/2010	-106.39537	67.65250	3
06/08/2010	-106.39539	67.65246	3
06/08/2010	-106.39541	67.65243	3
06/08/2010	-106.39543	67.65241	2
06/08/2010	-106.39546	67.65239	2
06/08/2010	-106.39552	67.65235	2
06/08/2010	-106.39554	67.65233	2
06/08/2010	-106.39557	67.65231	4
06/08/2010	-106.39559	67.65229	3
06/08/2010	-106.39565	67.65225	3
06/08/2010	-106.39568	67.65223	4
06/08/2010	-106.39574	67.65219	3
06/08/2010	-106.39577	67.65217	3
06/08/2010	-106.39579	67.65215	3
06/08/2010	-106.39582	67.65212	2
06/08/2010	-106.39586	67.65208	3
06/08/2010	-106.39589	67.65206	2
06/08/2010	-106.39592	67.65203	3
06/08/2010	-106.39597	67.65198	4
06/08/2010	-106.39599	67.65195	4
06/08/2010	-106.39601	67.65193	3
06/08/2010	-106.39605	67.65187	3
06/08/2010	-106.39608	67.65185	3
06/08/2010	-106.39610	67.65182	4
06/08/2010	-106.39612	67.65180	4
06/08/2010	-106.39618	67.65175	4
06/08/2010	-106.39621	67.65172	4
06/08/2010	-106.39624	67.65170	4
06/08/2010	-106.39628	67.65167	3
06/08/2010	-106.39630	67.65165	3
06/08/2010	-106.39631	67.65164	4
06/08/2010	-106.39635	67.65161	4
06/08/2010	-106.39637	67.65160	4
06/08/2010	-106.39640	67.65159	4
06/08/2010	-106.39642	67.65158	4
06/08/2010	-106.39648	67.65156	4
06/08/2010	-106.39650	67.65155	4
06/08/2010	-106.39653	67.65154	4
06/08/2010	-106.39658	67.65152	2
06/08/2010	-106.39660	67.65151	3
06/08/2010	-106.39663	67.65150	3
06/08/2010	-106.39669	67.65148	3
06/08/2010	-106.39672	67.65147	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39675	67.65146	3
06/08/2010	-106.39681	67.65145	4
06/08/2010	-106.39684	67.65144	3
06/08/2010	-106.39686	67.65143	2
06/08/2010	-106.39686	67.65143	3
06/08/2010	-106.39694	67.65140	3
06/08/2010	-106.39696	67.65139	3
06/08/2010	-106.39699	67.65138	2
06/08/2010	-106.39703	67.65136	3
06/08/2010	-106.39705	67.65134	3
06/08/2010	-106.39707	67.65133	3
06/08/2010	-106.39710	67.65131	3
06/08/2010	-106.39715	67.65128	3
06/08/2010	-106.39717	67.65126	2
06/08/2010	-106.39720	67.65124	3
06/08/2010	-106.39725	67.65121	2
06/08/2010	-106.39727	67.65119	2
06/08/2010	-106.39730	67.65117	4
06/08/2010	-106.39732	67.65115	2
06/08/2010	-106.39738	67.65111	3
06/08/2010	-106.39740	67.65110	3
06/08/2010	-106.39743	67.65108	3
06/08/2010	-106.39748	67.65104	2
06/08/2010	-106.39750	67.65102	4
06/08/2010	-106.39753	67.65100	3
06/08/2010	-106.39757	67.65096	4
06/08/2010	-106.39759	67.65095	3
06/08/2010	-106.39762	67.65093	4
06/08/2010	-106.39764	67.65091	3
06/08/2010	-106.39769	67.65087	4
06/08/2010	-106.39772	67.65085	3
06/08/2010	-106.39775	67.65083	3
06/08/2010	-106.39778	67.65080	3
06/08/2010	-106.39780	67.65078	4
06/08/2010	-106.39782	67.65076	3
06/08/2010	-106.39786	67.65072	3
06/08/2010	-106.39788	67.65070	3
06/08/2010	-106.39789	67.65068	3
06/08/2010	-106.39791	67.65066	3
06/08/2010	-106.39795	67.65062	4
06/08/2010	-106.39796	67.65060	4
06/08/2010	-106.39798	67.65058	4
06/08/2010	-106.39801	67.65054	3
06/08/2010	-106.39803	67.65052	3
06/08/2010	-106.39805	67.65050	3
06/08/2010	-106.39808	67.65046	4
06/08/2010	-106.39810	67.65044	4
06/08/2010	-106.39812	67.65042	3
06/08/2010	-106.39815	67.65040	4
06/08/2010	-106.39820	67.65036	4
06/08/2010	-106.39822	67.65035	4
06/08/2010	-106.39825	67.65033	4
06/08/2010	-106.39829	67.65029	4
06/08/2010	-106.39831	67.65027	4
06/08/2010	-106.39833	67.65025	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39838	67.65022	4
06/08/2010	-106.39840	67.65020	3
06/08/2010	-106.39843	67.65018	4
06/08/2010	-106.39850	67.65014	3
06/08/2010	-106.39853	67.65013	3
06/08/2010	-106.39857	67.65011	3
06/08/2010	-106.39861	67.65009	3
06/08/2010	-106.39867	67.65006	3
06/08/2010	-106.39870	67.65004	3
06/08/2010	-106.39874	67.65003	3
06/08/2010	-106.39880	67.64999	3
06/08/2010	-106.39884	67.64998	2
06/08/2010	-106.39887	67.64996	2
06/08/2010	-106.39890	67.64994	2
06/08/2010	-106.39896	67.64990	2
06/08/2010	-106.39899	67.64989	3
06/08/2010	-106.39903	67.64987	3
06/08/2010	-106.39912	67.64985	3
06/08/2010	-106.39916	67.64984	3
06/08/2010	-106.39920	67.64984	3
06/08/2010	-106.39926	67.64983	2
06/08/2010	-106.39936	67.64981	3
06/08/2010	-106.39941	67.64981	2
06/08/2010	-106.39946	67.64980	3
06/08/2010	-106.39956	67.64979	4
06/08/2010	-106.39962	67.64978	2
06/08/2010	-106.39967	67.64977	3
06/08/2010	-106.39972	67.64977	3
06/08/2010	-106.39983	67.64976	3
06/08/2010	-106.39988	67.64975	3
06/08/2010	-106.39993	67.64975	3
06/08/2010	-106.40004	67.64974	3
06/08/2010	-106.40010	67.64973	3
06/08/2010	-106.40015	67.64973	3
06/08/2010	-106.40026	67.64972	3
06/08/2010	-106.40031	67.64972	3
06/08/2010	-106.40037	67.64971	3
06/08/2010	-106.40042	67.64971	2
06/08/2010	-106.40052	67.64970	3
06/08/2010	-106.40058	67.64969	3
06/08/2010	-106.40065	67.64969	3
06/08/2010	-106.40079	67.64967	3
06/08/2010	-106.40086	67.64966	3
06/08/2010	-106.40094	67.64966	3
06/08/2010	-106.40101	67.64965	2
06/08/2010	-106.40115	67.64964	3
06/08/2010	-106.40123	67.64963	4
06/08/2010	-106.40130	67.64962	4
06/08/2010	-106.40145	67.64961	3
06/08/2010	-106.40153	67.64960	3
06/08/2010	-106.40161	67.64960	4
06/08/2010	-106.40176	67.64960	4
06/08/2010	-106.40184	67.64960	2
06/08/2010	-106.40191	67.64960	4
06/08/2010	-106.40199	67.64960	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40214	67.64960	4
06/08/2010	-106.40222	67.64959	4
06/08/2010	-106.40230	67.64959	3
06/08/2010	-106.40245	67.64959	3
06/08/2010	-106.40253	67.64959	2
06/08/2010	-106.40261	67.64959	2
06/08/2010	-106.40269	67.64959	2
06/08/2010	-106.40284	67.64959	2
06/08/2010	-106.40292	67.64959	2
06/08/2010	-106.40300	67.64959	2
06/08/2010	-106.40307	67.64960	2
06/08/2010	-106.40323	67.64960	2
06/08/2010	-106.40330	67.64960	2
06/08/2010	-106.40338	67.64960	2
06/08/2010	-106.40346	67.64960	2
06/08/2010	-106.40361	67.64959	2
06/08/2010	-106.40369	67.64959	2
06/08/2010	-106.40376	67.64959	2
06/08/2010	-106.40391	67.64958	2
06/08/2010	-106.40399	67.64958	1
06/08/2010	-106.40407	67.64958	2
06/08/2010	-106.40414	67.64958	2
06/08/2010	-106.40430	67.64959	2
06/08/2010	-106.40438	67.64958	2
06/08/2010	-106.40446	67.64959	2
06/08/2010	-106.40454	67.64958	2
06/08/2010	-106.40469	67.64958	2
06/08/2010	-106.40477	67.64958	2
06/08/2010	-106.40485	67.64958	2
06/08/2010	-106.40493	67.64958	2
06/08/2010	-106.40508	67.64958	2
06/08/2010	-106.40516	67.64958	1
06/08/2010	-106.40524	67.64958	2
06/08/2010	-106.40532	67.64958	2
06/08/2010	-106.40548	67.64957	2
06/08/2010	-106.40556	67.64957	2
06/08/2010	-106.40563	67.64958	2
06/08/2010	-106.40579	67.64958	2
06/08/2010	-106.40587	67.64958	2
06/08/2010	-106.40595	67.64958	1
06/08/2010	-106.40603	67.64958	2
06/08/2010	-106.40618	67.64958	1
06/08/2010	-106.40626	67.64958	1
06/08/2010	-106.40634	67.64958	2
06/08/2010	-106.40642	67.64958	1
06/08/2010	-106.40657	67.64959	1
06/08/2010	-106.40665	67.64959	1
06/08/2010	-106.40673	67.64959	1
06/08/2010	-106.40681	67.64959	2
06/08/2010	-106.40696	67.64959	1
06/08/2010	-106.40704	67.64959	2
06/08/2010	-106.40712	67.64960	1
06/08/2010	-106.40727	67.64960	2
06/08/2010	-106.40735	67.64960	2
06/08/2010	-106.40742	67.64960	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40750	67.64960	1
06/08/2010	-106.40765	67.64961	1
06/08/2010	-106.40773	67.64961	1
06/08/2010	-106.40781	67.64961	2
06/08/2010	-106.40789	67.64962	2
06/08/2010	-106.40804	67.64962	2
06/08/2010	-106.40812	67.64963	2
06/08/2010	-106.40820	67.64963	2
06/08/2010	-106.40835	67.64964	2
06/08/2010	-106.40843	67.64964	2
06/08/2010	-106.40850	67.64964	2
06/08/2010	-106.40858	67.64964	2
06/08/2010	-106.40874	67.64965	2
06/08/2010	-106.40882	67.64965	1
06/08/2010	-106.40889	67.64965	1
06/08/2010	-106.40897	67.64966	2
06/08/2010	-106.40910	67.64966	2
06/08/2010	-106.40917	67.64966	1
06/08/2010	-106.40923	67.64967	2
06/08/2010	-106.40928	67.64967	2
06/08/2010	-106.40937	67.64968	2
06/08/2010	-106.40942	67.64969	1
06/08/2010	-106.40947	67.64969	1
06/08/2010	-106.40952	67.64970	1
06/08/2010	-106.40962	67.64971	2
06/08/2010	-106.40967	67.64971	2
06/08/2010	-106.40971	67.64972	2
06/08/2010	-106.40978	67.64973	4
06/08/2010	-106.40982	67.64973	4
06/08/2010	-106.40985	67.64974	4
06/08/2010	-106.40988	67.64974	4
06/08/2010	-106.40993	67.64975	3
06/08/2010	-106.40996	67.64976	3
06/08/2010	-106.40998	67.64977	4
06/08/2010	-106.41002	67.64978	4
06/08/2010	-106.41004	67.64979	4
06/08/2010	-106.41005	67.64979	4
06/08/2010	-106.41008	67.64980	4
06/08/2010	-106.41009	67.64980	4
06/08/2010	-106.41009	67.64980	4
06/08/2010	-106.41009	67.64980	4
06/08/2010	-106.41006	67.64980	4
06/08/2010	-106.41005	67.64979	4
06/08/2010	-106.41003	67.64979	4
06/08/2010	-106.41001	67.64978	4
06/08/2010	-106.40995	67.64976	3
06/08/2010	-106.40993	67.64975	4
06/08/2010	-106.40989	67.64974	3
06/08/2010	-106.40982	67.64971	4
06/08/2010	-106.40978	67.64969	4
06/08/2010	-106.40975	67.64967	4
06/08/2010	-106.40972	67.64964	2
06/08/2010	-106.40968	67.64960	1
06/08/2010	-106.40967	67.64957	2
06/08/2010	-106.40966	67.64954	1

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40964	67.64952	1
06/08/2010	-106.40966	67.64947	2
06/08/2010	-106.40968	67.64945	3
06/08/2010	-106.40972	67.64943	2
06/08/2010	-106.40975	67.64941	1
06/08/2010	-106.40982	67.64937	3
06/08/2010	-106.40985	67.64935	2
06/08/2010	-106.40989	67.64933	2
06/08/2010	-106.40996	67.64928	2
06/08/2010	-106.41000	67.64926	2
06/08/2010	-106.41004	67.64924	4
06/08/2010	-106.41008	67.64922	3
06/08/2010	-106.41016	67.64919	3
06/08/2010	-106.41020	67.64917	2
06/08/2010	-106.41024	67.64915	3
06/08/2010	-106.41028	67.64913	4
06/08/2010	-106.41037	67.64910	2
06/08/2010	-106.41041	67.64908	2
06/08/2010	-106.41046	67.64906	2
06/08/2010	-106.41051	67.64904	2
06/08/2010	-106.41059	67.64901	2
06/08/2010	-106.41064	67.64899	3
06/08/2010	-106.41068	67.64897	2
06/08/2010	-106.41076	67.64894	2
06/08/2010	-106.41081	67.64892	3
06/08/2010	-106.41085	67.64890	4
06/08/2010	-106.41089	67.64888	2
06/08/2010	-106.41098	67.64884	2
06/08/2010	-106.41101	67.64883	4
06/08/2010	-106.41105	67.64881	2
06/08/2010	-106.41109	67.64878	3
06/08/2010	-106.41116	67.64875	4
06/08/2010	-106.41120	67.64872	2
06/08/2010	-106.41123	67.64870	3
06/08/2010	-106.41126	67.64868	2
06/08/2010	-106.41132	67.64864	1
06/08/2010	-106.41134	67.64862	1
06/08/2010	-106.41137	67.64859	2
06/08/2010	-106.41139	67.64857	2
06/08/2010	-106.41144	67.64852	2
06/08/2010	-106.41146	67.64850	4
06/08/2010	-106.41148	67.64848	2
06/08/2010	-106.41151	67.64845	2
06/08/2010	-106.41155	67.64840	1
06/08/2010	-106.41156	67.64838	3
06/08/2010	-106.41157	67.64836	4
06/08/2010	-106.41157	67.64835	4
06/08/2010	-106.41160	67.64831	2
06/08/2010	-106.41164	67.64830	2
06/08/2010	-106.41169	67.64829	2
06/08/2010	-106.41174	67.64828	1
06/08/2010	-106.41185	67.64827	2
06/08/2010	-106.41191	67.64825	2
06/08/2010	-106.41196	67.64824	1
06/08/2010	-106.41201	67.64823	1
06/08/2010	-106.41210	67.64822	1
06/08/2010	-106.41215	67.64821	1
06/08/2010	-106.41219	67.64821	2
06/08/2010	-106.41224	67.64820	2
06/08/2010	-106.41234	67.64819	2
06/08/2010	-106.41239	67.64818	2
06/08/2010	-106.41244	67.64818	4
06/08/2010	-106.41249	67.64817	2
06/08/2010	-106.41259	67.64817	2
06/08/2010	-106.41264	67.64816	3
06/08/2010	-106.41269	67.64816	2
06/08/2010	-106.41273	67.64815	2
06/08/2010	-106.41274	67.64814	2
06/08/2010	-106.41273	67.64814	4
06/08/2010	-106.41271	67.64813	2
06/08/2010	-106.41268	67.64813	2
06/08/2010	-106.41260	67.64812	2
06/08/2010	-106.41254	67.64812	2
06/08/2010	-106.41248	67.64812	2
06/08/2010	-106.41234	67.64812	2
06/08/2010	-106.41227	67.64812	2
06/08/2010	-106.41220	67.64812	2
06/08/2010	-106.41213	67.64812	2
06/08/2010	-106.41197	67.64811	2
06/08/2010	-106.41189	67.64811	1
06/08/2010	-106.41181	67.64811	2
06/08/2010	-106.41173	67.64811	3
06/08/2010	-106.41158	67.64810	2
06/08/2010	-106.41150	67.64810	1
06/08/2010	-106.41142	67.64809	1
06/08/2010	-106.41135	67.64809	1
06/08/2010	-106.41119	67.64808	2
06/08/2010	-106.41111	67.64808	1
06/08/2010	-106.41103	67.64808	2
06/08/2010	-106.41095	67.64808	2
06/08/2010	-106.41080	67.64807	2
06/08/2010	-106.41072	67.64807	2
06/08/2010	-106.41064	67.64806	2
06/08/2010	-106.41056	67.64806	2
06/08/2010	-106.41041	67.64805	1
06/08/2010	-106.41033	67.64805	2
06/08/2010	-106.41025	67.64805	2
06/08/2010	-106.41017	67.64804	2
06/08/2010	-106.41002	67.64803	2
06/08/2010	-106.40994	67.64803	2
06/08/2010	-106.40986	67.64802	2
06/08/2010	-106.40979	67.64802	1
06/08/2010	-106.40964	67.64801	1
06/08/2010	-106.40956	67.64800	2
06/08/2010	-106.40948	67.64800	1
06/08/2010	-106.40941	67.64799	1
06/08/2010	-106.40925	67.64799	1
06/08/2010	-106.40917	67.64798	1
06/08/2010	-106.40909	67.64798	2
06/08/2010	-106.40894	67.64798	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40886	67.64797	2
06/08/2010	-106.40878	67.64797	2
06/08/2010	-106.40870	67.64797	2
06/08/2010	-106.40855	67.64797	2
06/08/2010	-106.40847	67.64797	2
06/08/2010	-106.40839	67.64797	2
06/08/2010	-106.40831	67.64797	2
06/08/2010	-106.40816	67.64798	2
06/08/2010	-106.40808	67.64798	2
06/08/2010	-106.40800	67.64798	2
06/08/2010	-106.40793	67.64798	2
06/08/2010	-106.40777	67.64799	2
06/08/2010	-106.40769	67.64799	1
06/08/2010	-106.40762	67.64799	2
06/08/2010	-106.40754	67.64799	2
06/08/2010	-106.40738	67.64799	2
06/08/2010	-106.40730	67.64799	2
06/08/2010	-106.40723	67.64799	2
06/08/2010	-106.40715	67.64799	2
06/08/2010	-106.40699	67.64799	2
06/08/2010	-106.40691	67.64799	2
06/08/2010	-106.40684	67.64799	2
06/08/2010	-106.40668	67.64799	2
06/08/2010	-106.40660	67.64799	2
06/08/2010	-106.40652	67.64799	2
06/08/2010	-106.40645	67.64798	2
06/08/2010	-106.40629	67.64798	2
06/08/2010	-106.40621	67.64798	2
06/08/2010	-106.40614	67.64798	2
06/08/2010	-106.40606	67.64797	3
06/08/2010	-106.40590	67.64797	2
06/08/2010	-106.40582	67.64797	2
06/08/2010	-106.40575	67.64797	1
06/08/2010	-106.40567	67.64796	2
06/08/2010	-106.40551	67.64796	2
06/08/2010	-106.40544	67.64795	2
06/08/2010	-106.40536	67.64795	2
06/08/2010	-106.40521	67.64794	2
06/08/2010	-106.40513	67.64794	2
06/08/2010	-106.40506	67.64793	2
06/08/2010	-106.40498	67.64793	3
06/08/2010	-106.40483	67.64793	3
06/08/2010	-106.40475	67.64793	4
06/08/2010	-106.40468	67.64793	3
06/08/2010	-106.40460	67.64792	3
06/08/2010	-106.40444	67.64792	2
06/08/2010	-106.40438	67.64792	2
06/08/2010	-106.40432	67.64792	3
06/08/2010	-106.40421	67.64792	3
06/08/2010	-106.40416	67.64792	2
06/08/2010	-106.40410	67.64792	2
06/08/2010	-106.40404	67.64792	2
06/08/2010	-106.40393	67.64792	3
06/08/2010	-106.40386	67.64792	3
06/08/2010	-106.40380	67.64792	3
06/08/2010	-106.40368	67.64792	2
06/08/2010	-106.40362	67.64791	2
06/08/2010	-106.40356	67.64791	2
06/08/2010	-106.40351	67.64791	2
06/08/2010	-106.40340	67.64789	2
06/08/2010	-106.40335	67.64788	2
06/08/2010	-106.40330	67.64787	2
06/08/2010	-106.40320	67.64785	2
06/08/2010	-106.40316	67.64784	3
06/08/2010	-106.40312	67.64783	3
06/08/2010	-106.40305	67.64779	4
06/08/2010	-106.40300	67.64777	4
06/08/2010	-106.40296	67.64775	4
06/08/2010	-106.40290	67.64771	3
06/08/2010	-106.40289	67.64768	4
06/08/2010	-106.40288	67.64766	3
06/08/2010	-106.40290	67.64763	3
06/08/2010	-106.40297	67.64760	3
06/08/2010	-106.40300	67.64759	2
06/08/2010	-106.40302	67.64758	4
06/08/2010	-106.40307	67.64758	2
06/08/2010	-106.40309	67.64757	3
06/08/2010	-106.40311	67.64757	2
06/08/2010	-106.40312	67.64757	2
06/08/2010	-106.40313	67.64756	2
06/08/2010	-106.40313	67.64755	3
06/08/2010	-106.40312	67.64755	2
06/08/2010	-106.40310	67.64753	2
06/08/2010	-106.40308	67.64753	3
06/08/2010	-106.40307	67.64752	3
06/08/2010	-106.40306	67.64751	3
06/08/2010	-106.40303	67.64748	2
06/08/2010	-106.40302	67.64747	3
06/08/2010	-106.40301	67.64745	3
06/08/2010	-106.40298	67.64742	4
06/08/2010	-106.40296	67.64740	2
06/08/2010	-106.40295	67.64738	3
06/08/2010	-106.40292	67.64734	2
06/08/2010	-106.40291	67.64732	3
06/08/2010	-106.40290	67.64730	3
06/08/2010	-106.40289	67.64729	3
06/08/2010	-106.40286	67.64725	3
06/08/2010	-106.40285	67.64723	2
06/08/2010	-106.40283	67.64721	3
06/08/2010	-106.40282	67.64719	3
06/08/2010	-106.40279	67.64715	4
06/08/2010	-106.40278	67.64714	2
06/08/2010	-106.40277	67.64712	3
06/08/2010	-106.40274	67.64708	3
06/08/2010	-106.40272	67.64706	4
06/08/2010	-106.40271	67.64704	2
06/08/2010	-106.40269	67.64702	2
06/08/2010	-106.40266	67.64698	2
06/08/2010	-106.40265	67.64696	4
06/08/2010	-106.40263	67.64694	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40261	67.64692	3
06/08/2010	-106.40259	67.64689	4
06/08/2010	-106.40257	67.64687	2
06/08/2010	-106.40256	67.64685	3
06/08/2010	-106.40254	67.64681	3
06/08/2010	-106.40253	67.64679	2
06/08/2010	-106.40252	67.64677	2
06/08/2010	-106.40251	67.64675	2
06/08/2010	-106.40248	67.64671	3
06/08/2010	-106.40247	67.64669	2
06/08/2010	-106.40247	67.64667	4
06/08/2010	-106.40247	67.64665	2
06/08/2010	-106.40246	67.64661	2
06/08/2010	-106.40245	67.64659	2
06/08/2010	-106.40244	67.64656	4
06/08/2010	-106.40242	67.64653	3
06/08/2010	-106.40241	67.64651	4
06/08/2010	-106.40239	67.64649	3
06/08/2010	-106.40238	67.64647	3
06/08/2010	-106.40236	67.64644	2
06/08/2010	-106.40234	67.64643	2
06/08/2010	-106.40232	67.64642	2
06/08/2010	-106.40226	67.64642	2
06/08/2010	-106.40222	67.64641	2
06/08/2010	-106.40218	67.64642	2
06/08/2010	-106.40213	67.64642	3
06/08/2010	-106.40204	67.64642	2
06/08/2010	-106.40199	67.64641	2
06/08/2010	-106.40195	67.64641	2
06/08/2010	-106.40190	67.64641	2
06/08/2010	-106.40181	67.64640	4
06/08/2010	-106.40176	67.64640	2
06/08/2010	-106.40172	67.64639	4
06/08/2010	-106.40167	67.64639	2
06/08/2010	-106.40158	67.64638	3
06/08/2010	-106.40153	67.64637	3
06/08/2010	-106.40149	67.64637	2
06/08/2010	-106.40139	67.64636	4
06/08/2010	-106.40135	67.64636	3
06/08/2010	-106.40130	67.64635	2
06/08/2010	-106.40126	67.64635	2
06/08/2010	-106.40117	67.64634	2
06/08/2010	-106.40113	67.64633	2
06/08/2010	-106.40108	67.64633	2
06/08/2010	-106.40104	67.64633	2
06/08/2010	-106.40099	67.64632	3
06/08/2010	-106.40090	67.64631	2
06/08/2010	-106.40086	67.64630	2
06/08/2010	-106.40077	67.64630	2
06/08/2010	-106.40073	67.64629	2
06/08/2010	-106.40068	67.64629	2
06/08/2010	-106.40063	67.64628	3
06/08/2010	-106.40054	67.64627	2
06/08/2010	-106.40049	67.64627	2
06/08/2010	-106.40044	67.64627	3

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40035	67.64626	3
06/08/2010	-106.40031	67.64626	2
06/08/2010	-106.40026	67.64625	2
06/08/2010	-106.40022	67.64625	3
06/08/2010	-106.40013	67.64624	2
06/08/2010	-106.40008	67.64624	4
06/08/2010	-106.40004	67.64623	3
06/08/2010	-106.39999	67.64623	4
06/08/2010	-106.39990	67.64622	4
06/08/2010	-106.39986	67.64622	3
06/08/2010	-106.39982	67.64621	3
06/08/2010	-106.39977	67.64622	3
06/08/2010	-106.39975	67.64622	4
06/08/2010	-106.39975	67.64622	3
06/08/2010	-106.39973	67.64622	4
06/08/2010	-106.39972	67.64622	3
06/08/2010	-106.39971	67.64623	3
06/08/2010	-106.39969	67.64623	4
06/08/2010	-106.39969	67.64624	3
06/08/2010	-106.39969	67.64624	4
06/08/2010	-106.39969	67.64624	3
06/08/2010	-106.39971	67.64624	4
06/08/2010	-106.39972	67.64624	4
06/08/2010	-106.39973	67.64624	3
06/08/2010	-106.39976	67.64623	3
06/08/2010	-106.39978	67.64623	4
06/08/2010	-106.39980	67.64623	4
06/08/2010	-106.39983	67.64622	3
06/08/2010	-106.39985	67.64622	3
06/08/2010	-106.39987	67.64622	4
06/08/2010	-106.39989	67.64621	3
06/08/2010	-106.39993	67.64620	3
06/08/2010	-106.39995	67.64620	3
06/08/2010	-106.39997	67.64620	3
06/08/2010	-106.40002	67.64620	3
06/08/2010	-106.40004	67.64620	4
06/08/2010	-106.40006	67.64620	3
06/08/2010	-106.40012	67.64620	3
06/08/2010	-106.40015	67.64620	3
06/08/2010	-106.40018	67.64620	3
06/08/2010	-106.40022	67.64620	3
06/08/2010	-106.40031	67.64620	2
06/08/2010	-106.40036	67.64620	2
06/08/2010	-106.40041	67.64620	2
06/08/2010	-106.40047	67.64620	2
06/08/2010	-106.40059	67.64620	4
06/08/2010	-106.40065	67.64619	3
06/08/2010	-106.40072	67.64619	2
06/08/2010	-106.40084	67.64619	3
06/08/2010	-106.40090	67.64619	3
06/08/2010	-106.40096	67.64619	2
06/08/2010	-106.40108	67.64619	2
06/08/2010	-106.40114	67.64619	2
06/08/2010	-106.40120	67.64619	3
06/08/2010	-106.40126	67.64620	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40138	67.64620	2
06/08/2010	-106.40144	67.64621	2
06/08/2010	-106.40149	67.64621	2
06/08/2010	-106.40155	67.64621	2
06/08/2010	-106.40167	67.64621	2
06/08/2010	-106.40173	67.64622	2
06/08/2010	-106.40179	67.64621	2
06/08/2010	-106.40192	67.64622	2
06/08/2010	-106.40198	67.64622	1
06/08/2010	-106.40203	67.64622	2
06/08/2010	-106.40208	67.64622	3
06/08/2010	-106.40218	67.64622	2
06/08/2010	-106.40223	67.64623	2
06/08/2010	-106.40228	67.64623	2
06/08/2010	-106.40232	67.64623	2
06/08/2010	-106.40241	67.64623	2
06/08/2010	-106.40246	67.64623	2
06/08/2010	-106.40250	67.64623	2
06/08/2010	-106.40255	67.64623	2
06/08/2010	-106.40269	67.64623	2
06/08/2010	-106.40274	67.64623	2
06/08/2010	-106.40279	67.64622	3
06/08/2010	-106.40289	67.64622	2
06/08/2010	-106.40294	67.64621	2
06/08/2010	-106.40299	67.64621	2
06/08/2010	-106.40304	67.64620	2
06/08/2010	-106.40314	67.64620	2
06/08/2010	-106.40319	67.64620	3
06/08/2010	-106.40324	67.64620	2
06/08/2010	-106.40329	67.64619	3
06/08/2010	-106.40339	67.64619	2
06/08/2010	-106.40344	67.64619	2
06/08/2010	-106.40348	67.64619	2
06/08/2010	-106.40358	67.64618	2
06/08/2010	-106.40362	67.64618	2
06/08/2010	-106.40367	67.64618	2
06/08/2010	-106.40372	67.64617	2
06/08/2010	-106.40382	67.64617	2
06/08/2010	-106.40387	67.64617	2
06/08/2010	-106.40392	67.64616	2
06/08/2010	-106.40397	67.64616	2
06/08/2010	-106.40407	67.64616	2
06/08/2010	-106.40411	67.64616	2
06/08/2010	-106.40416	67.64615	2
06/08/2010	-106.40426	67.64615	3
06/08/2010	-106.40431	67.64615	3
06/08/2010	-106.40436	67.64615	4
06/08/2010	-106.40440	67.64615	3
06/08/2010	-106.40449	67.64615	3
06/08/2010	-106.40454	67.64615	4
06/08/2010	-106.40459	67.64615	2
06/08/2010	-106.40468	67.64615	2
06/08/2010	-106.40472	67.64615	2
06/08/2010	-106.40477	67.64615	2
06/08/2010	-106.40481	67.64615	2
06/08/2010	-106.40490	67.64615	2
06/08/2010	-106.40495	67.64615	2
06/08/2010	-106.40500	67.64615	2
06/08/2010	-106.40504	67.64615	1
06/08/2010	-106.40513	67.64615	2
06/08/2010	-106.40518	67.64615	2
06/08/2010	-106.40522	67.64615	2
06/08/2010	-106.40527	67.64615	2
06/08/2010	-106.40536	67.64615	2
06/08/2010	-106.40541	67.64615	2
06/08/2010	-106.40545	67.64616	2
06/08/2010	-106.40550	67.64616	2
06/08/2010	-106.40559	67.64616	2
06/08/2010	-106.40564	67.64616	2
06/08/2010	-106.40568	67.64617	2
06/08/2010	-106.40573	67.64617	2
06/08/2010	-106.40583	67.64617	2
06/08/2010	-106.40588	67.64617	1
06/08/2010	-106.40593	67.64617	1
06/08/2010	-106.40597	67.64617	2
06/08/2010	-106.40607	67.64618	2
06/08/2010	-106.40612	67.64618	2
06/08/2010	-106.40616	67.64618	2
06/08/2010	-106.40626	67.64618	2
06/08/2010	-106.40631	67.64618	2
06/08/2010	-106.40636	67.64618	2
06/08/2010	-106.40641	67.64618	2
06/08/2010	-106.40650	67.64618	2
06/08/2010	-106.40655	67.64618	2
06/08/2010	-106.40661	67.64618	2
06/08/2010	-106.40668	67.64618	2
06/08/2010	-106.40683	67.64617	2
06/08/2010	-106.40690	67.64617	2
06/08/2010	-106.40697	67.64617	2
06/08/2010	-106.40704	67.64616	1
06/08/2010	-106.40719	67.64616	2
06/08/2010	-106.40726	67.64616	2
06/08/2010	-106.40734	67.64616	2
06/08/2010	-106.40749	67.64616	2
06/08/2010	-106.40756	67.64616	2
06/08/2010	-106.40763	67.64616	2
06/08/2010	-106.40771	67.64616	4
06/08/2010	-106.40785	67.64617	2
06/08/2010	-106.40793	67.64617	2
06/08/2010	-106.40800	67.64617	2
06/08/2010	-106.40807	67.64618	2
06/08/2010	-106.40821	67.64618	2
06/08/2010	-106.40829	67.64619	2
06/08/2010	-106.40836	67.64619	2
06/08/2010	-106.40843	67.64619	2
06/08/2010	-106.40858	67.64619	2
06/08/2010	-106.40865	67.64619	2
06/08/2010	-106.40873	67.64619	2
06/08/2010	-106.40887	67.64619	2
06/08/2010	-106.40895	67.64619	1

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40902	67.64619	1
06/08/2010	-106.40910	67.64619	1
06/08/2010	-106.40924	67.64619	1
06/08/2010	-106.40932	67.64619	1
06/08/2010	-106.40939	67.64619	1
06/08/2010	-106.40947	67.64619	1
06/08/2010	-106.40961	67.64620	1
06/08/2010	-106.40968	67.64620	1
06/08/2010	-106.40976	67.64620	2
06/08/2010	-106.40983	67.64620	2
06/08/2010	-106.40998	67.64620	2
06/08/2010	-106.41005	67.64620	2
06/08/2010	-106.41013	67.64620	2
06/08/2010	-106.41027	67.64620	2
06/08/2010	-106.41035	67.64620	2
06/08/2010	-106.41042	67.64620	2
06/08/2010	-106.41050	67.64620	2
06/08/2010	-106.41063	67.64620	2
06/08/2010	-106.41068	67.64620	2
06/08/2010	-106.41074	67.64620	2
06/08/2010	-106.41079	67.64620	2
06/08/2010	-106.41089	67.64621	2
06/08/2010	-106.41094	67.64622	3
06/08/2010	-106.41099	67.64622	4
06/08/2010	-106.41104	67.64622	3
06/08/2010	-106.41114	67.64623	3
06/08/2010	-106.41119	67.64623	3
06/08/2010	-106.41124	67.64623	4
06/08/2010	-106.41134	67.64623	3
06/08/2010	-106.41140	67.64623	4
06/08/2010	-106.41145	67.64623	4
06/08/2010	-106.41150	67.64622	3
06/08/2010	-106.41161	67.64622	3
06/08/2010	-106.41166	67.64622	4
06/08/2010	-106.41170	67.64622	3
06/08/2010	-106.41179	67.64621	3
06/08/2010	-106.41183	67.64621	3
06/08/2010	-106.41187	67.64621	3
06/08/2010	-106.41191	67.64621	4
06/08/2010	-106.41198	67.64621	4
06/08/2010	-106.41202	67.64621	4
06/08/2010	-106.41205	67.64621	4
06/08/2010	-106.41166	67.64636	4
06/08/2010	-106.41161	67.64636	4
06/08/2010	-106.41156	67.64637	3
06/08/2010	-106.41144	67.64638	4
06/08/2010	-106.41139	67.64638	4
06/08/2010	-106.41133	67.64638	4
06/08/2010	-106.41128	67.64638	4
06/08/2010	-106.41116	67.64638	4
06/08/2010	-106.41110	67.64638	4
06/08/2010	-106.41105	67.64637	3
06/08/2010	-106.41094	67.64636	3
06/08/2010	-106.41089	67.64635	3
06/08/2010	-106.41084	67.64635	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41079	67.64633	2
06/08/2010	-106.41071	67.64631	2
06/08/2010	-106.41067	67.64630	2
06/08/2010	-106.41062	67.64629	2
06/08/2010	-106.41058	67.64628	2
06/08/2010	-106.41050	67.64625	2
06/08/2010	-106.41047	67.64624	3
06/08/2010	-106.41043	67.64622	2
06/08/2010	-106.41039	67.64621	2
06/08/2010	-106.41031	67.64618	2
06/08/2010	-106.41027	67.64617	2
06/08/2010	-106.41023	67.64615	2
06/08/2010	-106.41019	67.64614	3
06/08/2010	-106.41013	67.64611	3
06/08/2010	-106.41009	67.64609	2
06/08/2010	-106.41006	67.64607	2
06/08/2010	-106.41002	67.64605	2
06/08/2010	-106.40999	67.64602	2
06/08/2010	-106.40993	67.64598	2
06/08/2010	-106.40990	67.64595	2
06/08/2010	-106.40987	67.64592	2
06/08/2010	-106.40985	67.64590	2
06/08/2010	-106.40979	67.64585	2
06/08/2010	-106.40977	67.64582	2
06/08/2010	-106.40975	67.64579	2
06/08/2010	-106.40973	67.64577	1
06/08/2010	-106.40970	67.64571	2
06/08/2010	-106.40969	67.64569	2
06/08/2010	-106.40969	67.64566	2
06/08/2010	-106.40971	67.64564	3
06/08/2010	-106.40975	67.64559	2
06/08/2010	-106.40977	67.64556	2
06/08/2010	-106.40980	67.64554	2
06/08/2010	-106.40982	67.64552	2
06/08/2010	-106.40988	67.64547	1
06/08/2010	-106.40990	67.64545	2
06/08/2010	-106.40993	67.64543	2
06/08/2010	-106.40996	67.64541	2
06/08/2010	-106.41003	67.64538	2
06/08/2010	-106.41006	67.64536	2
06/08/2010	-106.41010	67.64534	2
06/08/2010	-106.41014	67.64533	2
06/08/2010	-106.41022	67.64530	2
06/08/2010	-106.41026	67.64528	2
06/08/2010	-106.41030	67.64527	2
06/08/2010	-106.41034	67.64526	2
06/08/2010	-106.41043	67.64523	3
06/08/2010	-106.41047	67.64522	2
06/08/2010	-106.41051	67.64521	2
06/08/2010	-106.41059	67.64520	3
06/08/2010	-106.41063	67.64519	3
06/08/2010	-106.41067	67.64518	2
06/08/2010	-106.41070	67.64518	2
06/08/2010	-106.41076	67.64517	3
06/08/2010	-106.41079	67.64517	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41081	67.64516	3
06/08/2010	-106.41084	67.64515	3
06/08/2010	-106.41085	67.64514	3
06/08/2010	-106.41085	67.64514	3
06/08/2010	-106.41084	67.64514	3
06/08/2010	-106.41083	67.64514	4
06/08/2010	-106.41082	67.64514	3
06/08/2010	-106.41080	67.64514	3
06/08/2010	-106.41076	67.64514	4
06/08/2010	-106.41073	67.64513	3
06/08/2010	-106.41069	67.64513	2
06/08/2010	-106.41064	67.64513	4
06/08/2010	-106.41055	67.64512	4
06/08/2010	-106.41049	67.64512	3
06/08/2010	-106.41043	67.64511	2
06/08/2010	-106.41031	67.64509	2
06/08/2010	-106.41024	67.64507	3
06/08/2010	-106.41018	67.64506	2
06/08/2010	-106.41012	67.64504	2
06/08/2010	-106.41000	67.64501	2
06/08/2010	-106.40994	67.64500	2
06/08/2010	-106.40988	67.64498	2
06/08/2010	-106.40981	67.64497	2
06/08/2010	-106.40968	67.64495	2
06/08/2010	-106.40961	67.64494	2
06/08/2010	-106.40954	67.64493	2
06/08/2010	-106.40947	67.64492	2
06/08/2010	-106.40940	67.64490	1
06/08/2010	-106.40927	67.64488	2
06/08/2010	-106.40920	67.64487	1
06/08/2010	-106.40913	67.64486	1
06/08/2010	-106.40906	67.64485	2
06/08/2010	-106.40891	67.64484	1
06/08/2010	-106.40884	67.64484	2
06/08/2010	-106.40877	67.64483	1
06/08/2010	-106.40869	67.64482	2
06/08/2010	-106.40854	67.64481	1
06/08/2010	-106.40846	67.64481	1
06/08/2010	-106.40838	67.64480	1
06/08/2010	-106.40830	67.64480	1
06/08/2010	-106.40814	67.64480	1
06/08/2010	-106.40807	67.64479	2
06/08/2010	-106.40799	67.64479	2
06/08/2010	-106.40783	67.64478	2
06/08/2010	-106.40775	67.64478	2
06/08/2010	-106.40767	67.64478	2
06/08/2010	-106.40759	67.64477	2
06/08/2010	-106.40743	67.64477	2
06/08/2010	-106.40735	67.64477	2
06/08/2010	-106.40727	67.64477	2
06/08/2010	-106.40720	67.64476	2
06/08/2010	-106.40704	67.64476	2
06/08/2010	-106.40696	67.64476	2
06/08/2010	-106.40688	67.64476	2
06/08/2010	-106.40680	67.64476	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40664	67.64476	2
06/08/2010	-106.40656	67.64475	2
06/08/2010	-106.40648	67.64475	2
06/08/2010	-106.40640	67.64475	2
06/08/2010	-106.40625	67.64475	2
06/08/2010	-106.40617	67.64475	1
06/08/2010	-106.40609	67.64475	2
06/08/2010	-106.40593	67.64474	2
06/08/2010	-106.40585	67.64474	2
06/08/2010	-106.40577	67.64474	2
06/08/2010	-106.40569	67.64474	2
06/08/2010	-106.40553	67.64473	1
06/08/2010	-106.40545	67.64473	2
06/08/2010	-106.40537	67.64473	2
06/08/2010	-106.40529	67.64472	2
06/08/2010	-106.40512	67.64472	2
06/08/2010	-106.40504	67.64472	2
06/08/2010	-106.40496	67.64471	2
06/08/2010	-106.40481	67.64470	2
06/08/2010	-106.40473	67.64470	2
06/08/2010	-106.40465	67.64470	2
06/08/2010	-106.40457	67.64469	2
06/08/2010	-106.40442	67.64469	1
06/08/2010	-106.40434	67.64469	1
06/08/2010	-106.40426	67.64469	1
06/08/2010	-106.40418	67.64468	2
06/08/2010	-106.40403	67.64468	2
06/08/2010	-106.40395	67.64467	2
06/08/2010	-106.40387	67.64467	3
06/08/2010	-106.40379	67.64467	4
06/08/2010	-106.40363	67.64467	4
06/08/2010	-106.40356	67.64467	3
06/08/2010	-106.40349	67.64467	3
06/08/2010	-106.40337	67.64468	4
06/08/2010	-106.40332	67.64468	4
06/08/2010	-106.40326	67.64468	3
06/08/2010	-106.40315	67.64469	3
06/08/2010	-106.40309	67.64469	3
06/08/2010	-106.40303	67.64469	3
06/08/2010	-106.40298	67.64470	3
06/08/2010	-106.40286	67.64470	2
06/08/2010	-106.40280	67.64471	2
06/08/2010	-106.40274	67.64471	3
06/08/2010	-106.40263	67.64471	2
06/08/2010	-106.40257	67.64471	2
06/08/2010	-106.40253	67.64472	2
06/08/2010	-106.40248	67.64472	3
06/08/2010	-106.40239	67.64472	4
06/08/2010	-106.40235	67.64472	3
06/08/2010	-106.40231	67.64473	3
06/08/2010	-106.40222	67.64473	3
06/08/2010	-106.40217	67.64474	3
06/08/2010	-106.40213	67.64474	3
06/08/2010	-106.40205	67.64474	3
06/08/2010	-106.40200	67.64475	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40196	67.64475	3
06/08/2010	-106.40192	67.64476	3
06/08/2010	-106.40183	67.64476	3
06/08/2010	-106.40180	67.64477	3
06/08/2010	-106.40177	67.64478	4
06/08/2010	-106.40176	67.64478	4
06/08/2010	-106.40175	67.64478	3
06/08/2010	-106.40175	67.64479	4
06/08/2010	-106.40175	67.64480	4
06/08/2010	-106.40175	67.64481	4
06/08/2010	-106.40176	67.64481	4
06/08/2010	-106.40177	67.64481	4
06/08/2010	-106.40181	67.64481	4
06/08/2010	-106.40286	67.64419	4
06/08/2010	-106.40289	67.64419	4
06/08/2010	-106.40296	67.64418	3
06/08/2010	-106.40300	67.64417	3
06/08/2010	-106.40303	67.64417	3
06/08/2010	-106.40311	67.64416	3
06/08/2010	-106.40314	67.64416	4
06/08/2010	-106.40318	67.64415	2
06/08/2010	-106.40324	67.64414	3
06/08/2010	-106.40327	67.64414	3
06/08/2010	-106.40330	67.64414	2
06/08/2010	-106.40332	67.64413	3
06/08/2010	-106.40337	67.64412	3
06/08/2010	-106.40339	67.64412	3
06/08/2010	-106.40341	67.64412	3
06/08/2010	-106.40346	67.64411	3
06/08/2010	-106.40348	67.64411	3
06/08/2010	-106.40351	67.64411	3
06/08/2010	-106.40353	67.64411	3
06/08/2010	-106.40357	67.64410	2
06/08/2010	-106.40359	67.64410	2
06/08/2010	-106.40360	67.64410	2
06/08/2010	-106.40363	67.64409	2
06/08/2010	-106.40364	67.64408	2
06/08/2010	-106.40365	67.64407	2
06/08/2010	-106.40366	67.64407	2
06/08/2010	-106.40367	67.64405	2
06/08/2010	-106.40367	67.64404	2
06/08/2010	-106.40368	67.64403	2
06/08/2010	-106.40369	67.64403	2
06/08/2010	-106.40370	67.64401	2
06/08/2010	-106.40371	67.64400	2
06/08/2010	-106.40371	67.64400	2
06/08/2010	-106.40372	67.64398	2
06/08/2010	-106.40373	67.64397	2
06/08/2010	-106.40374	67.64396	2
06/08/2010	-106.40375	67.64395	1
06/08/2010	-106.40377	67.64394	1
06/08/2010	-106.40377	67.64393	1
06/08/2010	-106.40378	67.64393	1
06/08/2010	-106.40379	67.64392	2
06/08/2010	-106.40379	67.64390	1

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40379	67.64389	1
06/08/2010	-106.40379	67.64388	2
06/08/2010	-106.40379	67.64387	2
06/08/2010	-106.40378	67.64385	1
06/08/2010	-106.40377	67.64384	2
06/08/2010	-106.40376	67.64383	1
06/08/2010	-106.40375	67.64383	2
06/08/2010	-106.40375	67.64381	1
06/08/2010	-106.40375	67.64380	1
06/08/2010	-106.40376	67.64380	2
06/08/2010	-106.40377	67.64379	2
06/08/2010	-106.40378	67.64378	1
06/08/2010	-106.40379	67.64378	1
06/08/2010	-106.40380	67.64377	2
06/08/2010	-106.40383	67.64376	2
06/08/2010	-106.40385	67.64376	2
06/08/2010	-106.40387	67.64375	2
06/08/2010	-106.40388	67.64375	1
06/08/2010	-106.40392	67.64374	1
06/08/2010	-106.40394	67.64374	1
06/08/2010	-106.40396	67.64374	1
06/08/2010	-106.40399	67.64374	1
06/08/2010	-106.40402	67.64375	2
06/08/2010	-106.40404	67.64375	1
06/08/2010	-106.40406	67.64376	2
06/08/2010	-106.40408	67.64376	1
06/08/2010	-106.40411	67.64378	2
06/08/2010	-106.40413	67.64378	1
06/08/2010	-106.40414	67.64379	2
06/08/2010	-106.40417	67.64381	1
06/08/2010	-106.40418	67.64381	1
06/08/2010	-106.40419	67.64382	2
06/08/2010	-106.40420	67.64383	2
06/08/2010	-106.40423	67.64384	1
06/08/2010	-106.40424	67.64385	1
06/08/2010	-106.40426	67.64386	1
06/08/2010	-106.40427	67.64386	1
06/08/2010	-106.40430	67.64388	2
06/08/2010	-106.40431	67.64388	1
06/08/2010	-106.40433	67.64389	1
06/08/2010	-106.40434	67.64390	2
06/08/2010	-106.40437	67.64391	2
06/08/2010	-106.40438	67.64392	2
06/08/2010	-106.40439	67.64393	2
06/08/2010	-106.40440	67.64394	2
06/08/2010	-106.40442	67.64395	1
06/08/2010	-106.40443	67.64396	1
06/08/2010	-106.40444	67.64396	2
06/08/2010	-106.40446	67.64396	2
06/08/2010	-106.40448	67.64396	2
06/08/2010	-106.40449	67.64396	2
06/08/2010	-106.40450	67.64396	2
06/08/2010	-106.40451	67.64395	2
06/08/2010	-106.40452	67.64394	2
06/08/2010	-106.40451	67.64394	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40451	67.64393	2
06/08/2010	-106.40450	67.64391	2
06/08/2010	-106.40449	67.64390	1
06/08/2010	-106.40449	67.64389	2
06/08/2010	-106.40449	67.64388	2
06/08/2010	-106.40449	67.64386	1
06/08/2010	-106.40449	67.64385	1
06/08/2010	-106.40449	67.64385	1
06/08/2010	-106.40449	67.64384	2
06/08/2010	-106.40449	67.64382	1
06/08/2010	-106.40449	67.64381	1
06/08/2010	-106.40449	67.64380	2
06/08/2010	-106.40450	67.64379	2
06/08/2010	-106.40451	67.64377	2
06/08/2010	-106.40451	67.64376	2
06/08/2010	-106.40451	67.64375	2
06/08/2010	-106.40452	67.64373	2
06/08/2010	-106.40453	67.64372	2
06/08/2010	-106.40454	67.64371	2
06/08/2010	-106.40455	67.64370	2
06/08/2010	-106.40459	67.64369	2
06/08/2010	-106.40461	67.64369	2
06/08/2010	-106.40463	67.64368	2
06/08/2010	-106.40465	67.64368	2
06/08/2010	-106.40469	67.64369	2
06/08/2010	-106.40470	67.64369	2
06/08/2010	-106.40471	67.64370	2
06/08/2010	-106.40471	67.64371	2
06/08/2010	-106.40471	67.64372	2
06/08/2010	-106.40471	67.64373	2
06/08/2010	-106.40471	67.64374	2
06/08/2010	-106.40471	67.64374	2
06/08/2010	-106.40472	67.64375	2
06/08/2010	-106.40473	67.64376	2
06/08/2010	-106.40475	67.64376	2
06/08/2010	-106.40478	67.64376	2
06/08/2010	-106.40479	67.64377	2
06/08/2010	-106.40481	67.64377	2
06/08/2010	-106.40483	67.64377	2
06/08/2010	-106.40487	67.64378	2
06/08/2010	-106.40489	67.64378	2
06/08/2010	-106.40491	67.64379	2
06/08/2010	-106.40493	67.64379	2
06/08/2010	-106.40497	67.64379	2
06/08/2010	-106.40499	67.64379	2
06/08/2010	-106.40501	67.64379	2
06/08/2010	-106.40503	67.64379	2
06/08/2010	-106.40507	67.64379	2
06/08/2010	-106.40509	67.64379	2
06/08/2010	-106.40510	67.64379	3
06/08/2010	-106.40512	67.64379	2
06/08/2010	-106.40515	67.64378	3
06/08/2010	-106.40516	67.64377	2
06/08/2010	-106.40516	67.64377	2
06/08/2010	-106.40515	67.64375	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40514	67.64375	3
06/08/2010	-106.40512	67.64375	2
06/08/2010	-106.40510	67.64375	2
06/08/2010	-106.40505	67.64375	2
06/08/2010	-106.40502	67.64375	2
06/08/2010	-106.40499	67.64375	2
06/08/2010	-106.40496	67.64376	2
06/08/2010	-106.40491	67.64377	2
06/08/2010	-106.40488	67.64377	2
06/08/2010	-106.40486	67.64378	2
06/08/2010	-106.40484	67.64379	2
06/08/2010	-106.40479	67.64380	2
06/08/2010	-106.40477	67.64381	2
06/08/2010	-106.40475	67.64382	1
06/08/2010	-106.40471	67.64384	1
06/08/2010	-106.40469	67.64386	2
06/08/2010	-106.40467	67.64387	2
06/08/2010	-106.40465	67.64388	2
06/08/2010	-106.40461	67.64390	2
06/08/2010	-106.40458	67.64391	2
06/08/2010	-106.40456	67.64391	1
06/08/2010	-106.40454	67.64392	2
06/08/2010	-106.40450	67.64394	2
06/08/2010	-106.40447	67.64396	2
06/08/2010	-106.40444	67.64397	1
06/08/2010	-106.40442	67.64398	1
06/08/2010	-106.40437	67.64401	1
06/08/2010	-106.40435	67.64402	2
06/08/2010	-106.40432	67.64403	2
06/08/2010	-106.40427	67.64406	1
06/08/2010	-106.40425	67.64408	1
06/08/2010	-106.40422	67.64409	2
06/08/2010	-106.40419	67.64411	2
06/08/2010	-106.40414	67.64413	1
06/08/2010	-106.40411	67.64415	2
06/08/2010	-106.40408	67.64416	1
06/08/2010	-106.40405	67.64417	2
06/08/2010	-106.40400	67.64420	1
06/08/2010	-106.40398	67.64422	2
06/08/2010	-106.40396	67.64423	2
06/08/2010	-106.40393	67.64425	2
06/08/2010	-106.40388	67.64428	2
06/08/2010	-106.40386	67.64429	2
06/08/2010	-106.40384	67.64431	2
06/08/2010	-106.40382	67.64432	2
06/08/2010	-106.40378	67.64435	3
06/08/2010	-106.40376	67.64437	3
06/08/2010	-106.40374	67.64438	4
06/08/2010	-106.40370	67.64441	3
06/08/2010	-106.40369	67.64443	3
06/08/2010	-106.40367	67.64444	4
06/08/2010	-106.40366	67.64446	2
06/08/2010	-106.40363	67.64449	3
06/08/2010	-106.40362	67.64450	2
06/08/2010	-106.40360	67.64452	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40357	67.64455	2
06/08/2010	-106.40356	67.64457	3
06/08/2010	-106.40354	67.64459	3
06/08/2010	-106.40353	67.64460	4
06/08/2010	-106.40350	67.64464	4
06/08/2010	-106.40349	67.64465	3
06/08/2010	-106.40348	67.64467	4
06/08/2010	-106.40346	67.64470	3
06/08/2010	-106.40344	67.64472	3
06/08/2010	-106.40343	67.64474	2
06/08/2010	-106.40340	67.64477	3
06/08/2010	-106.40338	67.64479	4
06/08/2010	-106.40336	67.64480	3
06/08/2010	-106.40335	67.64482	3
06/08/2010	-106.40332	67.64485	2
06/08/2010	-106.40331	67.64487	2
06/08/2010	-106.40329	67.64488	3
06/08/2010	-106.40327	67.64492	2
06/08/2010	-106.40325	67.64493	2
06/08/2010	-106.40324	67.64495	3
06/08/2010	-106.40323	67.64497	3
06/08/2010	-106.40321	67.64501	2
06/08/2010	-106.40320	67.64503	2
06/08/2010	-106.40319	67.64505	2
06/08/2010	-106.40318	67.64508	2
06/08/2010	-106.40318	67.64510	2
06/08/2010	-106.40318	67.64512	3
06/08/2010	-106.40317	67.64514	2
06/08/2010	-106.40316	67.64518	2
06/08/2010	-106.40315	67.64520	2
06/08/2010	-106.40315	67.64522	2
06/08/2010	-106.40314	67.64524	2
06/08/2010	-106.40313	67.64528	2
06/08/2010	-106.40312	67.64530	2
06/08/2010	-106.40312	67.64532	2
06/08/2010	-106.40311	67.64536	4
06/08/2010	-106.40310	67.64537	2
06/08/2010	-106.40310	67.64539	4
06/08/2010	-106.40310	67.64541	2
06/08/2010	-106.40310	67.64545	2
06/08/2010	-106.40309	67.64547	3
06/08/2010	-106.40309	67.64549	2
06/08/2010	-106.40308	67.64553	2
06/08/2010	-106.40308	67.64553	2
06/08/2010	-106.40308	67.64557	2
06/08/2010	-106.40308	67.64559	2
06/08/2010	-106.40307	67.64563	2
06/08/2010	-106.40306	67.64565	2
06/08/2010	-106.40305	67.64567	3
06/08/2010	-106.40304	67.64571	3
06/08/2010	-106.40304	67.64573	2
06/08/2010	-106.40304	67.64574	2
06/08/2010	-106.40303	67.64576	2
06/08/2010	-106.40303	67.64580	2
06/08/2010	-106.40302	67.64582	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40301	67.64584	2
06/08/2010	-106.40301	67.64586	3
06/08/2010	-106.40300	67.64591	2
06/08/2010	-106.40300	67.64593	3
06/08/2010	-106.40300	67.64596	2
06/08/2010	-106.40300	67.64601	2
06/08/2010	-106.40301	67.64603	3
06/08/2010	-106.40301	67.64606	2
06/08/2010	-106.40301	67.64609	2
06/08/2010	-106.40302	67.64614	3
06/08/2010	-106.40302	67.64617	2
06/08/2010	-106.40302	67.64619	2
06/08/2010	-106.40302	67.64622	2
06/08/2010	-106.40302	67.64627	2
06/08/2010	-106.40302	67.64630	2
06/08/2010	-106.40302	67.64633	2
06/08/2010	-106.40302	67.64638	2
06/08/2010	-106.40302	67.64641	2
06/08/2010	-106.40302	67.64644	2
06/08/2010	-106.40302	67.64646	3
06/08/2010	-106.40302	67.64651	3
06/08/2010	-106.40302	67.64653	3
06/08/2010	-106.40302	67.64653	2
06/08/2010	-106.40302	67.64657	2
06/08/2010	-106.40302	67.64661	3
06/08/2010	-106.40301	67.64663	4
06/08/2010	-106.40301	67.64665	3
06/08/2010	-106.40299	67.64669	2
06/08/2010	-106.40299	67.64671	4
06/08/2010	-106.40298	67.64672	4
06/08/2010	-106.40298	67.64674	2
06/08/2010	-106.40298	67.64678	2
06/08/2010	-106.40297	67.64680	3
06/08/2010	-106.40297	67.64682	4
06/08/2010	-106.40297	67.64685	4
06/08/2010	-106.40297	67.64687	4
06/08/2010	-106.40297	67.64689	2
06/08/2010	-106.40297	67.64691	2
06/08/2010	-106.40298	67.64695	3
06/08/2010	-106.40299	67.64697	2
06/08/2010	-106.40300	67.64698	2
06/08/2010	-106.40301	67.64702	3
06/08/2010	-106.40302	67.64704	3
06/08/2010	-106.40302	67.64706	3
06/08/2010	-106.40303	67.64708	2
06/08/2010	-106.40304	67.64711	2
06/08/2010	-106.40304	67.64713	2
06/08/2010	-106.40304	67.64715	3
06/08/2010	-106.40304	67.64717	2
06/08/2010	-106.40304	67.64721	2
06/08/2010	-106.40304	67.64723	3
06/08/2010	-106.40304	67.64724	4
06/08/2010	-106.40303	67.64728	2
06/08/2010	-106.40304	67.64730	3
06/08/2010	-106.40304	67.64731	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40305	67.64733	2
06/08/2010	-106.40306	67.64737	2
06/08/2010	-106.40307	67.64739	2
06/08/2010	-106.40308	67.64741	3
06/08/2010	-106.40309	67.64744	2
06/08/2010	-106.40310	67.64746	3
06/08/2010	-106.40311	67.64748	3
06/08/2010	-106.40312	67.64750	2
06/08/2010	-106.40314	67.64753	3
06/08/2010	-106.40314	67.64755	2
06/08/2010	-106.40315	67.64757	2
06/08/2010	-106.40315	67.64761	3
06/08/2010	-106.40316	67.64763	4
06/08/2010	-106.40315	67.64765	4
06/08/2010	-106.40315	67.64766	4
06/08/2010	-106.40316	67.64770	4
06/08/2010	-106.40316	67.64772	4
06/08/2010	-106.40316	67.64774	4
06/08/2010	-106.40317	67.64777	3
06/08/2010	-106.40317	67.64780	3
06/08/2010	-106.40317	67.64782	4
06/08/2010	-106.40316	67.64785	3
06/08/2010	-106.40316	67.64787	3
06/08/2010	-106.40315	67.64789	4
06/08/2010	-106.40314	67.64793	2
06/08/2010	-106.40313	67.64795	3
06/08/2010	-106.40312	67.64797	4
06/08/2010	-106.40311	67.64798	4
06/08/2010	-106.40309	67.64802	3
06/08/2010	-106.40308	67.64804	4
06/08/2010	-106.40307	67.64806	4
06/08/2010	-106.40304	67.64810	4
06/08/2010	-106.40301	67.64812	4
06/08/2010	-106.40299	67.64813	4
06/08/2010	-106.40295	67.64817	4
06/08/2010	-106.40293	67.64819	4
06/08/2010	-106.40291	67.64821	4
06/08/2010	-106.40287	67.64824	4
06/08/2010	-106.40284	67.64826	0
06/08/2010	-106.40281	67.64828	4
06/08/2010	-106.40278	67.64830	0
06/08/2010	-106.40274	67.64833	0
06/08/2010	-106.40272	67.64835	4
06/08/2010	-106.40270	67.64837	4
06/08/2010	-106.40268	67.64841	4
06/08/2010	-106.40266	67.64842	4
06/08/2010	-106.40264	67.64844	0
06/08/2010	-106.40262	67.64847	4
06/08/2010	-106.40260	67.64848	4
06/08/2010	-106.40259	67.64850	4
06/08/2010	-106.40257	67.64853	4
06/08/2010	-106.40255	67.64854	4
06/08/2010	-106.40254	67.64855	4
06/08/2010	-106.40252	67.64857	3
06/08/2010	-106.40250	67.64859	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40248	67.64861	4
06/08/2010	-106.40247	67.64862	4
06/08/2010	-106.40244	67.64865	4
06/08/2010	-106.40242	67.64866	4
06/08/2010	-106.40241	67.64867	4
06/08/2010	-106.40237	67.64869	4
06/08/2010	-106.40235	67.64871	4
06/08/2010	-106.40233	67.64872	4
06/08/2010	-106.40229	67.64874	4
06/08/2010	-106.40227	67.64875	4
06/08/2010	-106.40225	67.64876	3
06/08/2010	-106.40223	67.64877	4
06/08/2010	-106.40219	67.64880	4
06/08/2010	-106.40217	67.64881	4
06/08/2010	-106.40215	67.64883	3
06/08/2010	-106.40211	67.64886	4
06/08/2010	-106.40209	67.64887	4
06/08/2010	-106.40207	67.64889	3
06/08/2010	-106.40203	67.64892	3
06/08/2010	-106.40201	67.64893	3
06/08/2010	-106.40199	67.64895	3
06/08/2010	-106.40196	67.64896	4
06/08/2010	-106.40192	67.64899	3
06/08/2010	-106.40190	67.64901	3
06/08/2010	-106.40188	67.64903	3
06/08/2010	-106.40183	67.64906	3
06/08/2010	-106.40180	67.64907	3
06/08/2010	-106.40178	67.64908	3
06/08/2010	-106.40175	67.64910	3
06/08/2010	-106.40170	67.64913	3
06/08/2010	-106.40167	67.64914	3
06/08/2010	-106.40164	67.64915	2
06/08/2010	-106.40158	67.64918	2
06/08/2010	-106.40154	67.64919	4
06/08/2010	-106.40150	67.64920	3
06/08/2010	-106.40142	67.64923	3
06/08/2010	-106.40139	67.64924	3
06/08/2010	-106.40135	67.64925	3
06/08/2010	-106.40132	67.64926	3
06/08/2010	-106.40127	67.64929	3
06/08/2010	-106.40124	67.64930	3
06/08/2010	-106.40121	67.64932	2
06/08/2010	-106.40116	67.64935	3
06/08/2010	-106.40113	67.64936	3
06/08/2010	-106.40111	67.64937	2
06/08/2010	-106.40108	67.64939	3
06/08/2010	-106.40103	67.64942	3
06/08/2010	-106.40101	67.64943	3
06/08/2010	-106.40098	67.64945	3
06/08/2010	-106.40093	67.64948	4
06/08/2010	-106.40090	67.64949	4
06/08/2010	-106.40088	67.64951	3
06/08/2010	-106.40082	67.64953	3
06/08/2010	-106.40079	67.64955	3
06/08/2010	-106.40076	67.64956	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40073	67.64958	3
06/08/2010	-106.40066	67.64960	3
06/08/2010	-106.40063	67.64962	3
06/08/2010	-106.40059	67.64963	3
06/08/2010	-106.40053	67.64966	3
06/08/2010	-106.40049	67.64967	3
06/08/2010	-106.40045	67.64968	2
06/08/2010	-106.40042	67.64969	3
06/08/2010	-106.40036	67.64972	2
06/08/2010	-106.40034	67.64973	3
06/08/2010	-106.40033	67.64974	3
06/08/2010	-106.40032	67.64976	3
06/08/2010	-106.40032	67.64977	3
06/08/2010	-106.40032	67.64977	3
06/08/2010	-106.40035	67.64979	3
06/08/2010	-106.40036	67.64979	2
06/08/2010	-106.40038	67.64979	2
06/08/2010	-106.40039	67.64978	3
06/08/2010	-106.40041	67.64977	3
06/08/2010	-106.40042	67.64976	4
06/08/2010	-106.40043	67.64974	3
06/08/2010	-106.40045	67.64972	3
06/08/2010	-106.40046	67.64970	3
06/08/2010	-106.40047	67.64969	2
06/08/2010	-106.40049	67.64968	3
06/08/2010	-106.40052	67.64965	3
06/08/2010	-106.40054	67.64964	2
06/08/2010	-106.40056	67.64963	3
06/08/2010	-106.40062	67.64960	4
06/08/2010	-106.40065	67.64959	2
06/08/2010	-106.40069	67.64958	4
06/08/2010	-106.40076	67.64955	4
06/08/2010	-106.40080	67.64953	3
06/08/2010	-106.40084	67.64952	2
06/08/2010	-106.40087	67.64951	3
06/08/2010	-106.40096	67.64948	3
06/08/2010	-106.40100	67.64947	4
06/08/2010	-106.40104	67.64946	3
06/08/2010	-106.40111	67.64943	3
06/08/2010	-106.40115	67.64941	2
06/08/2010	-106.40119	67.64940	3
06/08/2010	-106.40127	67.64937	3
06/08/2010	-106.40131	67.64936	3
06/08/2010	-106.40134	67.64935	3
06/08/2010	-106.40138	67.64933	3
06/08/2010	-106.40146	67.64930	3
06/08/2010	-106.40150	67.64929	3
06/08/2010	-106.40153	67.64927	2
06/08/2010	-106.40162	67.64925	3
06/08/2010	-106.40166	67.64923	3
06/08/2010	-106.40170	67.64922	3
06/08/2010	-106.40174	67.64921	3
06/08/2010	-106.40183	67.64918	2
06/08/2010	-106.40187	67.64917	4
06/08/2010	-106.40192	67.64916	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40201	67.64912	3
06/08/2010	-106.40205	67.64911	2
06/08/2010	-106.40209	67.64909	3
06/08/2010	-106.40218	67.64905	3
06/08/2010	-106.40223	67.64904	3
06/08/2010	-106.40228	67.64902	2
06/08/2010	-106.40233	67.64901	3
06/08/2010	-106.40243	67.64898	2
06/08/2010	-106.40249	67.64896	3
06/08/2010	-106.40254	67.64895	3
06/08/2010	-106.40265	67.64892	3
06/08/2010	-106.40271	67.64891	3
06/08/2010	-106.40277	67.64890	3
06/08/2010	-106.40282	67.64889	3
06/08/2010	-106.40294	67.64886	3
06/08/2010	-106.40299	67.64885	4
06/08/2010	-106.40305	67.64884	3
06/08/2010	-106.40316	67.64881	3
06/08/2010	-106.40321	67.64880	4
06/08/2010	-106.40326	67.64878	4
06/08/2010	-106.40335	67.64875	4
06/08/2010	-106.40339	67.64873	3
06/08/2010	-106.40343	67.64871	3
06/08/2010	-106.40349	67.64867	3
06/08/2010	-106.40351	67.64865	4
06/08/2010	-106.40351	67.64862	4
06/08/2010	-106.40352	67.64860	3
06/08/2010	-106.40356	67.64855	3
06/08/2010	-106.40357	67.64852	3
06/08/2010	-106.40359	67.64850	3
06/08/2010	-106.40363	67.64845	3
06/08/2010	-106.40367	67.64843	3
06/08/2010	-106.40370	67.64842	3
06/08/2010	-106.40378	67.64838	2
06/08/2010	-106.40381	67.64836	2
06/08/2010	-106.40385	67.64834	3
06/08/2010	-106.40388	67.64832	2
06/08/2010	-106.40395	67.64827	3
06/08/2010	-106.40399	67.64825	3
06/08/2010	-106.40403	67.64824	2
06/08/2010	-106.40410	67.64820	2
06/08/2010	-106.40414	67.64817	3
06/08/2010	-106.40418	67.64815	2
06/08/2010	-106.40422	67.64813	2
06/08/2010	-106.40430	67.64808	3
06/08/2010	-106.40434	67.64806	4
06/08/2010	-106.40439	67.64803	2
06/08/2010	-106.40447	67.64799	2
06/08/2010	-106.40451	67.64796	2
06/08/2010	-106.40455	67.64794	3
06/08/2010	-106.40458	67.64791	3
06/08/2010	-106.40466	67.64786	3
06/08/2010	-106.40470	67.64783	3
06/08/2010	-106.40474	67.64781	4
06/08/2010	-106.40483	67.64776	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40488	67.64774	2
06/08/2010	-106.40493	67.64772	3
06/08/2010	-106.40497	67.64770	4
06/08/2010	-106.40507	67.64766	2
06/08/2010	-106.40512	67.64763	2
06/08/2010	-106.40517	67.64761	2
06/08/2010	-106.40525	67.64756	3
06/08/2010	-106.40528	67.64753	2
06/08/2010	-106.40532	67.64751	2
06/08/2010	-106.40535	67.64748	3
06/08/2010	-106.40541	67.64742	2
06/08/2010	-106.40544	67.64739	3
06/08/2010	-106.40548	67.64737	2
06/08/2010	-106.40552	67.64734	2
06/08/2010	-106.40559	67.64729	2
06/08/2010	-106.40562	67.64726	1
06/08/2010	-106.40566	67.64724	2
06/08/2010	-106.40574	67.64718	2
06/08/2010	-106.40577	67.64716	2
06/08/2010	-106.40581	67.64713	2
06/08/2010	-106.40585	67.64711	2
06/08/2010	-106.40591	67.64705	2
06/08/2010	-106.40594	67.64702	2
06/08/2010	-106.40597	67.64699	2
06/08/2010	-106.40600	67.64697	2
06/08/2010	-106.40606	67.64691	2
06/08/2010	-106.40609	67.64688	2
06/08/2010	-106.40613	67.64686	2
06/08/2010	-106.40616	67.64683	1
06/08/2010	-106.40619	67.64678	1
06/08/2010	-106.40621	67.64676	1
06/08/2010	-106.40623	67.64673	2
06/08/2010	-106.40625	67.64671	2
06/08/2010	-106.40630	67.64666	2
06/08/2010	-106.40633	67.64664	2
06/08/2010	-106.40636	67.64661	1
06/08/2010	-106.40640	67.64659	2
06/08/2010	-106.40647	67.64654	2
06/08/2010	-106.40650	67.64651	2
06/08/2010	-106.40654	67.64649	2
06/08/2010	-106.40661	67.64644	2
06/08/2010	-106.40665	67.64642	2
06/08/2010	-106.40669	67.64640	2
06/08/2010	-106.40673	67.64637	2
06/08/2010	-106.40680	67.64632	2
06/08/2010	-106.40682	67.64630	1
06/08/2010	-106.40684	67.64627	2
06/08/2010	-106.40686	67.64624	1
06/08/2010	-106.40688	67.64618	1
06/08/2010	-106.40690	67.64616	2
06/08/2010	-106.40691	67.64613	2
06/08/2010	-106.40693	67.64610	1
06/08/2010	-106.40695	67.64607	1
06/08/2010	-106.40698	67.64602	1
06/08/2010	-106.40701	67.64599	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40704	67.64593	2
06/08/2010	-106.40706	67.64590	2
06/08/2010	-106.40707	67.64588	2
06/08/2010	-106.40709	67.64585	2
06/08/2010	-106.40712	67.64579	2
06/08/2010	-106.40714	67.64576	2
06/08/2010	-106.40715	67.64573	2
06/08/2010	-106.40715	67.64570	2
06/08/2010	-106.40716	67.64565	2
06/08/2010	-106.40717	67.64562	2
06/08/2010	-106.40717	67.64559	2
06/08/2010	-106.40717	67.64553	2
06/08/2010	-106.40717	67.64550	2
06/08/2010	-106.40717	67.64547	2
06/08/2010	-106.40717	67.64544	2
06/08/2010	-106.40717	67.64538	4
06/08/2010	-106.40717	67.64535	2
06/08/2010	-106.40717	67.64533	2
06/08/2010	-106.40718	67.64530	2
06/08/2010	-106.40719	67.64524	2
06/08/2010	-106.40720	67.64521	2
06/08/2010	-106.40722	67.64518	2
06/08/2010	-106.40726	67.64513	2
06/08/2010	-106.40728	67.64510	2
06/08/2010	-106.40731	67.64507	2
06/08/2010	-106.40734	67.64504	2
06/08/2010	-106.40740	67.64499	2
06/08/2010	-106.40744	67.64496	2
06/08/2010	-106.40749	67.64494	2
06/08/2010	-106.40755	67.64493	2
06/08/2010	-106.40768	67.64491	2
06/08/2010	-106.40775	67.64491	2
06/08/2010	-106.40782	67.64492	2
06/08/2010	-106.40797	67.64493	2
06/08/2010	-106.40804	67.64494	2
06/08/2010	-106.40811	67.64494	1
06/08/2010	-106.40818	67.64495	1
06/08/2010	-106.40833	67.64497	1
06/08/2010	-106.40840	67.64498	1
06/08/2010	-106.40847	67.64499	1
06/08/2010	-106.40854	67.64500	1
06/08/2010	-106.40869	67.64501	1
06/08/2010	-106.40876	67.64502	1
06/08/2010	-106.40883	67.64504	1
06/08/2010	-106.40897	67.64506	1
06/08/2010	-106.40903	67.64507	1
06/08/2010	-106.40910	67.64508	1
06/08/2010	-106.40917	67.64509	1
06/08/2010	-106.40929	67.64512	1
06/08/2010	-106.40935	67.64514	1
06/08/2010	-106.40940	67.64515	2
06/08/2010	-106.40946	67.64517	1
06/08/2010	-106.40955	67.64520	2
06/08/2010	-106.40960	67.64522	2
06/08/2010	-106.40964	67.64524	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40968	67.64526	2
06/08/2010	-106.40976	67.64530	2
06/08/2010	-106.40979	67.64532	2
06/08/2010	-106.40983	67.64534	2
06/08/2010	-106.40987	67.64536	2
06/08/2010	-106.40991	67.64538	2
06/08/2010	-106.40998	67.64543	2
06/08/2010	-106.41002	67.64545	2
06/08/2010	-106.41005	67.64547	2
06/08/2010	-106.41009	67.64552	2
06/08/2010	-106.41010	67.64555	2
06/08/2010	-106.41012	67.64557	2
06/08/2010	-106.41013	67.64560	2
06/08/2010	-106.41015	67.64565	2
06/08/2010	-106.41016	67.64568	2
06/08/2010	-106.41016	67.64570	2
06/08/2010	-106.41016	67.64573	2
06/08/2010	-106.41018	67.64578	2
06/08/2010	-106.41019	67.64580	2
06/08/2010	-106.41021	67.64582	2
06/08/2010	-106.41024	67.64584	3
06/08/2010	-106.41030	67.64588	2
06/08/2010	-106.41034	67.64590	2
06/08/2010	-106.41039	67.64592	2
06/08/2010	-106.41042	67.64594	2
06/08/2010	-106.41050	67.64598	2
06/08/2010	-106.41053	67.64600	3
06/08/2010	-106.41056	67.64602	2
06/08/2010	-106.41060	67.64604	2
06/08/2010	-106.41068	67.64607	2
06/08/2010	-106.41072	67.64609	2
06/08/2010	-106.41076	67.64611	2
06/08/2010	-106.41080	67.64612	2
06/08/2010	-106.41089	67.64616	2
06/08/2010	-106.41094	67.64617	3
06/08/2010	-106.41098	67.64619	4
06/08/2010	-106.41108	67.64622	4
06/08/2010	-106.41113	67.64624	2
06/08/2010	-106.41118	67.64625	2
06/08/2010	-106.41123	67.64627	3
06/08/2010	-106.41133	67.64630	2
06/08/2010	-106.41138	67.64631	3
06/08/2010	-106.41143	67.64633	4
06/08/2010	-106.41148	67.64634	2
06/08/2010	-106.41158	67.64638	4
06/08/2010	-106.41162	67.64639	4
06/08/2010	-106.41167	67.64641	4
06/08/2010	-106.41177	67.64644	3
06/08/2010	-106.41181	67.64646	3
06/08/2010	-106.41185	67.64648	3
06/08/2010	-106.41189	67.64650	2
06/08/2010	-106.41198	67.64653	4
06/08/2010	-106.41203	67.64655	4
06/08/2010	-106.41207	67.64657	2
06/08/2010	-106.41216	67.64660	3

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41220	67.64662	3
06/08/2010	-106.41228	67.64666	2
06/08/2010	-106.41232	67.64668	3
06/08/2010	-106.41241	67.64672	3
06/08/2010	-106.41244	67.64674	2
06/08/2010	-106.41248	67.64676	4
06/08/2010	-106.41251	67.64678	2
06/08/2010	-106.41258	67.64683	2
06/08/2010	-106.41260	67.64685	2
06/08/2010	-106.41263	67.64687	4
06/08/2010	-106.41266	67.64689	4
06/08/2010	-106.41271	67.64694	4
06/08/2010	-106.41274	67.64696	2
06/08/2010	-106.41276	67.64699	2
06/08/2010	-106.41281	67.64703	4
06/08/2010	-106.41283	67.64706	4
06/08/2010	-106.41285	67.64708	3
06/08/2010	-106.41287	67.64711	4
06/08/2010	-106.41290	67.64716	4
06/08/2010	-106.41291	67.64718	4
06/08/2010	-106.41292	67.64721	3
06/08/2010	-106.41293	67.64723	2
06/08/2010	-106.41295	67.64728	2
06/08/2010	-106.41296	67.64731	2
06/08/2010	-106.41297	67.64734	2
06/08/2010	-106.41299	67.64736	3
06/08/2010	-106.41301	67.64741	3
06/08/2010	-106.41302	67.64744	3
06/08/2010	-106.41303	67.64746	2
06/08/2010	-106.41305	67.64751	2
06/08/2010	-106.41307	67.64754	2
06/08/2010	-106.41308	67.64756	2
06/08/2010	-106.41309	67.64759	2
06/08/2010	-106.41312	67.64764	2
06/08/2010	-106.41313	67.64767	3
06/08/2010	-106.41314	67.64769	3
06/08/2010	-106.41315	67.64772	3
06/08/2010	-106.41315	67.64777	2
06/08/2010	-106.41316	67.64780	2
06/08/2010	-106.41316	67.64782	2
06/08/2010	-106.41316	67.64785	2
06/08/2010	-106.41315	67.64790	3
06/08/2010	-106.41315	67.64793	2
06/08/2010	-106.41314	67.64796	2
06/08/2010	-106.41311	67.64801	2
06/08/2010	-106.41308	67.64803	3
06/08/2010	-106.41305	67.64806	2
06/08/2010	-106.41301	67.64808	3
06/08/2010	-106.41292	67.64812	2
06/08/2010	-106.41287	67.64814	2
06/08/2010	-106.41282	67.64816	3
06/08/2010	-106.41277	67.64817	3
06/08/2010	-106.41269	67.64820	2
06/08/2010	-106.41265	67.64821	3
06/08/2010	-106.41261	67.64822	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41252	67.64824	3
06/08/2010	-106.41247	67.64825	2
06/08/2010	-106.41242	67.64826	4
06/08/2010	-106.41238	67.64826	2
06/08/2010	-106.41229	67.64828	2
06/08/2010	-106.41224	67.64829	2
06/08/2010	-106.41219	67.64830	2
06/08/2010	-106.41214	67.64830	2
06/08/2010	-106.41205	67.64831	2
06/08/2010	-106.41200	67.64832	2
06/08/2010	-106.41195	67.64832	1
06/08/2010	-106.41190	67.64833	2
06/08/2010	-106.41180	67.64833	2
06/08/2010	-106.41175	67.64834	3
06/08/2010	-106.41170	67.64834	1
06/08/2010	-106.41164	67.64834	4
06/08/2010	-106.41154	67.64834	3
06/08/2010	-106.41149	67.64834	2
06/08/2010	-106.41144	67.64834	1
06/08/2010	-106.41139	67.64834	2
06/08/2010	-106.41130	67.64835	2
06/08/2010	-106.41125	67.64835	2
06/08/2010	-106.41120	67.64836	1
06/08/2010	-106.41115	67.64837	2
06/08/2010	-106.41105	67.64838	1
06/08/2010	-106.41101	67.64839	1
06/08/2010	-106.41096	67.64840	2
06/08/2010	-106.41092	67.64841	2
06/08/2010	-106.41083	67.64843	2
06/08/2010	-106.41079	67.64844	1
06/08/2010	-106.41074	67.64845	3
06/08/2010	-106.41069	67.64845	2
06/08/2010	-106.41059	67.64847	2
06/08/2010	-106.41054	67.64847	2
06/08/2010	-106.41049	67.64848	2
06/08/2010	-106.41044	67.64848	2
06/08/2010	-106.41033	67.64849	2
06/08/2010	-106.41028	67.64849	3
06/08/2010	-106.41022	67.64850	2
06/08/2010	-106.41016	67.64851	2
06/08/2010	-106.41005	67.64853	2
06/08/2010	-106.41000	67.64854	2
06/08/2010	-106.40995	67.64855	2
06/08/2010	-106.40989	67.64857	2
06/08/2010	-106.40979	67.64859	2
06/08/2010	-106.40973	67.64860	2
06/08/2010	-106.40967	67.64861	3
06/08/2010	-106.40961	67.64862	2
06/08/2010	-106.40948	67.64864	2
06/08/2010	-106.40942	67.64865	2
06/08/2010	-106.40937	67.64866	2
06/08/2010	-106.40931	67.64867	2
06/08/2010	-106.40922	67.64871	2
06/08/2010	-106.40917	67.64872	2
06/08/2010	-106.40913	67.64874	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40906	67.64878	0
06/08/2010	-106.40903	67.64880	2
06/08/2010	-106.40899	67.64883	2
06/08/2010	-106.40896	67.64885	2
06/08/2010	-106.40890	67.64889	3
06/08/2010	-106.40887	67.64891	2
06/08/2010	-106.40884	67.64893	2
06/08/2010	-106.40881	67.64896	3
06/08/2010	-106.40875	67.64900	2
06/08/2010	-106.40873	67.64902	2
06/08/2010	-106.40870	67.64904	2
06/08/2010	-106.40867	67.64907	2
06/08/2010	-106.40862	67.64911	2
06/08/2010	-106.40860	67.64913	2
06/08/2010	-106.40857	67.64916	2
06/08/2010	-106.40854	67.64918	2
06/08/2010	-106.40850	67.64922	2
06/08/2010	-106.40847	67.64925	2
06/08/2010	-106.40845	67.64927	2
06/08/2010	-106.40843	67.64929	2
06/08/2010	-106.40838	67.64934	2
06/08/2010	-106.40836	67.64936	2
06/08/2010	-106.40834	67.64938	2
06/08/2010	-106.40831	67.64940	2
06/08/2010	-106.40826	67.64945	2
06/08/2010	-106.40824	67.64947	2
06/08/2010	-106.40821	67.64949	2
06/08/2010	-106.40819	67.64952	2
06/08/2010	-106.40814	67.64956	2
06/08/2010	-106.40812	67.64958	2
06/08/2010	-106.40809	67.64961	2
06/08/2010	-106.40807	67.64963	2
06/08/2010	-106.40803	67.64968	2
06/08/2010	-106.40800	67.64970	2
06/08/2010	-106.40798	67.64972	2
06/08/2010	-106.40796	67.64975	2
06/08/2010	-106.40791	67.64979	2
06/08/2010	-106.40789	67.64982	2
06/08/2010	-106.40787	67.64984	2
06/08/2010	-106.40785	67.64986	2
06/08/2010	-106.40782	67.64991	2
06/08/2010	-106.40780	67.64994	2
06/08/2010	-106.40779	67.64996	2
06/08/2010	-106.40777	67.64999	2
06/08/2010	-106.40775	67.65004	2
06/08/2010	-106.40774	67.65006	2
06/08/2010	-106.40773	67.65009	1
06/08/2010	-106.40772	67.65011	2
06/08/2010	-106.40771	67.65013	2
06/08/2010	-106.40770	67.65018	2
06/08/2010	-106.40769	67.65021	2
06/08/2010	-106.40769	67.65023	2
06/08/2010	-106.40769	67.65026	2
06/08/2010	-106.40768	67.65031	1
06/08/2010	-106.40767	67.65033	1

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40767	67.65036	2
06/08/2010	-106.40767	67.65038	2
06/08/2010	-106.40767	67.65041	2
06/08/2010	-106.40766	67.65046	2
06/08/2010	-106.40766	67.65048	2
06/08/2010	-106.40766	67.65051	2
06/08/2010	-106.40766	67.65053	2
06/08/2010	-106.40765	67.65058	2
06/08/2010	-106.40766	67.65061	2
06/08/2010	-106.40766	67.65063	2
06/08/2010	-106.40766	67.65066	2
06/08/2010	-106.40766	67.65068	2
06/08/2010	-106.40767	67.65073	2
06/08/2010	-106.40767	67.65075	2
06/08/2010	-106.40768	67.65078	2
06/08/2010	-106.40770	67.65080	2
06/08/2010	-106.40776	67.65084	3
06/08/2010	-106.40779	67.65086	2
06/08/2010	-106.40782	67.65088	2
06/08/2010	-106.40787	67.65090	2
06/08/2010	-106.40791	67.65091	2
06/08/2010	-106.40802	67.65095	2
06/08/2010	-106.40808	67.65096	2
06/08/2010	-106.40813	67.65098	2
06/08/2010	-106.40819	67.65100	2
06/08/2010	-106.40829	67.65103	2
06/08/2010	-106.40835	67.65105	2
06/08/2010	-106.40841	67.65106	2
06/08/2010	-106.40847	67.65107	2
06/08/2010	-106.40853	67.65109	2
06/08/2010	-106.40865	67.65111	2
06/08/2010	-106.40872	67.65112	2
06/08/2010	-106.40878	67.65113	1
06/08/2010	-106.40885	67.65115	1
06/08/2010	-106.40898	67.65117	1
06/08/2010	-106.40905	67.65118	1
06/08/2010	-106.40912	67.65119	2
06/08/2010	-106.40919	67.65120	3
06/08/2010	-106.40931	67.65122	4
06/08/2010	-106.40936	67.65123	3
06/08/2010	-106.40940	67.65123	2
06/08/2010	-106.40946	67.65125	4
06/08/2010	-106.40948	67.65126	4
06/08/2010	-106.40950	67.65127	4
06/08/2010	-106.40952	67.65128	4
06/08/2010	-106.40955	67.65130	4
06/08/2010	-106.40957	67.65131	4
06/08/2010	-106.40959	67.65133	4
06/08/2010	-106.40961	67.65136	4
06/08/2010	-106.40962	67.65138	4
06/08/2010	-106.40962	67.65140	4
06/08/2010	-106.40962	67.65142	4
06/08/2010	-106.40963	67.65146	4
06/08/2010	-106.40963	67.65148	4
06/08/2010	-106.40963	67.65149	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40963	67.65153	4
06/08/2010	-106.40963	67.65155	4
06/08/2010	-106.40963	67.65157	4
06/08/2010	-106.40963	67.65159	4
06/08/2010	-106.40962	67.65162	4
06/08/2010	-106.40962	67.65164	2
06/08/2010	-106.40961	67.65166	2
06/08/2010	-106.40960	67.65168	3
06/08/2010	-106.40958	67.65171	3
06/08/2010	-106.40958	67.65173	4
06/08/2010	-106.40957	67.65175	4
06/08/2010	-106.40956	67.65178	4
06/08/2010	-106.40956	67.65180	4
06/08/2010	-106.40956	67.65182	4
06/08/2010	-106.40955	67.65183	3
06/08/2010	-106.40955	67.65187	2
06/08/2010	-106.40955	67.65189	2
06/08/2010	-106.40955	67.65191	2
06/08/2010	-106.40955	67.65194	2
06/08/2010	-106.40954	67.65196	2
06/08/2010	-106.40953	67.65198	2
06/08/2010	-106.40952	67.65200	3
06/08/2010	-106.40949	67.65203	2
06/08/2010	-106.40948	67.65205	2
06/08/2010	-106.40947	67.65207	2
06/08/2010	-106.40946	67.65209	2
06/08/2010	-106.40946	67.65210	2
06/08/2010	-106.40946	67.65214	2
06/08/2010	-106.40947	67.65215	2
06/08/2010	-106.40948	67.65217	2
06/08/2010	-106.40949	67.65218	2
06/08/2010	-106.40952	67.65221	2
06/08/2010	-106.40954	67.65223	2
06/08/2010	-106.40957	67.65224	0
06/08/2010	-106.40959	67.65225	2
06/08/2010	-106.40962	67.65227	2
06/08/2010	-106.40967	67.65229	1
06/08/2010	-106.40970	67.65231	2
06/08/2010	-106.40974	67.65232	3
06/08/2010	-106.40977	67.65233	2
06/08/2010	-106.40984	67.65235	2
06/08/2010	-106.40987	67.65236	3
06/08/2010	-106.40991	67.65237	3
06/08/2010	-106.40994	67.65239	2
06/08/2010	-106.41001	67.65241	2
06/08/2010	-106.41005	67.65242	2
06/08/2010	-106.41008	67.65243	3
06/08/2010	-106.41016	67.65245	4
06/08/2010	-106.41019	67.65247	2
06/08/2010	-106.41022	67.65248	2
06/08/2010	-106.41024	67.65250	2
06/08/2010	-106.41025	67.65253	2
06/08/2010	-106.41025	67.65254	3
06/08/2010	-106.41025	67.65256	2
06/08/2010	-106.41023	67.65260	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41022	67.65261	2
06/08/2010	-106.41021	67.65263	2
06/08/2010	-106.41019	67.65265	2
06/08/2010	-106.41016	67.65269	2
06/08/2010	-106.41014	67.65271	3
06/08/2010	-106.41012	67.65272	2
06/08/2010	-106.41009	67.65274	2
06/08/2010	-106.41004	67.65278	2
06/08/2010	-106.41002	67.65279	2
06/08/2010	-106.40999	67.65281	2
06/08/2010	-106.40996	67.65283	4
06/08/2010	-106.40991	67.65286	1
06/08/2010	-106.40989	67.65288	1
06/08/2010	-106.40986	67.65290	1
06/08/2010	-106.40980	67.65293	1
06/08/2010	-106.40977	67.65295	2
06/08/2010	-106.40974	67.65296	2
06/08/2010	-106.40971	67.65298	1
06/08/2010	-106.40966	67.65301	1
06/08/2010	-106.40963	67.65303	1
06/08/2010	-106.40960	67.65304	1
06/08/2010	-106.40958	67.65306	1
06/08/2010	-106.40954	67.65309	1
06/08/2010	-106.40953	67.65311	1
06/08/2010	-106.40951	67.65313	1
06/08/2010	-106.40949	67.65315	2
06/08/2010	-106.40946	67.65318	1
06/08/2010	-106.40945	67.65320	1
06/08/2010	-106.40941	67.65325	2
06/08/2010	-106.40940	67.65327	2
06/08/2010	-106.40937	67.65331	2
06/08/2010	-106.40935	67.65333	2
06/08/2010	-106.40933	67.65335	2
06/08/2010	-106.40931	67.65336	2
06/08/2010	-106.40924	67.65339	2
06/08/2010	-106.40920	67.65341	2
06/08/2010	-106.40916	67.65342	4
06/08/2010	-106.40910	67.65343	4
06/08/2010	-106.40899	67.65344	4
06/08/2010	-106.40892	67.65344	2
06/08/2010	-106.40886	67.65344	4
06/08/2010	-106.40879	67.65344	2
06/08/2010	-106.40873	67.65344	3
06/08/2010	-106.40859	67.65344	4
06/08/2010	-106.40853	67.65344	4
06/08/2010	-106.40846	67.65344	4
06/08/2010	-106.40839	67.65344	2
06/08/2010	-106.40832	67.65344	4
06/08/2010	-106.40819	67.65343	4
06/08/2010	-106.40812	67.65343	2
06/08/2010	-106.40805	67.65342	4
06/08/2010	-106.40799	67.65342	4
06/08/2010	-106.40792	67.65341	2
06/08/2010	-106.40779	67.65340	2
06/08/2010	-106.40773	67.65339	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40766	67.65338	3
06/08/2010	-106.40760	67.65338	2
06/08/2010	-106.40747	67.65336	2
06/08/2010	-106.40740	67.65336	4
06/08/2010	-106.40733	67.65335	2
06/08/2010	-106.40727	67.65334	4
06/08/2010	-106.40714	67.65333	3
06/08/2010	-106.40708	67.65333	3
06/08/2010	-106.40703	67.65334	4
06/08/2010	-106.40698	67.65334	2
06/08/2010	-106.40694	67.65336	4
06/08/2010	-106.40687	67.65339	4
06/08/2010	-106.40683	67.65342	4
06/08/2010	-106.40681	67.65344	2
06/08/2010	-106.40676	67.65348	3
06/08/2010	-106.40674	67.65351	3
06/08/2010	-106.40671	67.65353	3
06/08/2010	-106.40668	67.65355	3
06/08/2010	-106.40663	67.65360	2
06/08/2010	-106.40660	67.65362	2
06/08/2010	-106.40657	67.65364	3
06/08/2010	-106.40654	67.65367	3
06/08/2010	-106.40648	67.65371	3
06/08/2010	-106.40645	67.65374	2
06/08/2010	-106.40642	67.65376	2
06/08/2010	-106.40639	67.65378	4
06/08/2010	-106.40633	67.65383	4
06/08/2010	-106.40630	67.65385	2
06/08/2010	-106.40626	67.65387	2
06/08/2010	-106.40623	67.65389	2
06/08/2010	-106.40615	67.65394	3
06/08/2010	-106.40612	67.65396	2
06/08/2010	-106.40608	67.65398	2
06/08/2010	-106.40604	67.65400	2
06/08/2010	-106.40596	67.65404	2
06/08/2010	-106.40592	67.65406	2
06/08/2010	-106.40588	67.65408	2
06/08/2010	-106.40580	67.65412	3
06/08/2010	-106.40576	67.65414	2
06/08/2010	-106.40572	67.65416	2
06/08/2010	-106.40568	67.65419	2
06/08/2010	-106.40561	67.65423	2
06/08/2010	-106.40558	67.65425	2
06/08/2010	-106.40554	67.65427	2
06/08/2010	-106.40551	67.65430	2
06/08/2010	-106.40544	67.65434	2
06/08/2010	-106.40540	67.65436	2
06/08/2010	-106.40537	67.65439	1
06/08/2010	-106.40533	67.65441	1
06/08/2010	-106.40526	67.65445	2
06/08/2010	-106.40522	67.65448	1
06/08/2010	-106.40518	67.65450	1
06/08/2010	-106.40510	67.65455	2
06/08/2010	-106.40505	67.65457	2
06/08/2010	-106.40501	67.65460	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40497	67.65462	2
06/08/2010	-106.40489	67.65467	2
06/08/2010	-106.40485	67.65469	2
06/08/2010	-106.40481	67.65472	2
06/08/2010	-106.40476	67.65474	2
06/08/2010	-106.40468	67.65479	2
06/08/2010	-106.40464	67.65481	2
06/08/2010	-106.40460	67.65484	2
06/08/2010	-106.40456	67.65486	2
06/08/2010	-106.40448	67.65491	2
06/08/2010	-106.40444	67.65494	2
06/08/2010	-106.40440	67.65496	2
06/08/2010	-106.40431	67.65501	2
06/08/2010	-106.40426	67.65503	2
06/08/2010	-106.40422	67.65505	2
06/08/2010	-106.40417	67.65508	2
06/08/2010	-106.40409	67.65512	2
06/08/2010	-106.40405	67.65515	2
06/08/2010	-106.40400	67.65517	3
06/08/2010	-106.40396	67.65519	3
06/08/2010	-106.40387	67.65524	2
06/08/2010	-106.40382	67.65526	2
06/08/2010	-106.40378	67.65529	2
06/08/2010	-106.40373	67.65531	2
06/08/2010	-106.40365	67.65536	2
06/08/2010	-106.40360	67.65539	2
06/08/2010	-106.40356	67.65541	2
06/08/2010	-106.40351	67.65544	2
06/08/2010	-106.40343	67.65549	2
06/08/2010	-106.40338	67.65551	2
06/08/2010	-106.40334	67.65554	2
06/08/2010	-106.40330	67.65556	2
06/08/2010	-106.40322	67.65561	2
06/08/2010	-106.40318	67.65564	2
06/08/2010	-106.40314	67.65567	2
06/08/2010	-106.40311	67.65569	4
06/08/2010	-106.40303	67.65574	2
06/08/2010	-106.40299	67.65577	2
06/08/2010	-106.40295	67.65579	3
06/08/2010	-106.40292	67.65582	3
06/08/2010	-106.40285	67.65587	3
06/08/2010	-106.40281	67.65590	2
06/08/2010	-106.40277	67.65592	4
06/08/2010	-106.40270	67.65598	3
06/08/2010	-106.40266	67.65600	2
06/08/2010	-106.40262	67.65603	2
06/08/2010	-106.40258	67.65605	2
06/08/2010	-106.40250	67.65610	2
06/08/2010	-106.40246	67.65613	2
06/08/2010	-106.40242	67.65615	2
06/08/2010	-106.40237	67.65617	2
06/08/2010	-106.40228	67.65622	2
06/08/2010	-106.40224	67.65625	1
06/08/2010	-106.40219	67.65627	2
06/08/2010	-106.40215	67.65629	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40206	67.65634	2
06/08/2010	-106.40202	67.65636	2
06/08/2010	-106.40197	67.65639	2
06/08/2010	-106.40193	67.65641	2
06/08/2010	-106.40184	67.65646	2
06/08/2010	-106.40179	67.65648	2
06/08/2010	-106.40175	67.65651	3
06/08/2010	-106.40166	67.65655	2
06/08/2010	-106.40161	67.65658	2
06/08/2010	-106.40157	67.65660	2
06/08/2010	-106.40152	67.65663	2
06/08/2010	-106.40143	67.65667	3
06/08/2010	-106.40139	67.65670	3
06/08/2010	-106.40135	67.65672	3
06/08/2010	-106.40131	67.65675	4
06/08/2010	-106.40123	67.65680	3
06/08/2010	-106.40119	67.65682	3
06/08/2010	-106.40114	67.65685	3
06/08/2010	-106.40106	67.65689	3
06/08/2010	-106.40101	67.65692	2
06/08/2010	-106.40097	67.65694	4
06/08/2010	-106.40093	67.65697	3
06/08/2010	-106.40086	67.65702	4
06/08/2010	-106.40082	67.65704	4
06/08/2010	-106.40078	67.65707	3
06/08/2010	-106.40071	67.65712	4
06/08/2010	-106.40068	67.65715	4
06/08/2010	-106.40065	67.65717	3
06/08/2010	-106.40061	67.65720	4
06/08/2010	-106.40056	67.65725	3
06/08/2010	-106.40053	67.65728	4
06/08/2010	-106.40050	67.65730	3
06/08/2010	-106.40043	67.65736	3
06/08/2010	-106.40040	67.65738	3
06/08/2010	-106.40037	67.65741	4
06/08/2010	-106.40034	67.65743	3
06/08/2010	-106.40026	67.65748	2
06/08/2010	-106.40023	67.65751	3
06/08/2010	-106.40019	67.65753	3
06/08/2010	-106.40015	67.65756	3
06/08/2010	-106.40008	67.65761	3
06/08/2010	-106.40004	67.65763	3
06/08/2010	-106.40000	67.65766	4
06/08/2010	-106.39993	67.65771	4
06/08/2010	-106.39990	67.65774	3
06/08/2010	-106.39986	67.65776	4
06/08/2010	-106.39983	67.65779	2
06/08/2010	-106.39976	67.65784	3
06/08/2010	-106.39973	67.65787	3
06/08/2010	-106.39969	67.65789	2
06/08/2010	-106.39963	67.65795	4
06/08/2010	-106.39959	67.65797	3
06/08/2010	-106.39956	67.65800	3
06/08/2010	-106.39953	67.65803	3
06/08/2010	-106.39946	67.65808	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39942	67.65810	2
06/08/2010	-106.39939	67.65813	3
06/08/2010	-106.39932	67.65818	3
06/08/2010	-106.39928	67.65821	4
06/08/2010	-106.39925	67.65824	2
06/08/2010	-106.39918	67.65829	3
06/08/2010	-106.39915	67.65832	3
06/08/2010	-106.39911	67.65834	2
06/08/2010	-106.39908	67.65837	3
06/08/2010	-106.39902	67.65842	2
06/08/2010	-106.39899	67.65845	2
06/08/2010	-106.39896	67.65848	2
06/08/2010	-106.39890	67.65853	3
06/08/2010	-106.39887	67.65856	3
06/08/2010	-106.39885	67.65858	2
06/08/2010	-106.39882	67.65861	2
06/08/2010	-106.39877	67.65867	2
06/08/2010	-106.39874	67.65869	2
06/08/2010	-106.39871	67.65872	2
06/08/2010	-106.39868	67.65875	2
06/08/2010	-106.39861	67.65880	2
06/08/2010	-106.39858	67.65883	2
06/08/2010	-106.39855	67.65885	2
06/08/2010	-106.39848	67.65890	2
06/08/2010	-106.39845	67.65893	2
06/08/2010	-106.39842	67.65896	2
06/08/2010	-106.39839	67.65898	2
06/08/2010	-106.39832	67.65904	2
06/08/2010	-106.39828	67.65906	3
06/08/2010	-106.39825	67.65909	3
06/08/2010	-106.39817	67.65914	4
06/08/2010	-106.39813	67.65916	3
06/08/2010	-106.39810	67.65919	3
06/08/2010	-106.39802	67.65924	3
06/08/2010	-106.39798	67.65926	4
06/08/2010	-106.39794	67.65929	4
06/08/2010	-106.39790	67.65931	4
06/08/2010	-106.39781	67.65936	4
06/08/2010	-106.39781	67.65936	4
06/08/2010	-106.39772	67.65941	4
06/08/2010	-106.39763	67.65946	3
06/08/2010	-106.39759	67.65948	3
06/08/2010	-106.39755	67.65951	2
06/08/2010	-106.39751	67.65953	2
06/08/2010	-106.39744	67.65958	3
06/08/2010	-106.39740	67.65961	3
06/08/2010	-106.39737	67.65963	3
06/08/2010	-106.39730	67.65969	4
06/08/2010	-106.39726	67.65971	3
06/08/2010	-106.39723	67.65974	3
06/08/2010	-106.39716	67.65979	3
06/08/2010	-106.39712	67.65982	3
06/08/2010	-106.39709	67.65984	3
06/08/2010	-106.39705	67.65987	3
06/08/2010	-106.39698	67.65992	3

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39695	67.65995	4
06/08/2010	-106.39691	67.65997	4
06/08/2010	-106.39685	67.66002	3
06/08/2010	-106.39681	67.66005	3
06/08/2010	-106.39678	67.66008	4
06/08/2010	-106.39675	67.66010	3
06/08/2010	-106.39669	67.66016	4
06/08/2010	-106.39666	67.66018	4
06/08/2010	-106.39662	67.66021	4
06/08/2010	-106.39656	67.66026	3
06/08/2010	-106.39652	67.66029	3
06/08/2010	-106.39648	67.66031	4
06/08/2010	-106.39640	67.66036	3
06/08/2010	-106.39636	67.66039	2
06/08/2010	-106.39632	67.66041	3
06/08/2010	-106.39629	67.66043	3
06/08/2010	-106.39623	67.66047	4
06/08/2010	-106.39621	67.66049	3
06/08/2010	-106.39618	67.66051	2
06/08/2010	-106.39613	67.66055	3
06/08/2010	-106.39611	67.66057	4
06/08/2010	-106.39608	67.66059	3
06/08/2010	-106.39605	67.66061	2
06/08/2010	-106.39599	67.66064	2
06/08/2010	-106.39596	67.66066	2
06/08/2010	-106.39593	67.66068	3
06/08/2010	-106.39587	67.66071	3
06/08/2010	-106.39585	67.66073	2
06/08/2010	-106.39582	67.66075	3
06/08/2010	-106.39576	67.66078	4
06/08/2010	-106.39573	67.66080	3
06/08/2010	-106.39571	67.66082	4
06/08/2010	-106.39569	67.66084	4
06/08/2010	-106.39566	67.66088	4
06/08/2010	-106.39564	67.66090	4
06/08/2010	-106.39563	67.66092	3
06/08/2010	-106.39560	67.66096	2
06/08/2010	-106.39559	67.66098	3
06/08/2010	-106.39558	67.66100	4
06/08/2010	-106.39556	67.66104	2
06/08/2010	-106.39554	67.66106	3
06/08/2010	-106.39553	67.66107	3
06/08/2010	-106.39552	67.66109	3
06/08/2010	-106.39550	67.66112	3
06/08/2010	-106.39549	67.66114	4
06/08/2010	-106.39548	67.66115	3
06/08/2010	-106.39545	67.66119	3
06/08/2010	-106.39544	67.66120	3
06/08/2010	-106.39543	67.66122	2
06/08/2010	-106.39542	67.66123	4
06/08/2010	-106.39539	67.66126	3
06/08/2010	-106.39537	67.66128	3
06/08/2010	-106.39536	67.66129	3
06/08/2010	-106.39533	67.66133	3
06/08/2010	-106.39531	67.66134	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39529	67.66136	3
06/08/2010	-106.39528	67.66137	2
06/08/2010	-106.39525	67.66140	3
06/08/2010	-106.39523	67.66142	3
06/08/2010	-106.39521	67.66144	4
06/08/2010	-106.39518	67.66147	3
06/08/2010	-106.39516	67.66148	3
06/08/2010	-106.39514	67.66150	3
06/08/2010	-106.39512	67.66151	3
06/08/2010	-106.39511	67.66154	3
06/08/2010	-106.39511	67.66156	4
06/08/2010	-106.39512	67.66157	4
06/08/2010	-106.39514	67.66158	4
06/08/2010	-106.39518	67.66159	3
06/08/2010	-106.39521	67.66160	4
06/08/2010	-106.39524	67.66161	4
06/08/2010	-106.39530	67.66163	3
06/08/2010	-106.39533	67.66164	3
06/08/2010	-106.39537	67.66165	3
06/08/2010	-106.39539	67.66166	3
06/08/2010	-106.39545	67.66168	2
06/08/2010	-106.39548	67.66169	4
06/08/2010	-106.39551	67.66170	4
06/08/2010	-106.39557	67.66172	4
06/08/2010	-106.39560	67.66173	3
06/08/2010	-106.39562	67.66174	4
06/08/2010	-106.39568	67.66176	3
06/08/2010	-106.39571	67.66178	3
06/08/2010	-106.39573	67.66179	3
06/08/2010	-106.39576	67.66180	2
06/08/2010	-106.39581	67.66182	2
06/08/2010	-106.39584	67.66184	3
06/08/2010	-106.39586	67.66185	3
06/08/2010	-106.39590	67.66188	4
06/08/2010	-106.39592	67.66189	3
06/08/2010	-106.39595	67.66190	3
06/08/2010	-106.39600	67.66192	3
06/08/2010	-106.39603	67.66193	4
06/08/2010	-106.39606	67.66195	3
06/08/2010	-106.39609	67.66196	3
06/08/2010	-106.39616	67.66197	3
06/08/2010	-106.39620	67.66198	4
06/08/2010	-106.39625	67.66198	2
06/08/2010	-106.39635	67.66199	3
06/08/2010	-106.39640	67.66199	4
06/08/2010	-106.39645	67.66199	3
06/08/2010	-106.39651	67.66199	2
06/08/2010	-106.39662	67.66199	2
06/08/2010	-106.39667	67.66199	2
06/08/2010	-106.39673	67.66199	2
06/08/2010	-106.39684	67.66200	2
06/08/2010	-106.39690	67.66200	3
06/08/2010	-106.39695	67.66200	3
06/08/2010	-106.39701	67.66200	3
06/08/2010	-106.39714	67.66201	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39721	67.66201	3
06/08/2010	-106.39729	67.66201	4
06/08/2010	-106.39744	67.66200	2
06/08/2010	-106.39752	67.66199	3
06/08/2010	-106.39759	67.66199	3
06/08/2010	-106.39775	67.66197	2
06/08/2010	-106.39783	67.66197	3
06/08/2010	-106.39790	67.66196	3
06/08/2010	-106.39798	67.66196	4
06/08/2010	-106.39814	67.66196	4
06/08/2010	-106.39822	67.66195	2
06/08/2010	-106.39830	67.66195	2
06/08/2010	-106.39846	67.66195	2
06/08/2010	-106.39854	67.66194	2
06/08/2010	-106.39862	67.66194	2
06/08/2010	-106.39869	67.66194	2
06/08/2010	-106.39886	67.66194	2
06/08/2010	-106.39894	67.66193	3
06/08/2010	-106.39902	67.66193	4
06/08/2010	-106.39910	67.66193	3
06/08/2010	-106.39926	67.66193	4
06/08/2010	-106.39934	67.66193	4
06/08/2010	-106.39942	67.66193	4
06/08/2010	-106.39958	67.66193	4
06/08/2010	-106.39966	67.66193	4
06/08/2010	-106.39974	67.66193	4
06/08/2010	-106.39991	67.66192	3
06/08/2010	-106.39999	67.66192	2
06/08/2010	-106.40007	67.66192	3
06/08/2010	-106.40015	67.66192	3
06/08/2010	-106.40031	67.66193	3
06/08/2010	-106.40039	67.66193	3
06/08/2010	-106.40047	67.66193	3
06/08/2010	-106.40063	67.66193	3
06/08/2010	-106.40071	67.66192	4
06/08/2010	-106.40079	67.66192	4
06/08/2010	-106.40087	67.66192	4
06/08/2010	-106.40104	67.66192	4
06/08/2010	-106.40112	67.66192	4
06/08/2010	-106.40120	67.66192	4
06/08/2010	-106.40137	67.66192	4
06/08/2010	-106.40145	67.66192	4
06/08/2010	-106.40153	67.66193	4
06/08/2010	-106.40161	67.66193	4
06/08/2010	-106.40178	67.66193	4
06/08/2010	-106.40186	67.66194	4
06/08/2010	-106.40194	67.66194	2
06/08/2010	-106.40211	67.66194	2
06/08/2010	-106.40219	67.66194	2
06/08/2010	-106.40227	67.66194	2
06/08/2010	-106.40236	67.66195	3
06/08/2010	-106.40252	67.66195	3
06/08/2010	-106.40260	67.66195	2
06/08/2010	-106.40268	67.66196	4
06/08/2010	-106.40276	67.66196	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40293	67.66196	3
06/08/2010	-106.40301	67.66196	4
06/08/2010	-106.40309	67.66196	3
06/08/2010	-106.40325	67.66195	3
06/08/2010	-106.40334	67.66195	3
06/08/2010	-106.40342	67.66195	2
06/08/2010	-106.40350	67.66195	4
06/08/2010	-106.40367	67.66195	2
06/08/2010	-106.40375	67.66195	2
06/08/2010	-106.40384	67.66195	4
06/08/2010	-106.40392	67.66195	4
06/08/2010	-106.40409	67.66196	4
06/08/2010	-106.40417	67.66196	2
06/08/2010	-106.40425	67.66196	4
06/08/2010	-106.40442	67.66196	4
06/08/2010	-106.40450	67.66196	2
06/08/2010	-106.40458	67.66196	4
06/08/2010	-106.40467	67.66196	4
06/08/2010	-106.40484	67.66196	4
06/08/2010	-106.40492	67.66196	4
06/08/2010	-106.40500	67.66196	4
06/08/2010	-106.40509	67.66197	4
06/08/2010	-106.40525	67.66197	4
06/08/2010	-106.40533	67.66197	4
06/08/2010	-106.40542	67.66197	4
06/08/2010	-106.40558	67.66197	2
06/08/2010	-106.40566	67.66197	2
06/08/2010	-106.40575	67.66196	2
06/08/2010	-106.40583	67.66196	2
06/08/2010	-106.40599	67.66195	2
06/08/2010	-106.40608	67.66195	2
06/08/2010	-106.40616	67.66195	2
06/08/2010	-106.40624	67.66194	2
06/08/2010	-106.40641	67.66194	2
06/08/2010	-106.40649	67.66193	2
06/08/2010	-106.40657	67.66193	1
06/08/2010	-106.40666	67.66192	1
06/08/2010	-106.40682	67.66192	1
06/08/2010	-106.40690	67.66191	2
06/08/2010	-106.40699	67.66191	2
06/08/2010	-106.40716	67.66191	2
06/08/2010	-106.40724	67.66190	2
06/08/2010	-106.40733	67.66190	1
06/08/2010	-106.40741	67.66190	2
06/08/2010	-106.40758	67.66190	2
06/08/2010	-106.40767	67.66190	2
06/08/2010	-106.40775	67.66190	2
06/08/2010	-106.40784	67.66190	2
06/08/2010	-106.40801	67.66190	2
06/08/2010	-106.40809	67.66190	2
06/08/2010	-106.40817	67.66190	2
06/08/2010	-106.40826	67.66190	2
06/08/2010	-106.40843	67.66190	2
06/08/2010	-106.40851	67.66190	2
06/08/2010	-106.40860	67.66190	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40868	67.66190	1
06/08/2010	-106.40885	67.66190	1
06/08/2010	-106.40894	67.66190	1
06/08/2010	-106.40902	67.66190	1
06/08/2010	-106.40911	67.66190	2
06/08/2010	-106.40928	67.66190	2
06/08/2010	-106.40937	67.66190	1
06/08/2010	-106.40945	67.66190	2
06/08/2010	-106.40954	67.66190	2
06/08/2010	-106.40971	67.66191	1
06/08/2010	-106.40980	67.66191	2
06/08/2010	-106.40988	67.66191	2
06/08/2010	-106.40997	67.66191	2
06/08/2010	-106.41005	67.66191	1
06/08/2010	-106.41021	67.66192	2
06/08/2010	-106.41029	67.66192	2
06/08/2010	-106.41037	67.66192	2
06/08/2010	-106.41045	67.66192	2
06/08/2010	-106.41060	67.66192	2
06/08/2010	-106.41068	67.66192	1
06/08/2010	-106.41074	67.66192	1
06/08/2010	-106.41080	67.66192	2
06/08/2010	-106.41086	67.66192	2
06/08/2010	-106.41097	67.66191	1
06/08/2010	-106.41103	67.66191	1
06/08/2010	-106.41107	67.66191	2
06/08/2010	-106.41111	67.66191	2
06/08/2010	-106.41117	67.66191	2
06/08/2010	-106.41120	67.66191	4
06/08/2010	-106.41123	67.66191	3
06/08/2010	-106.41128	67.66191	2
06/08/2010	-106.41129	67.66191	2
06/08/2010	-106.41129	67.66192	3
06/08/2010	-106.41132	67.66192	3
06/08/2010	-106.41133	67.66193	2
06/08/2010	-106.41135	67.66193	2
06/08/2010	-106.41136	67.66194	2
06/08/2010	-106.41140	67.66194	2
06/08/2010	-106.41142	67.66194	2
06/08/2010	-106.41144	67.66195	2
06/08/2010	-106.41147	67.66195	2
06/08/2010	-106.41148	67.66195	3
06/08/2010	-106.41149	67.66195	3
06/08/2010	-106.41149	67.66195	3
06/08/2010	-106.41151	67.66195	3
06/08/2010	-106.41152	67.66195	2
06/08/2010	-106.41153	67.66195	2
06/08/2010	-106.41154	67.66195	2
06/08/2010	-106.41154	67.66195	3
06/08/2010	-106.41127	67.66214	2
06/08/2010	-106.41125	67.66215	4
06/08/2010	-106.41123	67.66216	3
06/08/2010	-106.41121	67.66217	2
06/08/2010	-106.41115	67.66219	3
06/08/2010	-106.41112	67.66220	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41109	67.66220	1
06/08/2010	-106.41103	67.66221	1
06/08/2010	-106.41099	67.66222	2
06/08/2010	-106.41096	67.66223	2
06/08/2010	-106.41093	67.66225	2
06/08/2010	-106.41088	67.66228	4
06/08/2010	-106.41086	67.66229	2
06/08/2010	-106.41084	67.66231	2
06/08/2010	-106.41082	67.66233	1
06/08/2010	-106.41078	67.66237	1
06/08/2010	-106.41076	67.66238	1
06/08/2010	-106.41074	67.66240	1
06/08/2010	-106.41072	67.66242	2
06/08/2010	-106.41068	67.66246	2
06/08/2010	-106.41066	67.66247	2
06/08/2010	-106.41064	67.66249	2
06/08/2010	-106.41061	67.66251	2
06/08/2010	-106.41056	67.66254	2
06/08/2010	-106.41053	67.66256	2
06/08/2010	-106.41050	67.66258	2
06/08/2010	-106.41048	67.66259	2
06/08/2010	-106.41045	67.66261	2
06/08/2010	-106.41040	67.66265	2
06/08/2010	-106.41038	67.66266	2
06/08/2010	-106.41035	67.66268	2
06/08/2010	-106.41033	67.66270	2
06/08/2010	-106.41031	67.66272	2
06/08/2010	-106.41026	67.66275	2
06/08/2010	-106.41024	67.66277	2
06/08/2010	-106.41022	67.66279	2
06/08/2010	-106.41020	67.66281	2
06/08/2010	-106.41018	67.66283	2
06/08/2010	-106.41014	67.66287	2
06/08/2010	-106.41012	67.66288	2
06/08/2010	-106.41009	67.66290	2
06/08/2010	-106.41007	67.66292	2
06/08/2010	-106.41005	67.66293	2
06/08/2010	-106.41003	67.66295	2
06/08/2010	-106.41001	67.66298	2
06/08/2010	-106.41000	67.66300	2
06/08/2010	-106.40999	67.66302	2
06/08/2010	-106.40999	67.66304	2
06/08/2010	-106.40998	67.66306	2
06/08/2010	-106.40997	67.66307	4
06/08/2010	-106.40996	67.66311	3
06/08/2010	-106.40995	67.66313	4
06/08/2010	-106.40994	67.66315	4
06/08/2010	-106.40992	67.66316	3
06/08/2010	-106.40991	67.66318	4
06/08/2010	-106.40989	67.66321	4
06/08/2010	-106.40989	67.66323	4
06/08/2010	-106.40988	67.66325	4
06/08/2010	-106.40987	67.66326	4
06/08/2010	-106.40987	67.66328	4
06/08/2010	-106.40986	67.66330	4
06/08/2010	-106.40985	67.66333	4
06/08/2010	-106.40985	67.66335	4
06/08/2010	-106.40985	67.66337	3
06/08/2010	-106.40984	67.66339	4
06/08/2010	-106.40985	67.66340	4
06/08/2010	-106.40986	67.66343	2
06/08/2010	-106.40987	67.66345	2
06/08/2010	-106.40989	67.66347	2
06/08/2010	-106.40991	67.66348	3
06/08/2010	-106.40992	67.66350	3
06/08/2010	-106.40994	67.66352	4
06/08/2010	-106.41000	67.66356	4
06/08/2010	-106.41003	67.66358	3
06/08/2010	-106.41006	67.66360	2
06/08/2010	-106.41009	67.66362	2
06/08/2010	-106.41011	67.66365	3
06/08/2010	-106.41015	67.66369	3
06/08/2010	-106.41016	67.66372	4
06/08/2010	-106.41019	67.66374	2
06/08/2010	-106.41021	67.66376	4
06/08/2010	-106.41023	67.66379	4
06/08/2010	-106.41026	67.66381	2
06/08/2010	-106.41031	67.66386	2
06/08/2010	-106.41034	67.66388	3
06/08/2010	-106.41036	67.66390	2
06/08/2010	-106.41039	67.66393	2
06/08/2010	-106.41042	67.66395	2
06/08/2010	-106.41047	67.66400	2
06/08/2010	-106.41050	67.66402	2
06/08/2010	-106.41053	67.66404	2
06/08/2010	-106.41056	67.66407	2
06/08/2010	-106.41062	67.66411	2
06/08/2010	-106.41065	67.66413	2
06/08/2010	-106.41068	67.66415	2
06/08/2010	-106.41071	67.66418	2
06/08/2010	-106.41075	67.66420	2
06/08/2010	-106.41080	67.66425	2
06/08/2010	-106.41083	67.66427	2
06/08/2010	-106.41085	67.66429	2
06/08/2010	-106.41088	67.66432	1
06/08/2010	-106.41092	67.66437	2
06/08/2010	-106.41094	67.66439	2
06/08/2010	-106.41096	67.66442	2
06/08/2010	-106.41099	67.66444	2
06/08/2010	-106.41105	67.66449	2
06/08/2010	-106.41107	67.66451	2
06/08/2010	-106.41110	67.66453	1
06/08/2010	-106.41113	67.66456	2
06/08/2010	-106.41120	67.66460	2
06/08/2010	-106.41123	67.66462	1
06/08/2010	-106.41127	67.66464	2
06/08/2010	-106.41131	67.66466	1
06/08/2010	-106.41139	67.66470	2
06/08/2010	-106.41142	67.66473	2
06/08/2010	-106.41146	67.66475	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41155	67.66479	2
06/08/2010	-106.41159	67.66481	2
06/08/2010	-106.41163	67.66482	3
06/08/2010	-106.41168	67.66484	4
06/08/2010	-106.41177	67.66488	2
06/08/2010	-106.41182	67.66490	2
06/08/2010	-106.41186	67.66492	2
06/08/2010	-106.41194	67.66496	2
06/08/2010	-106.41198	67.66498	2
06/08/2010	-106.41201	67.66500	3
06/08/2010	-106.41205	67.66502	4
06/08/2010	-106.41213	67.66506	4
06/08/2010	-106.41216	67.66508	4
06/08/2010	-106.41219	67.66509	4
06/08/2010	-106.41222	67.66512	4
06/08/2010	-106.41224	67.66514	4
06/08/2010	-106.41226	67.66515	4
06/08/2010	-106.41229	67.66518	2
06/08/2010	-106.41230	67.66519	4
06/08/2010	-106.41230	67.66519	4
06/08/2010	-106.41232	67.66522	4
06/08/2010	-106.41235	67.66525	4
06/08/2010	-106.41236	67.66526	4
06/08/2010	-106.41238	67.66527	4
06/08/2010	-106.41242	67.66530	4
06/08/2010	-106.41243	67.66531	4
06/08/2010	-106.41245	67.66532	4
06/08/2010	-106.41249	67.66535	4
06/08/2010	-106.41251	67.66536	3
06/08/2010	-106.41254	67.66537	4
06/08/2010	-106.41257	67.66537	4
06/08/2010	-106.41263	67.66539	4
06/08/2010	-106.41266	67.66539	4
06/08/2010	-106.41269	67.66539	4
06/08/2010	-106.41276	67.66540	3
06/08/2010	-106.41279	67.66541	3
06/08/2010	-106.41283	67.66541	4
06/08/2010	-106.41290	67.66541	3
06/08/2010	-106.41293	67.66542	4
06/08/2010	-106.41297	67.66541	4
06/08/2010	-106.41301	67.66541	4
06/08/2010	-106.41308	67.66541	4
06/08/2010	-106.41312	67.66541	4
06/08/2010	-106.41315	67.66540	4
06/08/2010	-106.41322	67.66540	4
06/08/2010	-106.41325	67.66540	3
06/08/2010	-106.41328	67.66540	4
06/08/2010	-106.41334	67.66540	4
06/08/2010	-106.41336	67.66541	3
06/08/2010	-106.41338	67.66542	4
06/08/2010	-106.41339	67.66543	4
06/08/2010	-106.41338	67.66545	4
06/08/2010	-106.41338	67.66546	4
06/08/2010	-106.41336	67.66547	4
06/08/2010	-106.41332	67.66548	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41330	67.66549	4
06/08/2010	-106.41328	67.66550	4
06/08/2010	-106.41322	67.66551	4
06/08/2010	-106.41319	67.66552	4
06/08/2010	-106.41316	67.66552	3
06/08/2010	-106.41313	67.66552	4
06/08/2010	-106.41308	67.66554	4
06/08/2010	-106.41305	67.66554	4
06/08/2010	-106.41302	67.66555	4
06/08/2010	-106.41297	67.66557	4
06/08/2010	-106.41293	67.66558	4
06/08/2010	-106.41289	67.66558	4
06/08/2010	-106.41280	67.66560	3
06/08/2010	-106.41275	67.66561	3
06/08/2010	-106.41271	67.66561	3
06/08/2010	-106.41265	67.66562	4
06/08/2010	-106.41254	67.66563	3
06/08/2010	-106.41249	67.66563	4
06/08/2010	-106.41243	67.66564	4
06/08/2010	-106.41231	67.66564	3
06/08/2010	-106.41225	67.66564	2
06/08/2010	-106.41217	67.66564	3
06/08/2010	-106.41210	67.66564	3
06/08/2010	-106.41195	67.66563	4
06/08/2010	-106.41188	67.66563	4
06/08/2010	-106.41180	67.66562	2
06/08/2010	-106.41165	67.66562	4
06/08/2010	-106.41158	67.66561	4
06/08/2010	-106.41151	67.66561	4
06/08/2010	-106.41143	67.66560	4
06/08/2010	-106.41129	67.66559	3
06/08/2010	-106.41121	67.66558	3
06/08/2010	-106.41114	67.66557	2
06/08/2010	-106.41099	67.66556	2
06/08/2010	-106.41092	67.66555	2
06/08/2010	-106.41085	67.66555	2
06/08/2010	-106.41077	67.66554	3
06/08/2010	-106.41062	67.66554	2
06/08/2010	-106.41055	67.66554	2
06/08/2010	-106.41047	67.66553	2
06/08/2010	-106.41039	67.66554	2
06/08/2010	-106.41024	67.66554	2
06/08/2010	-106.41016	67.66554	2
06/08/2010	-106.41008	67.66554	2
06/08/2010	-106.41001	67.66555	3
06/08/2010	-106.40985	67.66555	2
06/08/2010	-106.40978	67.66556	3
06/08/2010	-106.40970	67.66556	4
06/08/2010	-106.40963	67.66556	4
06/08/2010	-106.40947	67.66557	2
06/08/2010	-106.40940	67.66557	3
06/08/2010	-106.40932	67.66558	2
06/08/2010	-106.40925	67.66558	3
06/08/2010	-106.40909	67.66559	4
06/08/2010	-106.40901	67.66559	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40894	67.66559	3
06/08/2010	-106.40886	67.66560	2
06/08/2010	-106.40871	67.66561	4
06/08/2010	-106.40863	67.66561	4
06/08/2010	-106.40855	67.66562	4
06/08/2010	-106.40847	67.66562	4
06/08/2010	-106.40832	67.66563	4
06/08/2010	-106.40824	67.66563	4
06/08/2010	-106.40817	67.66563	4
06/08/2010	-106.40802	67.66563	4
06/08/2010	-106.40794	67.66564	4
06/08/2010	-106.40786	67.66564	4
06/08/2010	-106.40778	67.66564	4
06/08/2010	-106.40763	67.66565	4
06/08/2010	-106.40755	67.66565	4
06/08/2010	-106.40747	67.66565	2
06/08/2010	-106.40740	67.66565	4
06/08/2010	-106.40724	67.66565	4
06/08/2010	-106.40716	67.66565	4
06/08/2010	-106.40708	67.66565	4
06/08/2010	-106.40701	67.66565	2
06/08/2010	-106.40685	67.66565	4
06/08/2010	-106.40677	67.66565	4
06/08/2010	-106.40670	67.66565	4
06/08/2010	-106.40654	67.66565	2
06/08/2010	-106.40647	67.66565	4
06/08/2010	-106.40639	67.66565	4
06/08/2010	-106.40631	67.66565	4
06/08/2010	-106.40615	67.66565	4
06/08/2010	-106.40608	67.66565	4
06/08/2010	-106.40600	67.66565	2
06/08/2010	-106.40592	67.66564	3
06/08/2010	-106.40576	67.66564	2
06/08/2010	-106.40569	67.66564	3
06/08/2010	-106.40561	67.66564	2
06/08/2010	-106.40546	67.66563	2
06/08/2010	-106.40538	67.66563	2
06/08/2010	-106.40530	67.66563	1
06/08/2010	-106.40523	67.66563	2
06/08/2010	-106.40507	67.66563	2
06/08/2010	-106.40500	67.66562	2
06/08/2010	-106.40492	67.66562	4
06/08/2010	-106.40484	67.66562	3
06/08/2010	-106.40469	67.66562	2
06/08/2010	-106.40461	67.66563	3
06/08/2010	-106.40454	67.66563	4
06/08/2010	-106.40439	67.66564	4
06/08/2010	-106.40431	67.66564	2
06/08/2010	-106.40424	67.66565	2
06/08/2010	-106.40424	67.66565	2
06/08/2010	-106.40402	67.66567	4
06/08/2010	-106.40394	67.66567	2
06/08/2010	-106.40387	67.66568	2
06/08/2010	-106.40380	67.66568	3
06/08/2010	-106.40365	67.66569	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40357	67.66569	2
06/08/2010	-106.40350	67.66569	4
06/08/2010	-106.40334	67.66569	2
06/08/2010	-106.40327	67.66570	2
06/08/2010	-106.40319	67.66570	3
06/08/2010	-106.40311	67.66569	3
06/08/2010	-106.40296	67.66569	2
06/08/2010	-106.40289	67.66569	3
06/08/2010	-106.40282	67.66569	3
06/08/2010	-106.40268	67.66570	4
06/08/2010	-106.40261	67.66570	2
06/08/2010	-106.40254	67.66570	3
06/08/2010	-106.40246	67.66570	3
06/08/2010	-106.40231	67.66570	2
06/08/2010	-106.40224	67.66570	2
06/08/2010	-106.40216	67.66569	2
06/08/2010	-106.40201	67.66569	2
06/08/2010	-106.40194	67.66568	2
06/08/2010	-106.40186	67.66568	3
06/08/2010	-106.40179	67.66568	4
06/08/2010	-106.40164	67.66567	4
06/08/2010	-106.40157	67.66567	4
06/08/2010	-106.40149	67.66567	4
06/08/2010	-106.40134	67.66567	4
06/08/2010	-106.40127	67.66567	3
06/08/2010	-106.40119	67.66567	0
06/08/2010	-106.40105	67.66567	0
06/08/2010	-106.40098	67.66567	0
06/08/2010	-106.40090	67.66568	0
06/08/2010	-106.40076	67.66568	0
06/08/2010	-106.40069	67.66568	0
06/08/2010	-106.40061	67.66568	0
06/08/2010	-106.40054	67.66569	4
06/08/2010	-106.40039	67.66569	4
06/08/2010	-106.40032	67.66569	4
06/08/2010	-106.40024	67.66569	4
06/08/2010	-106.40010	67.66569	4
06/08/2010	-106.40002	67.66569	4
06/08/2010	-106.39995	67.66569	4
06/08/2010	-106.39980	67.66570	4
06/08/2010	-106.39973	67.66570	3
06/08/2010	-106.39965	67.66570	4
06/08/2010	-106.39951	67.66569	3
06/08/2010	-106.39943	67.66569	2
06/08/2010	-106.39936	67.66569	3
06/08/2010	-106.39929	67.66569	2
06/08/2010	-106.39914	67.66569	3
06/08/2010	-106.39906	67.66569	3
06/08/2010	-106.39899	67.66568	3
06/08/2010	-106.39884	67.66568	3
06/08/2010	-106.39877	67.66568	2
06/08/2010	-106.39870	67.66568	2
06/08/2010	-106.39862	67.66567	2
06/08/2010	-106.39848	67.66567	2
06/08/2010	-106.39840	67.66567	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-1. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Ore Deposit Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39833	67.66567	3
06/08/2010	-106.39818	67.66567	2
06/08/2010	-106.39811	67.66567	3
06/08/2010	-106.39804	67.66567	4
06/08/2010	-106.39789	67.66567	4
06/08/2010	-106.39782	67.66567	2
06/08/2010	-106.39775	67.66567	2
06/08/2010	-106.39768	67.66567	2
06/08/2010	-106.39753	67.66567	3
06/08/2010	-106.39746	67.66568	2
06/08/2010	-106.39739	67.66568	3
06/08/2010	-106.39726	67.66569	3
06/08/2010	-106.39720	67.66570	3
06/08/2010	-106.39714	67.66570	3
06/08/2010	-106.39708	67.66570	3
06/08/2010	-106.39696	67.66571	3
06/08/2010	-106.39690	67.66571	3
06/08/2010	-106.39684	67.66571	3
06/08/2010	-106.39673	67.66571	2
06/08/2010	-106.39667	67.66572	3
06/08/2010	-106.39661	67.66572	4
06/08/2010	-106.39655	67.66572	3
06/08/2010	-106.39644	67.66573	3
06/08/2010	-106.39638	67.66573	2
06/08/2010	-106.39632	67.66573	3
06/08/2010	-106.39622	67.66574	3
06/08/2010	-106.39622	67.66574	3
06/08/2010	-106.39613	67.66575	4
06/08/2010	-106.39605	67.66575	3
06/08/2010	-106.39600	67.66576	3
06/08/2010	-106.39596	67.66576	3
06/08/2010	-106.39592	67.66576	3
06/08/2010	-106.39583	67.66576	3
06/08/2010	-106.39579	67.66576	3
06/08/2010	-106.39575	67.66577	2
06/08/2010	-106.39567	67.66577	4
06/08/2010	-106.39563	67.66577	2
06/08/2010	-106.39559	67.66577	2
06/08/2010	-106.39559	67.66577	2
06/08/2010	-106.39547	67.66578	3
06/08/2010	-106.39543	67.66579	3
06/08/2010	-106.39541	67.66579	4
06/08/2010	-106.39538	67.66580	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2

Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

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Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39019	67.69467	4
06/08/2010	-106.39027	67.69467	4
06/08/2010	-106.39031	67.69466	4
06/08/2010	-106.39040	67.69465	4
06/08/2010	-106.39045	67.69465	4
06/08/2010	-106.39049	67.69464	4
06/08/2010	-106.39059	67.69463	4
06/08/2010	-106.39071	67.69460	3
06/08/2010	-106.39077	67.69459	3
06/08/2010	-106.39089	67.69456	4
06/08/2010	-106.39095	67.69455	4
06/08/2010	-106.39108	67.69453	3
06/08/2010	-106.39114	67.69452	4
06/08/2010	-106.39125	67.69449	4
06/08/2010	-106.39137	67.69447	4
06/08/2010	-106.39143	67.69446	4
06/08/2010	-106.39156	67.69444	3
06/08/2010	-106.39162	67.69443	3
06/08/2010	-106.39168	67.69442	4
06/08/2010	-106.39182	67.69440	4
06/08/2010	-106.39195	67.69439	4
06/08/2010	-106.39201	67.69438	4
06/08/2010	-106.39214	67.69437	4
06/08/2010	-106.39221	67.69436	4
06/08/2010	-106.39234	67.69435	4
06/08/2010	-106.39240	67.69434	4
06/08/2010	-106.39253	67.69433	4
06/08/2010	-106.39259	67.69433	4
06/08/2010	-106.39272	67.69432	4
06/08/2010	-106.39279	67.69431	4
06/08/2010	-106.39291	67.69430	2
06/08/2010	-106.39298	67.69429	4
06/08/2010	-106.39311	67.69427	4
06/08/2010	-106.39317	67.69427	4
06/08/2010	-106.39330	67.69425	4
06/08/2010	-106.39336	67.69424	4
06/08/2010	-106.39349	67.69422	4
06/08/2010	-106.39355	67.69421	4
06/08/2010	-106.39368	67.69420	4
06/08/2010	-106.39375	67.69419	4
06/08/2010	-106.39388	67.69418	4
06/08/2010	-106.39394	67.69417	4
06/08/2010	-106.39401	67.69416	4
06/08/2010	-106.39414	67.69416	4
06/08/2010	-106.39420	67.69415	4
06/08/2010	-106.39433	67.69414	4
06/08/2010	-106.39440	67.69414	4
06/08/2010	-106.39452	67.69412	4
06/08/2010	-106.39459	67.69412	4
06/08/2010	-106.39471	67.69410	4
06/08/2010	-106.39477	67.69410	4
06/08/2010	-106.39490	67.69408	4
06/08/2010	-106.39496	67.69407	4
06/08/2010	-106.39508	67.69406	4
06/08/2010	-106.39514	67.69405	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39527	67.69403	4
06/08/2010	-106.39533	67.69402	4
06/08/2010	-106.39545	67.69400	4
06/08/2010	-106.39551	67.69399	4
06/08/2010	-106.39563	67.69397	4
06/08/2010	-106.39569	67.69396	2
06/08/2010	-106.39582	67.69394	2
06/08/2010	-106.39588	67.69394	3
06/08/2010	-106.39601	67.69392	2
06/08/2010	-106.39607	67.69391	2
06/08/2010	-106.39620	67.69389	2
06/08/2010	-106.39626	67.69389	2
06/08/2010	-106.39639	67.69387	2
06/08/2010	-106.39645	67.69386	2
06/08/2010	-106.39658	67.69385	2
06/08/2010	-106.39664	67.69384	3
06/08/2010	-106.39677	67.69383	2
06/08/2010	-106.39683	67.69382	2
06/08/2010	-106.39696	67.69381	2
06/08/2010	-106.39703	67.69380	2
06/08/2010	-106.39716	67.69379	2
06/08/2010	-106.39722	67.69379	3
06/08/2010	-106.39735	67.69377	2
06/08/2010	-106.39741	67.69376	2
06/08/2010	-106.39754	67.69375	2
06/08/2010	-106.39760	67.69373	2
06/08/2010	-106.39771	67.69371	2
06/08/2010	-106.39777	67.69370	3
06/08/2010	-106.39789	67.69367	2
06/08/2010	-106.39795	67.69366	2
06/08/2010	-106.39807	67.69364	2
06/08/2010	-106.39813	67.69363	2
06/08/2010	-106.39826	67.69361	2
06/08/2010	-106.39832	67.69360	2
06/08/2010	-106.39845	67.69358	4
06/08/2010	-106.39851	67.69358	4
06/08/2010	-106.39864	67.69356	4
06/08/2010	-106.39870	67.69355	4
06/08/2010	-106.39883	67.69354	4
06/08/2010	-106.39889	67.69353	4
06/08/2010	-106.39902	67.69352	4
06/08/2010	-106.39908	67.69351	2
06/08/2010	-106.39921	67.69350	2
06/08/2010	-106.39927	67.69349	2
06/08/2010	-106.39941	67.69347	2
06/08/2010	-106.39948	67.69347	4
06/08/2010	-106.39962	67.69345	2
06/08/2010	-106.39969	67.69344	4
06/08/2010	-106.39982	67.69342	4
06/08/2010	-106.39989	67.69341	2
06/08/2010	-106.39996	67.69340	4
06/08/2010	-106.40009	67.69338	4
06/08/2010	-106.40015	67.69337	4
06/08/2010	-106.40028	67.69335	4
06/08/2010	-106.40035	67.69334	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40049	67.69333	2
06/08/2010	-106.40055	67.69332	1
06/08/2010	-106.40069	67.69331	3
06/08/2010	-106.40076	67.69330	4
06/08/2010	-106.40089	67.69329	4
06/08/2010	-106.40096	67.69328	3
06/08/2010	-106.40109	67.69327	4
06/08/2010	-106.40116	67.69326	4
06/08/2010	-106.40130	67.69325	4
06/08/2010	-106.40136	67.69324	4
06/08/2010	-106.40150	67.69322	4
06/08/2010	-106.40157	67.69321	4
06/08/2010	-106.40170	67.69320	4
06/08/2010	-106.40177	67.69319	4
06/08/2010	-106.40190	67.69318	4
06/08/2010	-106.40197	67.69317	4
06/08/2010	-106.40211	67.69315	4
06/08/2010	-106.40218	67.69315	4
06/08/2010	-106.40231	67.69314	4
06/08/2010	-106.40238	67.69313	4
06/08/2010	-106.40251	67.69312	4
06/08/2010	-106.40258	67.69311	4
06/08/2010	-106.40271	67.69309	4
06/08/2010	-106.40278	67.69309	4
06/08/2010	-106.40291	67.69308	4
06/08/2010	-106.40298	67.69307	4
06/08/2010	-106.40311	67.69306	2
06/08/2010	-106.40318	67.69306	4
06/08/2010	-106.40331	67.69304	4
06/08/2010	-106.40337	67.69303	4
06/08/2010	-106.40350	67.69302	4
06/08/2010	-106.40356	67.69301	4
06/08/2010	-106.40369	67.69299	4
06/08/2010	-106.40375	67.69297	4
06/08/2010	-106.40387	67.69295	4
06/08/2010	-106.40394	67.69294	4
06/08/2010	-106.40406	67.69291	4
06/08/2010	-106.40412	67.69290	4
06/08/2010	-106.40425	67.69288	4
06/08/2010	-106.40432	67.69288	4
06/08/2010	-106.40445	67.69286	4
06/08/2010	-106.40452	67.69285	4
06/08/2010	-106.40465	67.69284	4
06/08/2010	-106.40471	67.69283	4
06/08/2010	-106.40484	67.69281	4
06/08/2010	-106.40491	67.69280	4
06/08/2010	-106.40504	67.69279	2
06/08/2010	-106.40510	67.69278	2
06/08/2010	-106.40517	67.69277	2
06/08/2010	-106.40529	67.69275	2
06/08/2010	-106.40535	67.69274	2
06/08/2010	-106.40547	67.69272	4
06/08/2010	-106.40553	67.69271	3
06/08/2010	-106.40565	67.69268	2
06/08/2010	-106.40571	67.69267	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40584	67.69264	4
06/08/2010	-106.40591	67.69264	2
06/08/2010	-106.40610	67.69261	2
06/08/2010	-106.40624	67.69260	2
06/08/2010	-106.40630	67.69259	2
06/08/2010	-106.40643	67.69257	4
06/08/2010	-106.40650	67.69256	4
06/08/2010	-106.40663	67.69254	4
06/08/2010	-106.40669	67.69253	4
06/08/2010	-106.40683	67.69252	4
06/08/2010	-106.40689	67.69251	4
06/08/2010	-106.40702	67.69250	4
06/08/2010	-106.40709	67.69249	4
06/08/2010	-106.40721	67.69247	4
06/08/2010	-106.40728	67.69246	4
06/08/2010	-106.40741	67.69244	4
06/08/2010	-106.40748	67.69244	4
06/08/2010	-106.40761	67.69242	4
06/08/2010	-106.40768	67.69241	4
06/08/2010	-106.40781	67.69239	4
06/08/2010	-106.40788	67.69239	4
06/08/2010	-106.40801	67.69237	4
06/08/2010	-106.40807	67.69236	4
06/08/2010	-106.40820	67.69235	4
06/08/2010	-106.40827	67.69234	4
06/08/2010	-106.40840	67.69232	4
06/08/2010	-106.40847	67.69231	4
06/08/2010	-106.40859	67.69229	4
06/08/2010	-106.40866	67.69228	4
06/08/2010	-106.40879	67.69227	4
06/08/2010	-106.40886	67.69226	4
06/08/2010	-106.40900	67.69225	4
06/08/2010	-106.40907	67.69225	4
06/08/2010	-106.40920	67.69224	4
06/08/2010	-106.40927	67.69223	4
06/08/2010	-106.40940	67.69222	4
06/08/2010	-106.40947	67.69221	4
06/08/2010	-106.40960	67.69219	4
06/08/2010	-106.40967	67.69218	4
06/08/2010	-106.40980	67.69217	4
06/08/2010	-106.40987	67.69217	4
06/08/2010	-106.41000	67.69216	4
06/08/2010	-106.41007	67.69215	4
06/08/2010	-106.41021	67.69214	4
06/08/2010	-106.41027	67.69214	2
06/08/2010	-106.41041	67.69212	2
06/08/2010	-106.41047	67.69211	2
06/08/2010	-106.41060	67.69210	2
06/08/2010	-106.41066	67.69209	2
06/08/2010	-106.41079	67.69207	2
06/08/2010	-106.41085	67.69206	2
06/08/2010	-106.41099	67.69204	2
06/08/2010	-106.41106	67.69204	2
06/08/2010	-106.41119	67.69203	2
06/08/2010	-106.41126	67.69202	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41139	67.69201	1
06/08/2010	-106.41146	67.69200	1
06/08/2010	-106.41160	67.69199	1
06/08/2010	-106.41167	67.69198	2
06/08/2010	-106.41180	67.69197	2
06/08/2010	-106.41187	67.69197	2
06/08/2010	-106.41200	67.69197	2
06/08/2010	-106.41207	67.69196	2
06/08/2010	-106.41220	67.69194	2
06/08/2010	-106.41226	67.69193	2
06/08/2010	-106.41239	67.69192	2
06/08/2010	-106.41246	67.69191	2
06/08/2010	-106.41258	67.69188	2
06/08/2010	-106.41264	67.69187	2
06/08/2010	-106.41277	67.69185	2
06/08/2010	-106.41283	67.69184	2
06/08/2010	-106.41296	67.69182	2
06/08/2010	-106.41303	67.69181	2
06/08/2010	-106.41314	67.69178	2
06/08/2010	-106.41320	67.69177	2
06/08/2010	-106.41332	67.69174	2
06/08/2010	-106.41338	67.69172	2
06/08/2010	-106.41350	67.69170	2
06/08/2010	-106.41357	67.69169	2
06/08/2010	-106.41369	67.69167	2
06/08/2010	-106.41376	67.69165	2
06/08/2010	-106.41388	67.69163	2
06/08/2010	-106.41395	67.69162	2
06/08/2010	-106.41408	67.69160	4
06/08/2010	-106.41414	67.69159	4
06/08/2010	-106.41420	67.69158	2
06/08/2010	-106.41433	67.69156	2
06/08/2010	-106.41440	67.69155	2
06/08/2010	-106.41453	67.69153	3
06/08/2010	-106.41459	67.69152	3
06/08/2010	-106.41472	67.69151	2
06/08/2010	-106.41479	67.69150	4
06/08/2010	-106.41492	67.69148	4
06/08/2010	-106.41498	67.69147	4
06/08/2010	-106.41512	67.69146	4
06/08/2010	-106.41519	67.69145	4
06/08/2010	-106.41532	67.69144	4
06/08/2010	-106.41539	67.69143	4
06/08/2010	-106.41552	67.69142	4
06/08/2010	-106.41559	67.69141	4
06/08/2010	-106.41572	67.69140	3
06/08/2010	-106.41579	67.69140	4
06/08/2010	-106.41593	67.69138	4
06/08/2010	-106.41599	67.69138	4
06/08/2010	-106.41613	67.69137	4
06/08/2010	-106.41620	67.69136	4
06/08/2010	-106.41633	67.69135	3
06/08/2010	-106.41640	67.69135	4
06/08/2010	-106.41653	67.69133	3
06/08/2010	-106.41659	67.69132	2
06/08/2010	-106.41672	67.69130	4
06/08/2010	-106.41679	67.69129	4
06/08/2010	-106.41692	67.69127	3
06/08/2010	-106.41698	67.69126	2
06/08/2010	-106.41711	67.69124	3
06/08/2010	-106.41718	67.69123	3
06/08/2010	-106.41731	67.69122	3
06/08/2010	-106.41738	67.69121	3
06/08/2010	-106.41751	67.69119	2
06/08/2010	-106.41757	67.69118	3
06/08/2010	-106.41770	67.69116	3
06/08/2010	-106.41777	67.69115	3
06/08/2010	-106.41790	67.69113	4
06/08/2010	-106.41796	67.69112	4
06/08/2010	-106.41809	67.69110	3
06/08/2010	-106.41815	67.69109	4
06/08/2010	-106.41828	67.69107	3
06/08/2010	-106.41834	67.69106	4
06/08/2010	-106.41847	67.69104	4
06/08/2010	-106.41854	67.69103	4
06/08/2010	-106.41867	67.69101	3
06/08/2010	-106.41873	67.69101	2
06/08/2010	-106.41887	67.69099	4
06/08/2010	-106.41893	67.69099	4
06/08/2010	-106.41900	67.69098	4
06/08/2010	-106.41907	67.69097	4
06/08/2010	-106.41920	67.69096	4
06/08/2010	-106.41933	67.69094	4
06/08/2010	-106.41940	67.69094	4
06/08/2010	-106.41953	67.69092	4
06/08/2010	-106.41960	67.69091	4
06/08/2010	-106.41973	67.69089	4
06/08/2010	-106.41979	67.69089	4
06/08/2010	-106.41992	67.69087	4
06/08/2010	-106.41999	67.69086	4
06/08/2010	-106.42011	67.69084	4
06/08/2010	-106.42018	67.69083	4
06/08/2010	-106.42031	67.69082	4
06/08/2010	-106.42038	67.69081	4
06/08/2010	-106.42051	67.69079	4
06/08/2010	-106.42057	67.69078	4
06/08/2010	-106.42071	67.69077	3
06/08/2010	-106.42077	67.69077	4
06/08/2010	-106.42090	67.69075	3
06/08/2010	-106.42097	67.69074	4
06/08/2010	-106.42109	67.69072	4
06/08/2010	-106.42115	67.69071	2
06/08/2010	-106.42128	67.69068	3
06/08/2010	-106.42134	67.69067	2
06/08/2010	-106.42147	67.69065	3
06/08/2010	-106.42154	67.69064	4
06/08/2010	-106.42167	67.69062	4
06/08/2010	-106.42173	67.69061	4
06/08/2010	-106.42187	67.69059	4
06/08/2010	-106.42193	67.69059	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42206	67.69057	4
06/08/2010	-106.42213	67.69057	2
06/08/2010	-106.42226	67.69055	2
06/08/2010	-106.42233	67.69055	4
06/08/2010	-106.42244	67.69053	4
06/08/2010	-106.42249	67.69053	2
06/08/2010	-106.42253	67.69052	4
06/08/2010	-106.42277	67.69049	4
06/08/2010	-106.42282	67.69049	4
06/08/2010	-106.42284	67.69050	4
06/08/2010	-106.42287	67.69051	4
06/08/2010	-106.42288	67.69052	4
06/08/2010	-106.42289	67.69054	4
06/08/2010	-106.42290	67.69055	4
06/08/2010	-106.42293	67.69058	4
06/08/2010	-106.42295	67.69060	4
06/08/2010	-106.42299	67.69064	4
06/08/2010	-106.42301	67.69066	4
06/08/2010	-106.42306	67.69070	4
06/08/2010	-106.42308	67.69073	4
06/08/2010	-106.42311	67.69078	4
06/08/2010	-106.42312	67.69081	2
06/08/2010	-106.42314	67.69087	4
06/08/2010	-106.42315	67.69089	4
06/08/2010	-106.42317	67.69095	4
06/08/2010	-106.42319	67.69098	4
06/08/2010	-106.42321	67.69103	2
06/08/2010	-106.42321	67.69106	4
06/08/2010	-106.42322	67.69111	4
06/08/2010	-106.42323	67.69114	4
06/08/2010	-106.42323	67.69120	4
06/08/2010	-106.42324	67.69123	4
06/08/2010	-106.42323	67.69128	3
06/08/2010	-106.42323	67.69131	4
06/08/2010	-106.42323	67.69137	4
06/08/2010	-106.42323	67.69139	4
06/08/2010	-106.42323	67.69145	2
06/08/2010	-106.42323	67.69148	4
06/08/2010	-106.42324	67.69153	3
06/08/2010	-106.42324	67.69156	4
06/08/2010	-106.42325	67.69159	3
06/08/2010	-106.42326	67.69164	4
06/08/2010	-106.42327	67.69167	2
06/08/2010	-106.42328	67.69172	4
06/08/2010	-106.42328	67.69175	4
06/08/2010	-106.42328	67.69181	4
06/08/2010	-106.42328	67.69184	2
06/08/2010	-106.42326	67.69189	4
06/08/2010	-106.42325	67.69192	2
06/08/2010	-106.42323	67.69198	4
06/08/2010	-106.42321	67.69201	4
06/08/2010	-106.42318	67.69206	2
06/08/2010	-106.42317	67.69209	2
06/08/2010	-106.42313	67.69215	2
06/08/2010	-106.42311	67.69217	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42308	67.69222	2
06/08/2010	-106.42307	67.69225	2
06/08/2010	-106.42305	67.69231	2
06/08/2010	-106.42303	67.69234	2
06/08/2010	-106.42300	67.69239	2
06/08/2010	-106.42299	67.69242	2
06/08/2010	-106.42296	67.69248	2
06/08/2010	-106.42294	67.69250	2
06/08/2010	-106.42292	67.69256	4
06/08/2010	-106.42292	67.69259	2
06/08/2010	-106.42291	67.69265	2
06/08/2010	-106.42290	67.69267	4
06/08/2010	-106.42290	67.69273	2
06/08/2010	-106.42290	67.69276	3
06/08/2010	-106.42287	67.69281	2
06/08/2010	-106.42283	67.69283	3
06/08/2010	-106.42322	67.69465	2
06/08/2010	-106.42326	67.69467	2
06/08/2010	-106.42328	67.69469	2
06/08/2010	-106.42329	67.69473	2
06/08/2010	-106.42331	67.69475	2
06/08/2010	-106.42333	67.69480	1
06/08/2010	-106.42334	67.69482	1
06/08/2010	-106.42337	67.69487	1
06/08/2010	-106.42338	67.69490	1
06/08/2010	-106.42340	67.69495	1
06/08/2010	-106.42341	67.69498	1
06/08/2010	-106.42341	67.69504	1
06/08/2010	-106.42342	67.69507	2
06/08/2010	-106.42342	67.69512	2
06/08/2010	-106.42342	67.69515	2
06/08/2010	-106.42341	67.69521	2
06/08/2010	-106.42341	67.69524	2
06/08/2010	-106.42339	67.69529	2
06/08/2010	-106.42338	67.69532	3
06/08/2010	-106.42337	67.69538	3
06/08/2010	-106.42337	67.69541	4
06/08/2010	-106.42336	67.69546	4
06/08/2010	-106.42336	67.69549	4
06/08/2010	-106.42336	67.69555	4
06/08/2010	-106.42336	67.69557	4
06/08/2010	-106.42336	67.69563	4
06/08/2010	-106.42336	67.69566	4
06/08/2010	-106.42336	67.69572	4
06/08/2010	-106.42336	67.69574	4
06/08/2010	-106.42337	67.69580	4
06/08/2010	-106.42337	67.69583	4
06/08/2010	-106.42339	67.69589	4
06/08/2010	-106.42339	67.69592	4
06/08/2010	-106.42339	67.69597	4
06/08/2010	-106.42338	67.69600	4
06/08/2010	-106.42337	67.69606	4
06/08/2010	-106.42337	67.69609	4
06/08/2010	-106.42336	67.69615	4
06/08/2010	-106.42335	67.69618	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42333	67.69623	4
06/08/2010	-106.42332	67.69626	4
06/08/2010	-106.42330	67.69632	4
06/08/2010	-106.42328	67.69635	4
06/08/2010	-106.42326	67.69641	4
06/08/2010	-106.42324	67.69644	4
06/08/2010	-106.42322	67.69650	4
06/08/2010	-106.42320	67.69652	4
06/08/2010	-106.42317	67.69658	4
06/08/2010	-106.42315	67.69661	4
06/08/2010	-106.42311	67.69667	4
06/08/2010	-106.42309	67.69670	4
06/08/2010	-106.42307	67.69672	4
06/08/2010	-106.42302	67.69678	4
06/08/2010	-106.42300	67.69681	4
06/08/2010	-106.42299	67.69687	4
06/08/2010	-106.42299	67.69689	4
06/08/2010	-106.42302	67.69695	4
06/08/2010	-106.42304	67.69697	4
06/08/2010	-106.42305	67.69703	4
06/08/2010	-106.42302	67.69705	4
06/08/2010	-106.42259	67.69289	4
06/08/2010	-106.42253	67.69291	4
06/08/2010	-106.42239	67.69293	4
06/08/2010	-106.42233	67.69294	4
06/08/2010	-106.42220	67.69296	4
06/08/2010	-106.42213	67.69297	4
06/08/2010	-106.42199	67.69298	4
06/08/2010	-106.42192	67.69299	4
06/08/2010	-106.42178	67.69301	4
06/08/2010	-106.42171	67.69302	4
06/08/2010	-106.42157	67.69304	4
06/08/2010	-106.42150	67.69305	4
06/08/2010	-106.42136	67.69307	4
06/08/2010	-106.42129	67.69308	4
06/08/2010	-106.42115	67.69310	4
06/08/2010	-106.42108	67.69310	4
06/08/2010	-106.42100	67.69311	2
06/08/2010	-106.42085	67.69312	4
06/08/2010	-106.42078	67.69312	2
06/08/2010	-106.42063	67.69313	2
06/08/2010	-106.42055	67.69313	2
06/08/2010	-106.42040	67.69314	2
06/08/2010	-106.42032	67.69314	2
06/08/2010	-106.42017	67.69314	2
06/08/2010	-106.42010	67.69314	2
06/08/2010	-106.41995	67.69315	2
06/08/2010	-106.41988	67.69316	2
06/08/2010	-106.41974	67.69318	2
06/08/2010	-106.41966	67.69318	2
06/08/2010	-106.41951	67.69320	2
06/08/2010	-106.41944	67.69321	2
06/08/2010	-106.41929	67.69322	2
06/08/2010	-106.41922	67.69323	2
06/08/2010	-106.41907	67.69324	3
06/08/2010	-106.41899	67.69325	3
06/08/2010	-106.41885	67.69326	2
06/08/2010	-106.41877	67.69327	3
06/08/2010	-106.41862	67.69328	4
06/08/2010	-106.41855	67.69329	4
06/08/2010	-106.41841	67.69331	4
06/08/2010	-106.41834	67.69332	4
06/08/2010	-106.41820	67.69334	4
06/08/2010	-106.41813	67.69335	4
06/08/2010	-106.41799	67.69336	4
06/08/2010	-106.41792	67.69338	4
06/08/2010	-106.41779	67.69340	4
06/08/2010	-106.41772	67.69341	4
06/08/2010	-106.41759	67.69344	4
06/08/2010	-106.41752	67.69345	4
06/08/2010	-106.41739	67.69348	4
06/08/2010	-106.41732	67.69349	4
06/08/2010	-106.41725	67.69350	4
06/08/2010	-106.41712	67.69353	3
06/08/2010	-106.41705	67.69354	4
06/08/2010	-106.41691	67.69356	4
06/08/2010	-106.41684	67.69357	4
06/08/2010	-106.41670	67.69359	4
06/08/2010	-106.41663	67.69360	4
06/08/2010	-106.41648	67.69362	4
06/08/2010	-106.41642	67.69363	4
06/08/2010	-106.41629	67.69364	4
06/08/2010	-106.41623	67.69365	4
06/08/2010	-106.41610	67.69366	4
06/08/2010	-106.41603	67.69366	4
06/08/2010	-106.41589	67.69367	4
06/08/2010	-106.41582	67.69368	4
06/08/2010	-106.41567	67.69368	4
06/08/2010	-106.41560	67.69368	4
06/08/2010	-106.41546	67.69369	4
06/08/2010	-106.41539	67.69369	4
06/08/2010	-106.41525	67.69370	4
06/08/2010	-106.41518	67.69371	4
06/08/2010	-106.41504	67.69372	4
06/08/2010	-106.41497	67.69373	4
06/08/2010	-106.41483	67.69374	4
06/08/2010	-106.41477	67.69375	4
06/08/2010	-106.41464	67.69377	4
06/08/2010	-106.41457	67.69378	4
06/08/2010	-106.41444	67.69380	4
06/08/2010	-106.41437	67.69381	4
06/08/2010	-106.41423	67.69382	4
06/08/2010	-106.41416	67.69383	3
06/08/2010	-106.41403	67.69385	2
06/08/2010	-106.41396	67.69385	4
06/08/2010	-106.41382	67.69387	2
06/08/2010	-106.41375	67.69387	4
06/08/2010	-106.41362	67.69389	4
06/08/2010	-106.41355	67.69390	2
06/08/2010	-106.41342	67.69392	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41336	67.69393	4
06/08/2010	-106.41323	67.69396	4
06/08/2010	-106.41316	67.69397	2
06/08/2010	-106.41304	67.69400	2
06/08/2010	-106.41297	67.69401	2
06/08/2010	-106.41284	67.69403	2
06/08/2010	-106.41278	67.69405	2
06/08/2010	-106.41264	67.69407	2
06/08/2010	-106.41258	67.69408	2
06/08/2010	-106.41245	67.69410	2
06/08/2010	-106.41238	67.69411	2
06/08/2010	-106.41225	67.69413	2
06/08/2010	-106.41218	67.69414	2
06/08/2010	-106.41205	67.69416	2
06/08/2010	-106.41198	67.69417	2
06/08/2010	-106.41184	67.69419	2
06/08/2010	-106.41177	67.69420	2
06/08/2010	-106.41163	67.69421	2
06/08/2010	-106.41155	67.69422	2
06/08/2010	-106.41141	67.69423	2
06/08/2010	-106.41134	67.69423	2
06/08/2010	-106.41119	67.69424	2
06/08/2010	-106.41112	67.69424	2
06/08/2010	-106.41098	67.69425	2
06/08/2010	-106.41090	67.69425	3
06/08/2010	-106.41083	67.69425	3
06/08/2010	-106.41069	67.69426	2
06/08/2010	-106.41062	67.69427	2
06/08/2010	-106.41047	67.69427	2
06/08/2010	-106.41040	67.69428	3
06/08/2010	-106.41026	67.69429	2
06/08/2010	-106.41019	67.69430	2
06/08/2010	-106.41004	67.69431	3
06/08/2010	-106.40997	67.69431	4
06/08/2010	-106.40983	67.69433	2
06/08/2010	-106.40976	67.69433	2
06/08/2010	-106.40962	67.69435	2
06/08/2010	-106.40955	67.69436	2
06/08/2010	-106.40942	67.69438	2
06/08/2010	-106.40935	67.69438	2
06/08/2010	-106.40921	67.69440	3
06/08/2010	-106.40914	67.69441	2
06/08/2010	-106.40900	67.69443	2
06/08/2010	-106.40893	67.69443	3
06/08/2010	-106.40879	67.69445	3
06/08/2010	-106.40872	67.69446	4
06/08/2010	-106.40859	67.69447	2
06/08/2010	-106.40852	67.69448	4
06/08/2010	-106.40838	67.69450	4
06/08/2010	-106.40831	67.69451	3
06/08/2010	-106.40817	67.69453	2
06/08/2010	-106.40810	67.69453	4
06/08/2010	-106.40796	67.69455	2
06/08/2010	-106.40790	67.69456	3
06/08/2010	-106.40776	67.69457	2
06/08/2010	-106.40769	67.69458	4
06/08/2010	-106.40755	67.69459	2
06/08/2010	-106.40748	67.69460	4
06/08/2010	-106.40735	67.69462	3
06/08/2010	-106.40728	67.69463	2
06/08/2010	-106.40715	67.69465	2
06/08/2010	-106.40708	67.69466	2
06/08/2010	-106.40695	67.69468	2
06/08/2010	-106.40688	67.69469	2
06/08/2010	-106.40675	67.69472	2
06/08/2010	-106.40669	67.69473	2
06/08/2010	-106.40656	67.69475	2
06/08/2010	-106.40650	67.69476	2
06/08/2010	-106.40637	67.69479	4
06/08/2010	-106.40631	67.69480	4
06/08/2010	-106.40619	67.69483	2
06/08/2010	-106.40612	67.69484	2
06/08/2010	-106.40606	67.69485	2
06/08/2010	-106.40592	67.69487	4
06/08/2010	-106.40586	67.69488	4
06/08/2010	-106.40572	67.69489	2
06/08/2010	-106.40565	67.69490	2
06/08/2010	-106.40552	67.69492	2
06/08/2010	-106.40545	67.69493	2
06/08/2010	-106.40531	67.69494	2
06/08/2010	-106.40524	67.69495	2
06/08/2010	-106.40510	67.69496	3
06/08/2010	-106.40503	67.69497	4
06/08/2010	-106.40489	67.69498	2
06/08/2010	-106.40482	67.69499	3
06/08/2010	-106.40468	67.69500	4
06/08/2010	-106.40461	67.69501	4
06/08/2010	-106.40447	67.69502	4
06/08/2010	-106.40440	67.69502	3
06/08/2010	-106.40419	67.69504	3
06/08/2010	-106.40412	67.69505	4
06/08/2010	-106.40399	67.69507	3
06/08/2010	-106.40392	67.69508	4
06/08/2010	-106.40379	67.69510	4
06/08/2010	-106.40372	67.69511	4
06/08/2010	-106.40358	67.69512	4
06/08/2010	-106.40351	67.69513	4
06/08/2010	-106.40337	67.69514	4
06/08/2010	-106.40330	67.69514	4
06/08/2010	-106.40323	67.69514	4
06/08/2010	-106.40308	67.69515	4
06/08/2010	-106.40301	67.69515	4
06/08/2010	-106.40287	67.69516	4
06/08/2010	-106.40280	67.69517	4
06/08/2010	-106.40266	67.69518	4
06/08/2010	-106.40259	67.69519	4
06/08/2010	-106.40246	67.69520	4
06/08/2010	-106.40239	67.69521	2
06/08/2010	-106.40225	67.69523	4
06/08/2010	-106.40218	67.69524	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40204	67.69525	2
06/08/2010	-106.40197	67.69526	3
06/08/2010	-106.40184	67.69528	2
06/08/2010	-106.40177	67.69529	2
06/08/2010	-106.40164	67.69531	2
06/08/2010	-106.40157	67.69532	2
06/08/2010	-106.40144	67.69534	2
06/08/2010	-106.40138	67.69535	2
06/08/2010	-106.40125	67.69537	2
06/08/2010	-106.40118	67.69538	2
06/08/2010	-106.40106	67.69540	3
06/08/2010	-106.40099	67.69541	2
06/08/2010	-106.40087	67.69544	3
06/08/2010	-106.40080	67.69545	2
06/08/2010	-106.40067	67.69547	2
06/08/2010	-106.40061	67.69548	2
06/08/2010	-106.40047	67.69550	2
06/08/2010	-106.40041	67.69550	3
06/08/2010	-106.40027	67.69552	3
06/08/2010	-106.40021	67.69552	4
06/08/2010	-106.40007	67.69554	3
06/08/2010	-106.40001	67.69555	4
06/08/2010	-106.39987	67.69556	3
06/08/2010	-106.39980	67.69557	4
06/08/2010	-106.39967	67.69558	4
06/08/2010	-106.39960	67.69559	4
06/08/2010	-106.39950	67.69560	4
06/08/2010	-106.39945	67.69561	4
06/08/2010	-106.39935	67.69562	4
06/08/2010	-106.39927	67.69563	4
06/08/2010	-106.39924	67.69563	4
06/08/2010	-106.39916	67.69564	4
06/08/2010	-106.39913	67.69564	4
06/08/2010	-106.39906	67.69564	4
06/08/2010	-106.39903	67.69565	4
06/08/2010	-106.39896	67.69565	4
06/08/2010	-106.39893	67.69565	4
06/08/2010	-106.39886	67.69565	4
06/08/2010	-106.39883	67.69565	4
06/08/2010	-106.39876	67.69565	4
06/08/2010	-106.39873	67.69565	4
06/08/2010	-106.39866	67.69565	4
06/08/2010	-106.39862	67.69564	4
06/08/2010	-106.39857	67.69564	4
06/08/2010	-106.39854	67.69564	4
06/08/2010	-106.39849	67.69565	4
06/08/2010	-106.39847	67.69565	4
06/08/2010	-106.39842	67.69566	4
06/08/2010	-106.39837	67.69567	4
06/08/2010	-106.39834	67.69568	4
06/08/2010	-106.39829	67.69569	4
06/08/2010	-106.39827	67.69570	4
06/08/2010	-106.39821	67.69571	4
06/08/2010	-106.39819	67.69572	3
06/08/2010	-106.39813	67.69573	3
06/08/2010	-106.39810	67.69573	3
06/08/2010	-106.39805	67.69574	2
06/08/2010	-106.39802	67.69575	2
06/08/2010	-106.39796	67.69576	2
06/08/2010	-106.39792	67.69576	2
06/08/2010	-106.39783	67.69578	4
06/08/2010	-106.39779	67.69578	3
06/08/2010	-106.39771	67.69580	4
06/08/2010	-106.39766	67.69580	4
06/08/2010	-106.39758	67.69582	3
06/08/2010	-106.39753	67.69583	3
06/08/2010	-106.39744	67.69584	3
06/08/2010	-106.39740	67.69585	4
06/08/2010	-106.39731	67.69586	2
06/08/2010	-106.39726	67.69587	4
06/08/2010	-106.39717	67.69588	4
06/08/2010	-106.39713	67.69589	4
06/08/2010	-106.39703	67.69590	4
06/08/2010	-106.39698	67.69590	4
06/08/2010	-106.39689	67.69591	4
06/08/2010	-106.39684	67.69592	4
06/08/2010	-106.39675	67.69593	3
06/08/2010	-106.39670	67.69593	4
06/08/2010	-106.39661	67.69595	3
06/08/2010	-106.39656	67.69595	3
06/08/2010	-106.39647	67.69596	4
06/08/2010	-106.39642	67.69597	4
06/08/2010	-106.39633	67.69598	4
06/08/2010	-106.39628	67.69599	4
06/08/2010	-106.39619	67.69600	3
06/08/2010	-106.39614	67.69600	3
06/08/2010	-106.39605	67.69601	2
06/08/2010	-106.39600	67.69602	3
06/08/2010	-106.39591	67.69603	2
06/08/2010	-106.39586	67.69604	3
06/08/2010	-106.39577	67.69605	2
06/08/2010	-106.39573	67.69605	2
06/08/2010	-106.39564	67.69606	2
06/08/2010	-106.39560	67.69607	4
06/08/2010	-106.39551	67.69608	3
06/08/2010	-106.39547	67.69609	4
06/08/2010	-106.39538	67.69610	3
06/08/2010	-106.39533	67.69611	4
06/08/2010	-106.39525	67.69612	4
06/08/2010	-106.39520	67.69613	3
06/08/2010	-106.39512	67.69614	3
06/08/2010	-106.39507	67.69615	2
06/08/2010	-106.39498	67.69616	3
06/08/2010	-106.39494	67.69616	3
06/08/2010	-106.39485	67.69617	4
06/08/2010	-106.39481	67.69617	4
06/08/2010	-106.39472	67.69618	2
06/08/2010	-106.39468	67.69619	3
06/08/2010	-106.39459	67.69619	4
06/08/2010	-106.39454	67.69620	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39445	67.69620	4
06/08/2010	-106.39442	67.69621	4
06/08/2010	-106.39435	67.69621	4
06/08/2010	-106.39431	67.69622	4
06/08/2010	-106.39425	67.69622	4
06/08/2010	-106.39418	67.69623	4
06/08/2010	-106.39415	67.69623	4
06/08/2010	-106.39409	67.69623	4
06/08/2010	-106.39405	67.69623	4
06/08/2010	-106.39399	67.69624	4
06/08/2010	-106.39396	67.69624	4
06/08/2010	-106.39390	67.69624	3
06/08/2010	-106.39387	67.69624	4
06/08/2010	-106.39381	67.69625	4
06/08/2010	-106.39378	67.69625	4
06/08/2010	-106.39371	67.69625	4
06/08/2010	-106.39368	67.69625	3
06/08/2010	-106.39362	67.69626	4
06/08/2010	-106.39358	67.69626	3
06/08/2010	-106.39352	67.69626	4
06/08/2010	-106.39349	67.69627	3
06/08/2010	-106.39343	67.69627	4
06/08/2010	-106.39340	67.69627	3
06/08/2010	-106.39334	67.69628	3
06/08/2010	-106.39331	67.69628	3
06/08/2010	-106.39324	67.69629	3
06/08/2010	-106.39321	67.69630	4
06/08/2010	-106.39315	67.69630	4
06/08/2010	-106.39309	67.69631	4
06/08/2010	-106.39305	67.69631	3
06/08/2010	-106.39299	67.69632	3
06/08/2010	-106.39296	67.69632	2
06/08/2010	-106.39289	67.69633	3
06/08/2010	-106.39286	67.69633	3
06/08/2010	-106.39280	67.69634	4
06/08/2010	-106.39277	67.69634	4
06/08/2010	-106.39271	67.69636	4
06/08/2010	-106.39269	67.69636	4
06/08/2010	-106.39264	67.69637	4
06/08/2010	-106.39261	67.69638	4
06/08/2010	-106.39256	67.69639	4
06/08/2010	-106.39253	67.69640	4
06/08/2010	-106.39247	67.69640	4
06/08/2010	-106.39245	67.69641	4
06/08/2010	-106.39239	67.69642	4
06/08/2010	-106.39237	67.69642	4
06/08/2010	-106.39231	67.69643	4
06/08/2010	-106.39226	67.69644	4
06/08/2010	-106.39225	67.69644	4
06/08/2010	-106.39223	67.69645	4
06/08/2010	-106.39314	67.69831	4
06/08/2010	-106.39317	67.69830	4
06/08/2010	-106.39324	67.69827	4
06/08/2010	-106.39332	67.69825	4
06/08/2010	-106.39336	67.69823	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39344	67.69820	3
06/08/2010	-106.39349	67.69819	3
06/08/2010	-106.39358	67.69816	4
06/08/2010	-106.39362	67.69815	3
06/08/2010	-106.39370	67.69812	3
06/08/2010	-106.39375	67.69811	4
06/08/2010	-106.39384	67.69809	3
06/08/2010	-106.39389	67.69808	3
06/08/2010	-106.39399	67.69807	4
06/08/2010	-106.39404	67.69806	4
06/08/2010	-106.39414	67.69805	3
06/08/2010	-106.39420	67.69805	3
06/08/2010	-106.39430	67.69805	3
06/08/2010	-106.39435	67.69805	4
06/08/2010	-106.39445	67.69804	3
06/08/2010	-106.39450	67.69804	4
06/08/2010	-106.39460	67.69805	4
06/08/2010	-106.39465	67.69804	4
06/08/2010	-106.39476	67.69805	4
06/08/2010	-106.39481	67.69804	2
06/08/2010	-106.39490	67.69804	2
06/08/2010	-106.39495	67.69803	2
06/08/2010	-106.39504	67.69802	2
06/08/2010	-106.39510	67.69801	3
06/08/2010	-106.39523	67.69799	2
06/08/2010	-106.39530	67.69798	2
06/08/2010	-106.39543	67.69796	2
06/08/2010	-106.39549	67.69795	2
06/08/2010	-106.39562	67.69793	2
06/08/2010	-106.39569	67.69792	4
06/08/2010	-106.39582	67.69790	2
06/08/2010	-106.39589	67.69789	2
06/08/2010	-106.39602	67.69787	2
06/08/2010	-106.39609	67.69787	2
06/08/2010	-106.39622	67.69785	2
06/08/2010	-106.39629	67.69784	3
06/08/2010	-106.39643	67.69783	3
06/08/2010	-106.39650	67.69782	3
06/08/2010	-106.39664	67.69781	2
06/08/2010	-106.39670	67.69781	3
06/08/2010	-106.39684	67.69779	4
06/08/2010	-106.39691	67.69779	3
06/08/2010	-106.39705	67.69777	4
06/08/2010	-106.39711	67.69777	3
06/08/2010	-106.39725	67.69776	4
06/08/2010	-106.39731	67.69776	3
06/08/2010	-106.39745	67.69774	2
06/08/2010	-106.39751	67.69774	2
06/08/2010	-106.39765	67.69772	2
06/08/2010	-106.39771	67.69772	3
06/08/2010	-106.39784	67.69770	2
06/08/2010	-106.39790	67.69769	2
06/08/2010	-106.39803	67.69767	2
06/08/2010	-106.39809	67.69766	2
06/08/2010	-106.39822	67.69764	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39828	67.69763	2
06/08/2010	-106.39841	67.69761	4
06/08/2010	-106.39848	67.69760	2
06/08/2010	-106.39861	67.69759	2
06/08/2010	-106.39868	67.69758	4
06/08/2010	-106.39881	67.69757	2
06/08/2010	-106.39888	67.69756	3
06/08/2010	-106.39901	67.69755	2
06/08/2010	-106.39908	67.69754	2
06/08/2010	-106.39921	67.69753	2
06/08/2010	-106.39927	67.69752	2
06/08/2010	-106.39940	67.69750	2
06/08/2010	-106.39946	67.69749	2
06/08/2010	-106.39959	67.69747	3
06/08/2010	-106.39965	67.69746	2
06/08/2010	-106.39978	67.69744	2
06/08/2010	-106.39985	67.69743	2
06/08/2010	-106.39998	67.69742	2
06/08/2010	-106.40005	67.69741	2
06/08/2010	-106.40011	67.69741	3
06/08/2010	-106.40025	67.69740	2
06/08/2010	-106.40038	67.69739	2
06/08/2010	-106.40045	67.69738	3
06/08/2010	-106.40058	67.69737	3
06/08/2010	-106.40065	67.69736	3
06/08/2010	-106.40071	67.69736	2
06/08/2010	-106.40085	67.69734	2
06/08/2010	-106.40098	67.69733	2
06/08/2010	-106.40105	67.69732	2
06/08/2010	-106.40118	67.69731	3
06/08/2010	-106.40125	67.69730	3
06/08/2010	-106.40138	67.69728	4
06/08/2010	-106.40144	67.69727	2
06/08/2010	-106.40158	67.69726	2
06/08/2010	-106.40164	67.69725	2
06/08/2010	-106.40177	67.69723	2
06/08/2010	-106.40184	67.69722	2
06/08/2010	-106.40197	67.69721	2
06/08/2010	-106.40203	67.69720	2
06/08/2010	-106.40216	67.69718	2
06/08/2010	-106.40223	67.69716	2
06/08/2010	-106.40236	67.69715	2
06/08/2010	-106.40242	67.69714	4
06/08/2010	-106.40256	67.69712	4
06/08/2010	-106.40262	67.69711	2
06/08/2010	-106.40275	67.69710	1
06/08/2010	-106.40282	67.69709	1
06/08/2010	-106.40295	67.69707	1
06/08/2010	-106.40302	67.69707	1
06/08/2010	-106.40315	67.69706	1
06/08/2010	-106.40322	67.69705	2
06/08/2010	-106.40335	67.69704	2
06/08/2010	-106.40342	67.69703	2
06/08/2010	-106.40355	67.69701	2
06/08/2010	-106.40361	67.69701	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40374	67.69699	4
06/08/2010	-106.40381	67.69698	4
06/08/2010	-106.40394	67.69696	2
06/08/2010	-106.40401	67.69696	4
06/08/2010	-106.40414	67.69694	4
06/08/2010	-106.40421	67.69693	4
06/08/2010	-106.40434	67.69692	4
06/08/2010	-106.40441	67.69691	4
06/08/2010	-106.40448	67.69691	4
06/08/2010	-106.40461	67.69690	4
06/08/2010	-106.40468	67.69689	4
06/08/2010	-106.40481	67.69688	4
06/08/2010	-106.40487	67.69688	4
06/08/2010	-106.40500	67.69686	4
06/08/2010	-106.40506	67.69685	4
06/08/2010	-106.40519	67.69683	4
06/08/2010	-106.40525	67.69682	4
06/08/2010	-106.40538	67.69680	4
06/08/2010	-106.40544	67.69679	4
06/08/2010	-106.40556	67.69676	4
06/08/2010	-106.40562	67.69675	4
06/08/2010	-106.40575	67.69673	4
06/08/2010	-106.40582	67.69672	4
06/08/2010	-106.40595	67.69670	4
06/08/2010	-106.40601	67.69669	4
06/08/2010	-106.40614	67.69667	4
06/08/2010	-106.40620	67.69666	4
06/08/2010	-106.40632	67.69664	4
06/08/2010	-106.40638	67.69663	4
06/08/2010	-106.40650	67.69660	2
06/08/2010	-106.40657	67.69659	4
06/08/2010	-106.40670	67.69658	4
06/08/2010	-106.40676	67.69657	4
06/08/2010	-106.40690	67.69656	4
06/08/2010	-106.40696	67.69656	4
06/08/2010	-106.40710	67.69655	4
06/08/2010	-106.40716	67.69654	4
06/08/2010	-106.40729	67.69653	4
06/08/2010	-106.40736	67.69652	4
06/08/2010	-106.40749	67.69650	4
06/08/2010	-106.40755	67.69649	4
06/08/2010	-106.40768	67.69647	2
06/08/2010	-106.40775	67.69646	2
06/08/2010	-106.40788	67.69645	2
06/08/2010	-106.40795	67.69645	2
06/08/2010	-106.40808	67.69643	2
06/08/2010	-106.40814	67.69642	2
06/08/2010	-106.40828	67.69641	1
06/08/2010	-106.40834	67.69640	2
06/08/2010	-106.40848	67.69640	2
06/08/2010	-106.40855	67.69639	2
06/08/2010	-106.40868	67.69639	2
06/08/2010	-106.40875	67.69638	2
06/08/2010	-106.40888	67.69637	2
06/08/2010	-106.40894	67.69636	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40907	67.69634	2
06/08/2010	-106.40914	67.69633	2
06/08/2010	-106.40927	67.69631	2
06/08/2010	-106.40933	67.69630	2
06/08/2010	-106.40940	67.69629	2
06/08/2010	-106.40952	67.69628	2
06/08/2010	-106.40965	67.69626	2
06/08/2010	-106.40971	67.69625	2
06/08/2010	-106.40985	67.69623	2
06/08/2010	-106.40991	67.69622	2
06/08/2010	-106.41004	67.69620	2
06/08/2010	-106.41010	67.69620	4
06/08/2010	-106.41023	67.69618	2
06/08/2010	-106.41029	67.69617	2
06/08/2010	-106.41042	67.69615	1
06/08/2010	-106.41048	67.69614	2
06/08/2010	-106.41060	67.69611	2
06/08/2010	-106.41066	67.69610	2
06/08/2010	-106.41078	67.69607	3
06/08/2010	-106.41084	67.69606	3
06/08/2010	-106.41098	67.69605	2
06/08/2010	-106.41105	67.69604	3
06/08/2010	-106.41118	67.69604	2
06/08/2010	-106.41125	67.69604	2
06/08/2010	-106.41138	67.69604	2
06/08/2010	-106.41144	67.69603	3
06/08/2010	-106.41157	67.69603	2
06/08/2010	-106.41164	67.69602	2
06/08/2010	-106.41177	67.69601	3
06/08/2010	-106.41184	67.69600	4
06/08/2010	-106.41196	67.69599	3
06/08/2010	-106.41203	67.69598	2
06/08/2010	-106.41216	67.69596	3
06/08/2010	-106.41222	67.69595	3
06/08/2010	-106.41235	67.69593	2
06/08/2010	-106.41241	67.69592	3
06/08/2010	-106.41255	67.69591	2
06/08/2010	-106.41261	67.69590	4
06/08/2010	-106.41274	67.69589	3
06/08/2010	-106.41281	67.69588	2
06/08/2010	-106.41294	67.69587	4
06/08/2010	-106.41300	67.69586	3
06/08/2010	-106.41313	67.69584	3
06/08/2010	-106.41320	67.69583	2
06/08/2010	-106.41333	67.69582	3
06/08/2010	-106.41340	67.69581	2
06/08/2010	-106.41353	67.69579	3
06/08/2010	-106.41359	67.69579	2
06/08/2010	-106.41373	67.69577	2
06/08/2010	-106.41380	67.69576	4
06/08/2010	-106.41393	67.69575	4
06/08/2010	-106.41400	67.69575	3
06/08/2010	-106.41406	67.69574	4
06/08/2010	-106.41420	67.69573	2
06/08/2010	-106.41426	67.69572	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41440	67.69571	4
06/08/2010	-106.41446	67.69571	4
06/08/2010	-106.41459	67.69569	4
06/08/2010	-106.41465	67.69568	2
06/08/2010	-106.41478	67.69567	2
06/08/2010	-106.41485	67.69566	2
06/08/2010	-106.41498	67.69564	2
06/08/2010	-106.41504	67.69563	2
06/08/2010	-106.41517	67.69561	2
06/08/2010	-106.41524	67.69560	2
06/08/2010	-106.41536	67.69558	2
06/08/2010	-106.41543	67.69557	2
06/08/2010	-106.41556	67.69556	4
06/08/2010	-106.41563	67.69555	4
06/08/2010	-106.41576	67.69553	4
06/08/2010	-106.41582	67.69552	4
06/08/2010	-106.41595	67.69551	4
06/08/2010	-106.41602	67.69550	4
06/08/2010	-106.41615	67.69548	4
06/08/2010	-106.41621	67.69547	4
06/08/2010	-106.41634	67.69545	4
06/08/2010	-106.41641	67.69545	1
06/08/2010	-106.41655	67.69544	1
06/08/2010	-106.41661	67.69543	1
06/08/2010	-106.41674	67.69541	2
06/08/2010	-106.41681	67.69540	2
06/08/2010	-106.41694	67.69538	2
06/08/2010	-106.41700	67.69537	2
06/08/2010	-106.41713	67.69535	2
06/08/2010	-106.41719	67.69534	4
06/08/2010	-106.41733	67.69533	4
06/08/2010	-106.41739	67.69532	2
06/08/2010	-106.41752	67.69531	2
06/08/2010	-106.41759	67.69530	4
06/08/2010	-106.41772	67.69529	4
06/08/2010	-106.41779	67.69528	4
06/08/2010	-106.41793	67.69527	4
06/08/2010	-106.41799	67.69527	4
06/08/2010	-106.41813	67.69526	4
06/08/2010	-106.41819	67.69525	4
06/08/2010	-106.41833	67.69524	4
06/08/2010	-106.41839	67.69523	4
06/08/2010	-106.41852	67.69522	4
06/08/2010	-106.41859	67.69521	4
06/08/2010	-106.41872	67.69520	4
06/08/2010	-106.41878	67.69519	4
06/08/2010	-106.41891	67.69517	4
06/08/2010	-106.41897	67.69517	4
06/08/2010	-106.41910	67.69515	4
06/08/2010	-106.41916	67.69514	4
06/08/2010	-106.41929	67.69512	4
06/08/2010	-106.41936	67.69512	4
06/08/2010	-106.41949	67.69510	4
06/08/2010	-106.41955	67.69509	4
06/08/2010	-106.41968	67.69508	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41974	67.69507	4
06/08/2010	-106.41987	67.69505	4
06/08/2010	-106.41993	67.69504	4
06/08/2010	-106.42006	67.69502	4
06/08/2010	-106.42012	67.69501	4
06/08/2010	-106.42025	67.69499	4
06/08/2010	-106.42031	67.69498	4
06/08/2010	-106.42045	67.69496	4
06/08/2010	-106.42051	67.69495	4
06/08/2010	-106.42064	67.69494	4
06/08/2010	-106.42071	67.69493	4
06/08/2010	-106.42084	67.69491	4
06/08/2010	-106.42090	67.69490	4
06/08/2010	-106.42103	67.69488	4
06/08/2010	-106.42110	67.69487	4
06/08/2010	-106.42123	67.69486	2
06/08/2010	-106.42130	67.69485	2
06/08/2010	-106.42143	67.69483	2
06/08/2010	-106.42150	67.69483	1
06/08/2010	-106.42164	67.69482	2
06/08/2010	-106.42171	67.69481	2
06/08/2010	-106.42184	67.69480	1
06/08/2010	-106.42191	67.69479	2
06/08/2010	-106.42204	67.69478	2
06/08/2010	-106.42210	67.69477	2
06/08/2010	-106.42224	67.69475	2
06/08/2010	-106.42230	67.69474	2
06/08/2010	-106.42243	67.69472	2
06/08/2010	-106.42250	67.69472	2
06/08/2010	-106.42263	67.69470	2
06/08/2010	-106.42269	67.69469	2
06/08/2010	-106.42283	67.69468	2
06/08/2010	-106.42289	67.69467	2
06/08/2010	-106.42302	67.69465	2
06/08/2010	-106.42308	67.69465	2
06/08/2010	-106.42316	67.69464	2
06/08/2010	-106.42309	67.69892	4
06/08/2010	-106.42310	67.69895	4
06/08/2010	-106.42311	67.69896	4
06/08/2010	-106.42315	67.69900	4
06/08/2010	-106.42317	67.69902	4
06/08/2010	-106.42322	67.69906	4
06/08/2010	-106.42324	67.69909	4
06/08/2010	-106.42326	67.69914	4
06/08/2010	-106.42327	67.69917	4
06/08/2010	-106.42327	67.69922	4
06/08/2010	-106.42326	67.69925	4
06/08/2010	-106.42324	67.69930	4
06/08/2010	-106.42323	67.69933	4
06/08/2010	-106.42320	67.69938	4
06/08/2010	-106.42319	67.69941	4
06/08/2010	-106.42317	67.69946	4
06/08/2010	-106.42316	67.69949	4
06/08/2010	-106.42314	67.69955	4
06/08/2010	-106.42313	67.69957	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42312	67.69963	4
06/08/2010	-106.42312	67.69966	3
06/08/2010	-106.42311	67.69968	4
06/08/2010	-106.42312	67.69974	4
06/08/2010	-106.42312	67.69976	4
06/08/2010	-106.42312	67.69982	4
06/08/2010	-106.42313	67.69985	4
06/08/2010	-106.42314	67.69990	4
06/08/2010	-106.42314	67.69993	4
06/08/2010	-106.42315	67.69998	4
06/08/2010	-106.42315	67.70001	4
06/08/2010	-106.42316	67.70006	4
06/08/2010	-106.42316	67.70009	4
06/08/2010	-106.42317	67.70014	4
06/08/2010	-106.42318	67.70017	4
06/08/2010	-106.42319	67.70022	4
06/08/2010	-106.42319	67.70025	4
06/08/2010	-106.42320	67.70030	4
06/08/2010	-106.42321	67.70033	4
06/08/2010	-106.42322	67.70038	4
06/08/2010	-106.42323	67.70041	4
06/08/2010	-106.42324	67.70046	4
06/08/2010	-106.42325	67.70049	4
06/08/2010	-106.42326	67.70054	4
06/08/2010	-106.42326	67.70057	4
06/08/2010	-106.42326	67.70062	4
06/08/2010	-106.42326	67.70065	4
06/08/2010	-106.42326	67.70070	4
06/08/2010	-106.42326	67.70073	4
06/08/2010	-106.42326	67.70078	4
06/08/2010	-106.42326	67.70081	4
06/08/2010	-106.42324	67.70087	4
06/08/2010	-106.42323	67.70089	4
06/08/2010	-106.42318	67.70095	4
06/08/2010	-106.42304	67.70101	4
06/08/2010	-106.42298	67.70102	4
06/08/2010	-106.42286	67.70106	3
06/08/2010	-106.42279	67.70107	4
06/08/2010	-106.42266	67.70109	4
06/08/2010	-106.42259	67.70110	4
06/08/2010	-106.42245	67.70112	4
06/08/2010	-106.42238	67.70114	3
06/08/2010	-106.42225	67.70116	4
06/08/2010	-106.42218	67.70117	3
06/08/2010	-106.42204	67.70119	4
06/08/2010	-106.42197	67.70120	3
06/08/2010	-106.42183	67.70122	2
06/08/2010	-106.42176	67.70123	4
06/08/2010	-106.42161	67.70125	3
06/08/2010	-106.42154	67.70126	3
06/08/2010	-106.42139	67.70127	3
06/08/2010	-106.42132	67.70128	3
06/08/2010	-106.42118	67.70129	4
06/08/2010	-106.42111	67.70130	4
06/08/2010	-106.42096	67.70132	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42089	67.70133	4
06/08/2010	-106.42074	67.70135	3
06/08/2010	-106.42068	67.70136	4
06/08/2010	-106.42054	67.70138	4
06/08/2010	-106.42047	67.70139	4
06/08/2010	-106.42033	67.70141	4
06/08/2010	-106.42026	67.70142	4
06/08/2010	-106.42011	67.70144	4
06/08/2010	-106.42004	67.70145	4
06/08/2010	-106.41990	67.70147	4
06/08/2010	-106.41983	67.70148	4
06/08/2010	-106.41976	67.70149	4
06/08/2010	-106.41962	67.70150	4
06/08/2010	-106.41948	67.70152	4
06/08/2010	-106.41941	67.70153	4
06/08/2010	-106.41927	67.70155	4
06/08/2010	-106.41919	67.70156	4
06/08/2010	-106.41905	67.70158	4
06/08/2010	-106.41898	67.70159	4
06/08/2010	-106.41884	67.70161	4
06/08/2010	-106.41876	67.70161	4
06/08/2010	-106.41861	67.70163	4
06/08/2010	-106.41854	67.70163	4
06/08/2010	-106.41839	67.70164	4
06/08/2010	-106.41832	67.70165	4
06/08/2010	-106.41818	67.70167	4
06/08/2010	-106.41811	67.70168	4
06/08/2010	-106.41797	67.70169	4
06/08/2010	-106.41789	67.70170	4
06/08/2010	-106.41774	67.70171	4
06/08/2010	-106.41767	67.70172	4
06/08/2010	-106.41752	67.70172	4
06/08/2010	-106.41744	67.70172	4
06/08/2010	-106.41729	67.70173	4
06/08/2010	-106.41722	67.70174	4
06/08/2010	-106.41707	67.70175	4
06/08/2010	-106.41700	67.70175	4
06/08/2010	-106.41685	67.70176	4
06/08/2010	-106.41678	67.70177	4
06/08/2010	-106.41663	67.70178	4
06/08/2010	-106.41656	67.70179	4
06/08/2010	-106.41641	67.70181	4
06/08/2010	-106.41634	67.70182	4
06/08/2010	-106.41619	67.70183	4
06/08/2010	-106.41612	67.70184	2
06/08/2010	-106.41597	67.70185	4
06/08/2010	-106.41590	67.70186	4
06/08/2010	-106.41575	67.70187	4
06/08/2010	-106.41568	67.70188	4
06/08/2010	-106.41553	67.70190	2
06/08/2010	-106.41546	67.70191	2
06/08/2010	-106.41539	67.70191	2
06/08/2010	-106.41524	67.70193	2
06/08/2010	-106.41517	67.70194	3
06/08/2010	-106.41503	67.70196	2
06/08/2010	-106.41496	67.70197	4
06/08/2010	-106.41482	67.70198	3
06/08/2010	-106.41474	67.70199	3
06/08/2010	-106.41460	67.70201	4
06/08/2010	-106.41452	67.70201	4
06/08/2010	-106.41437	67.70203	2
06/08/2010	-106.41430	67.70203	3
06/08/2010	-106.41415	67.70204	4
06/08/2010	-106.41407	67.70205	2
06/08/2010	-106.41393	67.70206	4
06/08/2010	-106.41385	67.70206	4
06/08/2010	-106.41371	67.70208	3
06/08/2010	-106.41364	67.70208	3
06/08/2010	-106.41349	67.70210	3
06/08/2010	-106.41342	67.70211	3
06/08/2010	-106.41328	67.70212	3
06/08/2010	-106.41321	67.70213	3
06/08/2010	-106.41307	67.70215	3
06/08/2010	-106.41300	67.70217	3
06/08/2010	-106.41287	67.70219	3
06/08/2010	-106.41280	67.70220	3
06/08/2010	-106.41266	67.70222	3
06/08/2010	-106.41259	67.70223	3
06/08/2010	-106.41245	67.70225	3
06/08/2010	-106.41238	67.70226	3
06/08/2010	-106.41223	67.70228	4
06/08/2010	-106.41216	67.70229	3
06/08/2010	-106.41201	67.70230	4
06/08/2010	-106.41194	67.70231	3
06/08/2010	-106.41180	67.70233	3
06/08/2010	-106.41173	67.70233	3
06/08/2010	-106.41158	67.70234	4
06/08/2010	-106.41150	67.70235	3
06/08/2010	-106.41135	67.70235	4
06/08/2010	-106.41128	67.70236	4
06/08/2010	-106.41113	67.70237	4
06/08/2010	-106.41106	67.70237	4
06/08/2010	-106.41091	67.70238	4
06/08/2010	-106.41084	67.70239	4
06/08/2010	-106.41070	67.70240	4
06/08/2010	-106.41063	67.70241	4
06/08/2010	-106.41048	67.70243	4
06/08/2010	-106.41041	67.70243	4
06/08/2010	-106.41027	67.70245	4
06/08/2010	-106.41020	67.70246	4
06/08/2010	-106.41013	67.70246	4
06/08/2010	-106.40998	67.70248	4
06/08/2010	-106.40991	67.70249	4
06/08/2010	-106.40976	67.70250	2
06/08/2010	-106.40969	67.70251	4
06/08/2010	-106.40954	67.70252	2
06/08/2010	-106.40947	67.70253	2
06/08/2010	-106.40932	67.70255	3
06/08/2010	-106.40925	67.70255	2
06/08/2010	-106.40911	67.70257	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40903	67.70257	4
06/08/2010	-106.40889	67.70259	4
06/08/2010	-106.40881	67.70259	4
06/08/2010	-106.40866	67.70260	2
06/08/2010	-106.40859	67.70261	2
06/08/2010	-106.40844	67.70261	4
06/08/2010	-106.40837	67.70262	2
06/08/2010	-106.40823	67.70263	4
06/08/2010	-106.40816	67.70264	4
06/08/2010	-106.40802	67.70266	4
06/08/2010	-106.40795	67.70267	4
06/08/2010	-106.40781	67.70269	4
06/08/2010	-106.40773	67.70270	4
06/08/2010	-106.40759	67.70271	4
06/08/2010	-106.40752	67.70272	4
06/08/2010	-106.40737	67.70273	4
06/08/2010	-106.40730	67.70274	2
06/08/2010	-106.40716	67.70275	2
06/08/2010	-106.40708	67.70276	2
06/08/2010	-106.40694	67.70278	2
06/08/2010	-106.40687	67.70279	2
06/08/2010	-106.40674	67.70281	2
06/08/2010	-106.40667	67.70283	2
06/08/2010	-106.40653	67.70285	2
06/08/2010	-106.40646	67.70286	2
06/08/2010	-106.40632	67.70288	4
06/08/2010	-106.40625	67.70289	4
06/08/2010	-106.40611	67.70291	4
06/08/2010	-106.40604	67.70292	4
06/08/2010	-106.40590	67.70294	1
06/08/2010	-106.40583	67.70294	1
06/08/2010	-106.40568	67.70296	2
06/08/2010	-106.40561	67.70297	2
06/08/2010	-106.40546	67.70298	2
06/08/2010	-106.40539	67.70299	2
06/08/2010	-106.40532	67.70300	2
06/08/2010	-106.40517	67.70301	2
06/08/2010	-106.40510	67.70302	2
06/08/2010	-106.40496	67.70304	2
06/08/2010	-106.40489	67.70304	2
06/08/2010	-106.40474	67.70306	2
06/08/2010	-106.40467	67.70307	2
06/08/2010	-106.40453	67.70309	2
06/08/2010	-106.40445	67.70310	4
06/08/2010	-106.40431	67.70311	2
06/08/2010	-106.40424	67.70312	2
06/08/2010	-106.40409	67.70314	2
06/08/2010	-106.40402	67.70314	2
06/08/2010	-106.40387	67.70316	2
06/08/2010	-106.40380	67.70316	2
06/08/2010	-106.40366	67.70317	2
06/08/2010	-106.40366	67.70317	2
06/08/2010	-106.40344	67.70319	2
06/08/2010	-106.40336	67.70320	2
06/08/2010	-106.40322	67.70321	2
06/08/2010	-106.40315	67.70322	2
06/08/2010	-106.40300	67.70323	3
06/08/2010	-106.40293	67.70324	4
06/08/2010	-106.40279	67.70325	4
06/08/2010	-106.40271	67.70325	4
06/08/2010	-106.40257	67.70326	2
06/08/2010	-106.40249	67.70327	2
06/08/2010	-106.40235	67.70328	2
06/08/2010	-106.40227	67.70328	2
06/08/2010	-106.40213	67.70329	2
06/08/2010	-106.40213	67.70329	1
06/08/2010	-106.40191	67.70331	2
06/08/2010	-106.40184	67.70332	2
06/08/2010	-106.40170	67.70333	2
06/08/2010	-106.40164	67.70334	2
06/08/2010	-106.40152	67.70336	4
06/08/2010	-106.40147	67.70337	2
06/08/2010	-106.40138	67.70339	2
06/08/2010	-106.40133	67.70340	2
06/08/2010	-106.40122	67.70341	2
06/08/2010	-106.40117	67.70341	2
06/08/2010	-106.40107	67.70342	2
06/08/2010	-106.40102	67.70342	3
06/08/2010	-106.40094	67.70343	4
06/08/2010	-106.40090	67.70344	2
06/08/2010	-106.40084	67.70345	3
06/08/2010	-106.40080	67.70345	3
06/08/2010	-106.40072	67.70346	4
06/08/2010	-106.40068	67.70347	4
06/08/2010	-106.40060	67.70348	4
06/08/2010	-106.40056	67.70348	3
06/08/2010	-106.40050	67.70349	3
06/08/2010	-106.40047	67.70349	4
06/08/2010	-106.40041	67.70350	4
06/08/2010	-106.40038	67.70351	4
06/08/2010	-106.40338	67.70531	3
06/08/2010	-106.40343	67.70530	3
06/08/2010	-106.40346	67.70529	3
06/08/2010	-106.40354	67.70528	3
06/08/2010	-106.40358	67.70528	3
06/08/2010	-106.40367	67.70526	4
06/08/2010	-106.40373	67.70525	3
06/08/2010	-106.40385	67.70523	3
06/08/2010	-106.40390	67.70522	3
06/08/2010	-106.40402	67.70520	4
06/08/2010	-106.40407	67.70519	4
06/08/2010	-106.40418	67.70516	4
06/08/2010	-106.40424	67.70515	2
06/08/2010	-106.40435	67.70513	4
06/08/2010	-106.40442	67.70512	4
06/08/2010	-106.40456	67.70510	4
06/08/2010	-106.40463	67.70510	2
06/08/2010	-106.40477	67.70509	2
06/08/2010	-106.40484	67.70508	2
06/08/2010	-106.40499	67.70507	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40506	67.70507	2
06/08/2010	-106.40521	67.70505	2
06/08/2010	-106.40528	67.70505	4
06/08/2010	-106.40542	67.70503	4
06/08/2010	-106.40549	67.70503	4
06/08/2010	-106.40564	67.70501	4
06/08/2010	-106.40571	67.70500	4
06/08/2010	-106.40585	67.70499	4
06/08/2010	-106.40593	67.70499	4
06/08/2010	-106.40607	67.70498	4
06/08/2010	-106.40615	67.70497	4
06/08/2010	-106.40629	67.70497	4
06/08/2010	-106.40637	67.70496	4
06/08/2010	-106.40644	67.70496	4
06/08/2010	-106.40659	67.70495	4
06/08/2010	-106.40666	67.70495	2
06/08/2010	-106.40680	67.70494	2
06/08/2010	-106.40688	67.70493	2
06/08/2010	-106.40702	67.70493	1
06/08/2010	-106.40709	67.70492	2
06/08/2010	-106.40724	67.70491	2
06/08/2010	-106.40731	67.70491	2
06/08/2010	-106.40745	67.70489	3
06/08/2010	-106.40752	67.70489	3
06/08/2010	-106.40766	67.70487	2
06/08/2010	-106.40773	67.70486	3
06/08/2010	-106.40787	67.70484	3
06/08/2010	-106.40794	67.70483	3
06/08/2010	-106.40807	67.70481	3
06/08/2010	-106.40814	67.70480	4
06/08/2010	-106.40828	67.70478	3
06/08/2010	-106.40835	67.70477	3
06/08/2010	-106.40849	67.70476	4
06/08/2010	-106.40856	67.70475	4
06/08/2010	-106.40870	67.70473	4
06/08/2010	-106.40877	67.70472	4
06/08/2010	-106.40891	67.70470	4
06/08/2010	-106.40898	67.70469	3
06/08/2010	-106.40913	67.70467	3
06/08/2010	-106.40920	67.70466	4
06/08/2010	-106.40934	67.70464	2
06/08/2010	-106.40941	67.70464	4
06/08/2010	-106.40956	67.70462	3
06/08/2010	-106.40963	67.70461	4
06/08/2010	-106.40970	67.70460	4
06/08/2010	-106.40984	67.70459	2
06/08/2010	-106.40991	67.70458	2
06/08/2010	-106.41006	67.70456	2
06/08/2010	-106.41013	67.70456	2
06/08/2010	-106.41027	67.70454	4
06/08/2010	-106.41034	67.70454	4
06/08/2010	-106.41048	67.70452	3
06/08/2010	-106.41055	67.70451	4
06/08/2010	-106.41069	67.70449	3
06/08/2010	-106.41076	67.70448	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41091	67.70446	3
06/08/2010	-106.41098	67.70445	4
06/08/2010	-106.41112	67.70443	4
06/08/2010	-106.41119	67.70442	4
06/08/2010	-106.41133	67.70440	4
06/08/2010	-106.41140	67.70439	2
06/08/2010	-106.41154	67.70437	4
06/08/2010	-106.41161	67.70436	3
06/08/2010	-106.41175	67.70434	2
06/08/2010	-106.41183	67.70433	2
06/08/2010	-106.41196	67.70431	2
06/08/2010	-106.41203	67.70430	2
06/08/2010	-106.41218	67.70428	2
06/08/2010	-106.41225	67.70427	2
06/08/2010	-106.41239	67.70426	2
06/08/2010	-106.41246	67.70425	3
06/08/2010	-106.41260	67.70423	2
06/08/2010	-106.41267	67.70422	3
06/08/2010	-106.41281	67.70420	3
06/08/2010	-106.41288	67.70419	3
06/08/2010	-106.41302	67.70417	2
06/08/2010	-106.41310	67.70416	2
06/08/2010	-106.41325	67.70415	2
06/08/2010	-106.41332	67.70415	2
06/08/2010	-106.41347	67.70414	2
06/08/2010	-106.41354	67.70414	2
06/08/2010	-106.41367	67.70414	2
06/08/2010	-106.41372	67.70414	2
06/08/2010	-106.41383	67.70413	4
06/08/2010	-106.41389	67.70413	4
06/08/2010	-106.41401	67.70412	4
06/08/2010	-106.41407	67.70412	4
06/08/2010	-106.41419	67.70410	4
06/08/2010	-106.41426	67.70409	4
06/08/2010	-106.41438	67.70407	4
06/08/2010	-106.41443	67.70406	4
06/08/2010	-106.41449	67.70405	2
06/08/2010	-106.41461	67.70402	2
06/08/2010	-106.41467	67.70401	2
06/08/2010	-106.41479	67.70399	2
06/08/2010	-106.41486	67.70398	4
06/08/2010	-106.41498	67.70396	4
06/08/2010	-106.41504	67.70395	4
06/08/2010	-106.41517	67.70394	4
06/08/2010	-106.41524	67.70393	4
06/08/2010	-106.41537	67.70392	4
06/08/2010	-106.41543	67.70392	4
06/08/2010	-106.41556	67.70391	4
06/08/2010	-106.41563	67.70391	4
06/08/2010	-106.41576	67.70389	4
06/08/2010	-106.41582	67.70389	4
06/08/2010	-106.41595	67.70388	4
06/08/2010	-106.41602	67.70387	4
06/08/2010	-106.41615	67.70386	4
06/08/2010	-106.41621	67.70385	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41633	67.70383	4
06/08/2010	-106.41640	67.70382	4
06/08/2010	-106.41652	67.70380	4
06/08/2010	-106.41658	67.70380	4
06/08/2010	-106.41671	67.70378	4
06/08/2010	-106.41677	67.70377	4
06/08/2010	-106.41690	67.70375	4
06/08/2010	-106.41696	67.70374	4
06/08/2010	-106.41708	67.70372	4
06/08/2010	-106.41715	67.70372	4
06/08/2010	-106.41728	67.70370	4
06/08/2010	-106.41734	67.70370	2
06/08/2010	-106.41747	67.70369	4
06/08/2010	-106.41754	67.70368	4
06/08/2010	-106.41767	67.70367	4
06/08/2010	-106.41773	67.70367	4
06/08/2010	-106.41787	67.70366	4
06/08/2010	-106.41793	67.70365	4
06/08/2010	-106.41799	67.70365	4
06/08/2010	-106.41812	67.70363	4
06/08/2010	-106.41818	67.70363	4
06/08/2010	-106.41831	67.70362	4
06/08/2010	-106.41838	67.70361	4
06/08/2010	-106.41851	67.70360	4
06/08/2010	-106.41857	67.70359	4
06/08/2010	-106.41870	67.70358	4
06/08/2010	-106.41877	67.70358	4
06/08/2010	-106.41890	67.70357	4
06/08/2010	-106.41896	67.70356	4
06/08/2010	-106.41909	67.70355	4
06/08/2010	-106.41915	67.70355	4
06/08/2010	-106.41928	67.70354	4
06/08/2010	-106.41934	67.70353	4
06/08/2010	-106.41947	67.70352	4
06/08/2010	-106.41953	67.70351	2
06/08/2010	-106.41965	67.70349	3
06/08/2010	-106.41971	67.70348	2
06/08/2010	-106.41983	67.70345	2
06/08/2010	-106.41989	67.70344	2
06/08/2010	-106.42000	67.70342	3
06/08/2010	-106.42005	67.70340	4
06/08/2010	-106.42017	67.70338	4
06/08/2010	-106.42023	67.70337	4
06/08/2010	-106.42035	67.70335	4
06/08/2010	-106.42041	67.70334	4
06/08/2010	-106.42054	67.70333	4
06/08/2010	-106.42061	67.70332	4
06/08/2010	-106.42074	67.70332	4
06/08/2010	-106.42080	67.70331	4
06/08/2010	-106.42093	67.70331	4
06/08/2010	-106.42100	67.70331	4
06/08/2010	-106.42113	67.70331	4
06/08/2010	-106.42119	67.70330	4
06/08/2010	-106.42132	67.70329	4
06/08/2010	-106.42138	67.70329	4
06/08/2010	-106.42150	67.70327	4
06/08/2010	-106.42156	67.70326	4
06/08/2010	-106.42168	67.70324	4
06/08/2010	-106.42174	67.70324	4
06/08/2010	-106.42181	67.70323	4
06/08/2010	-106.42193	67.70321	4
06/08/2010	-106.42199	67.70320	4
06/08/2010	-106.42211	67.70319	4
06/08/2010	-106.42217	67.70318	4
06/08/2010	-106.42229	67.70316	4
06/08/2010	-106.42235	67.70316	4
06/08/2010	-106.42247	67.70314	4
06/08/2010	-106.42254	67.70314	4
06/08/2010	-106.42266	67.70313	4
06/08/2010	-106.42272	67.70312	4
06/08/2010	-106.42284	67.70311	4
06/08/2010	-106.42290	67.70310	4
06/08/2010	-106.42303	67.70309	4
06/08/2010	-106.42309	67.70308	4
06/08/2010	-106.42321	67.70307	4
06/08/2010	-106.42327	67.70306	4
06/08/2010	-106.42339	67.70306	4
06/08/2010	-106.42345	67.70308	4
06/08/2010	-106.42353	67.70313	4
06/08/2010	-106.42353	67.70316	3
06/08/2010	-106.42352	67.70320	3
06/08/2010	-106.42351	67.70323	2
06/08/2010	-106.42350	67.70328	3
06/08/2010	-106.42350	67.70331	3
06/08/2010	-106.42348	67.70336	3
06/08/2010	-106.42348	67.70339	3
06/08/2010	-106.42347	67.70344	3
06/08/2010	-106.42347	67.70347	4
06/08/2010	-106.42346	67.70352	4
06/08/2010	-106.42345	67.70355	3
06/08/2010	-106.42343	67.70360	4
06/08/2010	-106.42342	67.70363	4
06/08/2010	-106.42340	67.70368	4
06/08/2010	-106.42339	67.70370	4
06/08/2010	-106.42336	67.70376	3
06/08/2010	-106.42335	67.70378	4
06/08/2010	-106.42334	67.70384	4
06/08/2010	-106.42334	67.70386	4
06/08/2010	-106.42333	67.70392	4
06/08/2010	-106.42333	67.70394	4
06/08/2010	-106.42333	67.70400	4
06/08/2010	-106.42333	67.70402	4
06/08/2010	-106.42333	67.70408	4
06/08/2010	-106.42333	67.70410	4
06/08/2010	-106.42333	67.70415	4
06/08/2010	-106.42334	67.70418	4
06/08/2010	-106.42335	67.70423	4
06/08/2010	-106.42336	67.70426	4
06/08/2010	-106.42338	67.70431	4
06/08/2010	-106.42339	67.70433	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42342	67.70438	4
06/08/2010	-106.42344	67.70441	4
06/08/2010	-106.42348	67.70446	4
06/08/2010	-106.42350	67.70448	4
06/08/2010	-106.42354	67.70453	4
06/08/2010	-106.42355	67.70456	4
06/08/2010	-106.42359	67.70461	4
06/08/2010	-106.42360	67.70463	4
06/08/2010	-106.42362	67.70468	4
06/08/2010	-106.42363	67.70471	4
06/08/2010	-106.42365	67.70476	4
06/08/2010	-106.42366	67.70479	4
06/08/2010	-106.42367	67.70484	4
06/08/2010	-106.42366	67.70487	4
06/08/2010	-106.42363	67.70492	4
06/08/2010	-106.42360	67.70495	4
06/08/2010	-106.42353	67.70499	4
06/08/2010	-106.42343	67.70503	4
06/08/2010	-106.42332	67.70506	4
06/08/2010	-106.42326	67.70507	4
06/08/2010	-106.42314	67.70509	4
06/08/2010	-106.42307	67.70511	4
06/08/2010	-106.42294	67.70513	4
06/08/2010	-106.42288	67.70514	4
06/08/2010	-106.42275	67.70516	4
06/08/2010	-106.42269	67.70517	4
06/08/2010	-106.42256	67.70520	4
06/08/2010	-106.42249	67.70521	4
06/08/2010	-106.42236	67.70523	4
06/08/2010	-106.42229	67.70524	4
06/08/2010	-106.42216	67.70526	4
06/08/2010	-106.42209	67.70527	4
06/08/2010	-106.42195	67.70529	4
06/08/2010	-106.42189	67.70529	4
06/08/2010	-106.42175	67.70531	4
06/08/2010	-106.42168	67.70532	4
06/08/2010	-106.42154	67.70534	4
06/08/2010	-106.42147	67.70535	4
06/08/2010	-106.42134	67.70537	4
06/08/2010	-106.42127	67.70538	4
06/08/2010	-106.42113	67.70539	4
06/08/2010	-106.42106	67.70540	4
06/08/2010	-106.42092	67.70542	4
06/08/2010	-106.42086	67.70543	4
06/08/2010	-106.42079	67.70544	4
06/08/2010	-106.42065	67.70545	4
06/08/2010	-106.42058	67.70546	4
06/08/2010	-106.42045	67.70548	4
06/08/2010	-106.42038	67.70548	4
06/08/2010	-106.42024	67.70550	3
06/08/2010	-106.42017	67.70551	4
06/08/2010	-106.42003	67.70552	4
06/08/2010	-106.41996	67.70552	4
06/08/2010	-106.41982	67.70554	4
06/08/2010	-106.41976	67.70555	4
06/08/2010	-106.41962	67.70557	2
06/08/2010	-106.41956	67.70558	2
06/08/2010	-106.41942	67.70560	2
06/08/2010	-106.41936	67.70561	2
06/08/2010	-106.41922	67.70563	1
06/08/2010	-106.41915	67.70564	2
06/08/2010	-106.41901	67.70566	2
06/08/2010	-106.41894	67.70567	4
06/08/2010	-106.41880	67.70568	4
06/08/2010	-106.41874	67.70569	3
06/08/2010	-106.41860	67.70571	3
06/08/2010	-106.41853	67.70572	3
06/08/2010	-106.41839	67.70573	2
06/08/2010	-106.41832	67.70574	2
06/08/2010	-106.41818	67.70575	2
06/08/2010	-106.41811	67.70576	4
06/08/2010	-106.41796	67.70576	3
06/08/2010	-106.41789	67.70577	3
06/08/2010	-106.41776	67.70578	3
06/08/2010	-106.41769	67.70579	3
06/08/2010	-106.41755	67.70581	3
06/08/2010	-106.41748	67.70582	3
06/08/2010	-106.41734	67.70584	4
06/08/2010	-106.41727	67.70585	4
06/08/2010	-106.41713	67.70587	3
06/08/2010	-106.41706	67.70587	3
06/08/2010	-106.41692	67.70589	3
06/08/2010	-106.41685	67.70590	2
06/08/2010	-106.41671	67.70592	3
06/08/2010	-106.41664	67.70593	3
06/08/2010	-106.41650	67.70595	4
06/08/2010	-106.41636	67.70596	3
06/08/2010	-106.41629	67.70597	3
06/08/2010	-106.41614	67.70598	3
06/08/2010	-106.41607	67.70599	3
06/08/2010	-106.41593	67.70600	3
06/08/2010	-106.41586	67.70601	3
06/08/2010	-106.41572	67.70602	3
06/08/2010	-106.41565	67.70603	3
06/08/2010	-106.41551	67.70604	3
06/08/2010	-106.41544	67.70605	4
06/08/2010	-106.41529	67.70606	3
06/08/2010	-106.41522	67.70607	4
06/08/2010	-106.41508	67.70608	4
06/08/2010	-106.41501	67.70609	4
06/08/2010	-106.41487	67.70611	4
06/08/2010	-106.41481	67.70612	3
06/08/2010	-106.41467	67.70614	4
06/08/2010	-106.41460	67.70615	4
06/08/2010	-106.41446	67.70617	4
06/08/2010	-106.41439	67.70618	3
06/08/2010	-106.41426	67.70620	3
06/08/2010	-106.41419	67.70621	2
06/08/2010	-106.41405	67.70623	3
06/08/2010	-106.41398	67.70624	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41384	67.70626	3
06/08/2010	-106.41377	67.70626	4
06/08/2010	-106.41364	67.70628	3
06/08/2010	-106.41357	67.70629	3
06/08/2010	-106.41343	67.70631	4
06/08/2010	-106.41336	67.70632	2
06/08/2010	-106.41322	67.70634	3
06/08/2010	-106.41308	67.70635	3
06/08/2010	-106.41301	67.70636	4
06/08/2010	-106.41287	67.70637	2
06/08/2010	-106.41280	67.70638	3
06/08/2010	-106.41266	67.70639	2
06/08/2010	-106.41259	67.70640	4
06/08/2010	-106.41245	67.70641	3
06/08/2010	-106.41238	67.70642	4
06/08/2010	-106.41224	67.70643	3
06/08/2010	-106.41217	67.70644	2
06/08/2010	-106.41203	67.70645	2
06/08/2010	-106.41197	67.70646	2
06/08/2010	-106.41183	67.70648	2
06/08/2010	-106.41176	67.70649	2
06/08/2010	-106.41169	67.70650	2
06/08/2010	-106.41156	67.70651	2
06/08/2010	-106.41149	67.70652	2
06/08/2010	-106.41135	67.70654	2
06/08/2010	-106.41128	67.70654	2
06/08/2010	-106.41115	67.70656	2
06/08/2010	-106.41108	67.70657	2
06/08/2010	-106.41094	67.70658	2
06/08/2010	-106.41087	67.70659	2
06/08/2010	-106.41074	67.70662	2
06/08/2010	-106.41068	67.70663	2
06/08/2010	-106.41055	67.70665	2
06/08/2010	-106.41049	67.70666	2
06/08/2010	-106.41036	67.70669	2
06/08/2010	-106.41029	67.70670	2
06/08/2010	-106.41015	67.70672	1
06/08/2010	-106.41008	67.70673	2
06/08/2010	-106.40994	67.70674	2
06/08/2010	-106.40987	67.70675	2
06/08/2010	-106.40973	67.70676	2
06/08/2010	-106.40966	67.70677	2
06/08/2010	-106.40953	67.70679	2
06/08/2010	-106.40948	67.70679	2
06/08/2010	-106.40936	67.70681	2
06/08/2010	-106.40930	67.70681	2
06/08/2010	-106.40918	67.70682	2
06/08/2010	-106.40912	67.70683	2
06/08/2010	-106.40900	67.70683	2
06/08/2010	-106.40894	67.70684	2
06/08/2010	-106.40884	67.70684	2
06/08/2010	-106.40879	67.70684	2
06/08/2010	-106.40875	67.70685	2
06/08/2010	-106.40866	67.70686	3
06/08/2010	-106.40862	67.70686	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40854	67.70687	4
06/08/2010	-106.40850	67.70688	2
06/08/2010	-106.40842	67.70689	2
06/08/2010	-106.40838	67.70689	3
06/08/2010	-106.40830	67.70690	2
06/08/2010	-106.40826	67.70690	2
06/08/2010	-106.40818	67.70691	2
06/08/2010	-106.40814	67.70691	2
06/08/2010	-106.40806	67.70691	2
06/08/2010	-106.40801	67.70692	3
06/08/2010	-106.40794	67.70692	4
06/08/2010	-106.40791	67.70692	4
06/08/2010	-106.40786	67.70693	4
06/08/2010	-106.40784	67.70694	4
06/08/2010	-106.40781	67.70694	4
06/08/2010	-106.40781	67.70694	4
06/08/2010	-106.40800	67.70700	4
06/08/2010	-106.40806	67.70702	3
06/08/2010	-106.40810	67.70703	4
06/08/2010	-106.40817	67.70705	2
06/08/2010	-106.40821	67.70706	2
06/08/2010	-106.40828	67.70709	2
06/08/2010	-106.40831	67.70710	2
06/08/2010	-106.40837	67.70712	2
06/08/2010	-106.40840	67.70713	2
06/08/2010	-106.40846	67.70716	2
06/08/2010	-106.40848	67.70718	2
06/08/2010	-106.40853	67.70720	3
06/08/2010	-106.40856	67.70722	1
06/08/2010	-106.40861	67.70725	2
06/08/2010	-106.40864	67.70726	2
06/08/2010	-106.40870	67.70729	3
06/08/2010	-106.40873	67.70730	2
06/08/2010	-106.40879	67.70732	4
06/08/2010	-106.40882	67.70734	3
06/08/2010	-106.40889	67.70736	3
06/08/2010	-106.40892	67.70737	3
06/08/2010	-106.40899	67.70739	3
06/08/2010	-106.40902	67.70740	3
06/08/2010	-106.40906	67.70742	3
06/08/2010	-106.40913	67.70744	3
06/08/2010	-106.40916	67.70745	3
06/08/2010	-106.40923	67.70747	3
06/08/2010	-106.40926	67.70748	2
06/08/2010	-106.40933	67.70751	3
06/08/2010	-106.40936	67.70752	3
06/08/2010	-106.40943	67.70754	2
06/08/2010	-106.40946	67.70756	3
06/08/2010	-106.40952	67.70758	4
06/08/2010	-106.40956	67.70759	2
06/08/2010	-106.40962	67.70762	4
06/08/2010	-106.40965	67.70763	3
06/08/2010	-106.40971	67.70765	2
06/08/2010	-106.40975	67.70766	3
06/08/2010	-106.40982	67.70767	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40986	67.70767	3
06/08/2010	-106.40994	67.70768	2
06/08/2010	-106.40998	67.70768	3
06/08/2010	-106.41006	67.70767	3
06/08/2010	-106.41010	67.70766	2
06/08/2010	-106.41017	67.70765	3
06/08/2010	-106.41020	67.70763	3
06/08/2010	-106.41025	67.70761	3
06/08/2010	-106.41027	67.70760	3
06/08/2010	-106.41033	67.70757	2
06/08/2010	-106.41035	67.70755	2
06/08/2010	-106.41040	67.70753	4
06/08/2010	-106.41043	67.70751	3
06/08/2010	-106.41047	67.70748	3
06/08/2010	-106.41049	67.70747	3
06/08/2010	-106.41053	67.70744	3
06/08/2010	-106.41055	67.70742	3
06/08/2010	-106.41060	67.70739	3
06/08/2010	-106.41063	67.70738	3
06/08/2010	-106.41068	67.70735	3
06/08/2010	-106.41071	67.70734	3
06/08/2010	-106.41078	67.70731	4
06/08/2010	-106.41081	67.70730	3
06/08/2010	-106.41088	67.70728	3
06/08/2010	-106.41092	67.70727	4
06/08/2010	-106.41100	67.70725	3
06/08/2010	-106.41103	67.70724	3
06/08/2010	-106.41111	67.70722	3
06/08/2010	-106.41115	67.70721	4
06/08/2010	-106.41122	67.70720	3
06/08/2010	-106.41126	67.70719	3
06/08/2010	-106.41133	67.70717	3
06/08/2010	-106.41137	67.70716	4
06/08/2010	-106.41145	67.70714	3
06/08/2010	-106.41149	67.70714	2
06/08/2010	-106.41156	67.70712	4
06/08/2010	-106.41160	67.70711	3
06/08/2010	-106.41166	67.70709	4
06/08/2010	-106.41170	67.70708	4
06/08/2010	-106.41176	67.70705	3
06/08/2010	-106.41179	67.70704	2
06/08/2010	-106.41186	67.70702	3
06/08/2010	-106.41186	67.70702	3
06/08/2010	-106.41196	67.70699	3
06/08/2010	-106.41200	67.70697	3
06/08/2010	-106.41206	67.70695	4
06/08/2010	-106.41209	67.70694	4
06/08/2010	-106.41216	67.70692	4
06/08/2010	-106.41219	67.70690	3
06/08/2010	-106.41226	67.70688	4
06/08/2010	-106.41229	67.70687	4
06/08/2010	-106.41235	67.70685	4
06/08/2010	-106.41239	67.70683	3
06/08/2010	-106.41246	67.70681	4
06/08/2010	-106.41249	67.70680	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41256	67.70678	3
06/08/2010	-106.41260	67.70677	4
06/08/2010	-106.41267	67.70675	3
06/08/2010	-106.41271	67.70674	3
06/08/2010	-106.41278	67.70672	3
06/08/2010	-106.41282	67.70672	3
06/08/2010	-106.41290	67.70670	3
06/08/2010	-106.41294	67.70669	2
06/08/2010	-106.41302	67.70668	3
06/08/2010	-106.41306	67.70667	3
06/08/2010	-106.41314	67.70666	3
06/08/2010	-106.41318	67.70665	2
06/08/2010	-106.41326	67.70664	2
06/08/2010	-106.41330	67.70664	3
06/08/2010	-106.41339	67.70662	2
06/08/2010	-106.41347	67.70662	3
06/08/2010	-106.41351	67.70661	4
06/08/2010	-106.41359	67.70660	4
06/08/2010	-106.41364	67.70660	2
06/08/2010	-106.41374	67.70659	4
06/08/2010	-106.41379	67.70659	3
06/08/2010	-106.41388	67.70658	2
06/08/2010	-106.41393	67.70657	3
06/08/2010	-106.41403	67.70656	3
06/08/2010	-106.41407	67.70656	3
06/08/2010	-106.41416	67.70655	3
06/08/2010	-106.41421	67.70655	3
06/08/2010	-106.41430	67.70654	4
06/08/2010	-106.41434	67.70653	3
06/08/2010	-106.41443	67.70652	3
06/08/2010	-106.41448	67.70652	3
06/08/2010	-106.41457	67.70650	3
06/08/2010	-106.41461	67.70650	3
06/08/2010	-106.41470	67.70649	3
06/08/2010	-106.41475	67.70648	3
06/08/2010	-106.41484	67.70648	3
06/08/2010	-106.41488	67.70648	3
06/08/2010	-106.41498	67.70647	3
06/08/2010	-106.41502	67.70647	3
06/08/2010	-106.41511	67.70647	3
06/08/2010	-106.41516	67.70647	4
06/08/2010	-106.41525	67.70646	4
06/08/2010	-106.41530	67.70646	3
06/08/2010	-106.41539	67.70646	3
06/08/2010	-106.41543	67.70646	3
06/08/2010	-106.41553	67.70646	3
06/08/2010	-106.41557	67.70646	3
06/08/2010	-106.41566	67.70646	4
06/08/2010	-106.41571	67.70646	3
06/08/2010	-106.41576	67.70646	4
06/08/2010	-106.41590	67.70647	3
06/08/2010	-106.41594	67.70647	3
06/08/2010	-106.41603	67.70648	4
06/08/2010	-106.41607	67.70648	3
06/08/2010	-106.41615	67.70649	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41619	67.70650	4
06/08/2010	-106.41628	67.70651	3
06/08/2010	-106.41632	67.70651	3
06/08/2010	-106.41641	67.70652	2
06/08/2010	-106.41645	67.70653	4
06/08/2010	-106.41654	67.70653	3
06/08/2010	-106.41658	67.70654	3
06/08/2010	-106.41667	67.70655	4
06/08/2010	-106.41671	67.70655	4
06/08/2010	-106.41680	67.70656	4
06/08/2010	-106.41684	67.70657	2
06/08/2010	-106.41693	67.70658	3
06/08/2010	-106.41697	67.70659	3
06/08/2010	-106.41706	67.70660	4
06/08/2010	-106.41710	67.70660	3
06/08/2010	-106.41719	67.70661	4
06/08/2010	-106.41723	67.70662	4
06/08/2010	-106.39789	67.70184	4
06/08/2010	-106.39792	67.70184	3
06/08/2010	-106.39794	67.70184	3
06/08/2010	-106.39800	67.70183	4
06/08/2010	-106.39803	67.70182	4
06/08/2010	-106.39811	67.70179	3
06/08/2010	-106.39816	67.70178	4
06/08/2010	-106.39825	67.70175	2
06/08/2010	-106.39829	67.70174	4
06/08/2010	-106.39839	67.70171	4
06/08/2010	-106.39844	67.70170	4
06/08/2010	-106.39854	67.70168	2
06/08/2010	-106.39859	67.70167	2
06/08/2010	-106.39869	67.70165	2
06/08/2010	-106.39874	67.70164	3
06/08/2010	-106.39884	67.70162	2
06/08/2010	-106.39889	67.70160	2
06/08/2010	-106.39898	67.70158	4
06/08/2010	-106.39903	67.70157	2
06/08/2010	-106.39914	67.70155	2
06/08/2010	-106.39919	67.70154	3
06/08/2010	-106.39929	67.70152	3
06/08/2010	-106.39933	67.70151	4
06/08/2010	-106.39942	67.70148	4
06/08/2010	-106.39947	67.70147	2
06/08/2010	-106.39956	67.70144	4
06/08/2010	-106.39960	67.70143	4
06/08/2010	-106.39971	67.70141	2
06/08/2010	-106.39976	67.70140	4
06/08/2010	-106.39987	67.70139	4
06/08/2010	-106.39992	67.70138	4
06/08/2010	-106.40003	67.70137	4
06/08/2010	-106.40009	67.70137	4
06/08/2010	-106.40020	67.70137	4
06/08/2010	-106.40026	67.70136	4
06/08/2010	-106.40038	67.70136	4
06/08/2010	-106.40045	67.70136	4
06/08/2010	-106.40060	67.70136	4
06/08/2010	-106.40067	67.70136	3
06/08/2010	-106.40082	67.70136	4
06/08/2010	-106.40089	67.70135	4
06/08/2010	-106.40104	67.70134	4
06/08/2010	-106.40111	67.70134	4
06/08/2010	-106.40124	67.70133	4
06/08/2010	-106.40130	67.70132	4
06/08/2010	-106.40143	67.70130	4
06/08/2010	-106.40149	67.70130	4
06/08/2010	-106.40163	67.70128	4
06/08/2010	-106.40170	67.70127	4
06/08/2010	-106.40184	67.70126	4
06/08/2010	-106.40191	67.70126	4
06/08/2010	-106.40206	67.70125	4
06/08/2010	-106.40213	67.70125	4
06/08/2010	-106.40227	67.70124	2
06/08/2010	-106.40234	67.70123	3
06/08/2010	-106.40248	67.70122	3
06/08/2010	-106.40255	67.70121	4
06/08/2010	-106.40269	67.70120	3
06/08/2010	-106.40276	67.70120	4
06/08/2010	-106.40290	67.70118	3
06/08/2010	-106.40296	67.70118	4
06/08/2010	-106.40310	67.70116	4
06/08/2010	-106.40317	67.70115	4
06/08/2010	-106.40330	67.70114	2
06/08/2010	-106.40337	67.70113	3
06/08/2010	-106.40350	67.70111	3
06/08/2010	-106.40357	67.70110	3
06/08/2010	-106.40363	67.70109	2
06/08/2010	-106.40377	67.70107	3
06/08/2010	-106.40383	67.70106	2
06/08/2010	-106.40396	67.70104	2
06/08/2010	-106.40403	67.70103	2
06/08/2010	-106.40416	67.70101	3
06/08/2010	-106.40423	67.70100	3
06/08/2010	-106.40436	67.70099	3
06/08/2010	-106.40443	67.70098	4
06/08/2010	-106.40457	67.70096	4
06/08/2010	-106.40464	67.70095	3
06/08/2010	-106.40478	67.70094	3
06/08/2010	-106.40485	67.70093	3
06/08/2010	-106.40498	67.70092	2
06/08/2010	-106.40505	67.70091	4
06/08/2010	-106.40519	67.70090	2
06/08/2010	-106.40526	67.70089	2
06/08/2010	-106.40540	67.70088	4
06/08/2010	-106.40547	67.70087	4
06/08/2010	-106.40561	67.70086	2
06/08/2010	-106.40568	67.70086	2
06/08/2010	-106.40582	67.70084	2
06/08/2010	-106.40589	67.70083	2
06/08/2010	-106.40602	67.70082	2
06/08/2010	-106.40609	67.70082	3
06/08/2010	-106.40623	67.70080	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40630	67.70080	2
06/08/2010	-106.40645	67.70078	2
06/08/2010	-106.40652	67.70078	2
06/08/2010	-106.40666	67.70076	2
06/08/2010	-106.40673	67.70076	2
06/08/2010	-106.40686	67.70074	2
06/08/2010	-106.40693	67.70073	2
06/08/2010	-106.40707	67.70072	2
06/08/2010	-106.40714	67.70072	2
06/08/2010	-106.40728	67.70071	2
06/08/2010	-106.40734	67.70070	2
06/08/2010	-106.40748	67.70069	2
06/08/2010	-106.40755	67.70068	2
06/08/2010	-106.40768	67.70066	2
06/08/2010	-106.40775	67.70065	2
06/08/2010	-106.40788	67.70063	2
06/08/2010	-106.40795	67.70062	2
06/08/2010	-106.40808	67.70060	2
06/08/2010	-106.40815	67.70059	2
06/08/2010	-106.40828	67.70057	2
06/08/2010	-106.40835	67.70056	2
06/08/2010	-106.40848	67.70054	2
06/08/2010	-106.40855	67.70053	2
06/08/2010	-106.40869	67.70051	4
06/08/2010	-106.40876	67.70051	0
06/08/2010	-106.40890	67.70050	4
06/08/2010	-106.40897	67.70049	4
06/08/2010	-106.40912	67.70048	4
06/08/2010	-106.40919	67.70048	4
06/08/2010	-106.40933	67.70046	2
06/08/2010	-106.40939	67.70046	4
06/08/2010	-106.40952	67.70044	2
06/08/2010	-106.40959	67.70042	3
06/08/2010	-106.40965	67.70041	4
06/08/2010	-106.40978	67.70038	4
06/08/2010	-106.40992	67.70036	4
06/08/2010	-106.41005	67.70034	4
06/08/2010	-106.41012	67.70033	4
06/08/2010	-106.41025	67.70031	4
06/08/2010	-106.41032	67.70030	4
06/08/2010	-106.41046	67.70028	4
06/08/2010	-106.41053	67.70027	4
06/08/2010	-106.41067	67.70026	4
06/08/2010	-106.41074	67.70025	4
06/08/2010	-106.41088	67.70024	4
06/08/2010	-106.41095	67.70023	4
06/08/2010	-106.41109	67.70022	4
06/08/2010	-106.41116	67.70022	4
06/08/2010	-106.41130	67.70020	4
06/08/2010	-106.41137	67.70019	4
06/08/2010	-106.41150	67.70018	4
06/08/2010	-106.41157	67.70017	2
06/08/2010	-106.41171	67.70015	4
06/08/2010	-106.41177	67.70014	4
06/08/2010	-106.41191	67.70012	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41198	67.70011	4
06/08/2010	-106.41211	67.70010	4
06/08/2010	-106.41218	67.70008	4
06/08/2010	-106.41231	67.70006	4
06/08/2010	-106.41238	67.70005	4
06/08/2010	-106.41251	67.70004	4
06/08/2010	-106.41258	67.70003	4
06/08/2010	-106.41271	67.70001	4
06/08/2010	-106.41278	67.70000	4
06/08/2010	-106.41292	67.69999	4
06/08/2010	-106.41299	67.69998	4
06/08/2010	-106.41313	67.69997	4
06/08/2010	-106.41320	67.69996	4
06/08/2010	-106.41334	67.69995	4
06/08/2010	-106.41341	67.69995	4
06/08/2010	-106.41355	67.69994	4
06/08/2010	-106.41362	67.69993	4
06/08/2010	-106.41375	67.69992	2
06/08/2010	-106.41382	67.69991	2
06/08/2010	-106.41389	67.69991	1
06/08/2010	-106.41403	67.69989	2
06/08/2010	-106.41410	67.69988	2
06/08/2010	-106.41424	67.69987	2
06/08/2010	-106.41430	67.69986	2
06/08/2010	-106.41444	67.69984	2
06/08/2010	-106.41451	67.69984	3
06/08/2010	-106.41465	67.69982	2
06/08/2010	-106.41471	67.69981	3
06/08/2010	-106.41485	67.69979	2
06/08/2010	-106.41491	67.69978	3
06/08/2010	-106.41505	67.69976	3
06/08/2010	-106.41511	67.69975	2
06/08/2010	-106.41525	67.69972	2
06/08/2010	-106.41531	67.69971	2
06/08/2010	-106.41544	67.69969	2
06/08/2010	-106.41551	67.69968	4
06/08/2010	-106.41565	67.69967	3
06/08/2010	-106.41571	67.69966	3
06/08/2010	-106.41585	67.69964	3
06/08/2010	-106.41591	67.69963	2
06/08/2010	-106.41604	67.69961	4
06/08/2010	-106.41611	67.69960	3
06/08/2010	-106.41625	67.69959	3
06/08/2010	-106.41631	67.69958	2
06/08/2010	-106.41645	67.69957	3
06/08/2010	-106.41651	67.69956	4
06/08/2010	-106.41665	67.69955	2
06/08/2010	-106.41672	67.69954	3
06/08/2010	-106.41685	67.69953	4
06/08/2010	-106.41692	67.69952	3
06/08/2010	-106.41706	67.69950	4
06/08/2010	-106.41712	67.69949	3
06/08/2010	-106.41726	67.69947	3
06/08/2010	-106.41732	67.69946	3
06/08/2010	-106.41745	67.69944	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41752	67.69943	2
06/08/2010	-106.41765	67.69941	2
06/08/2010	-106.41772	67.69940	2
06/08/2010	-106.41786	67.69938	2
06/08/2010	-106.41793	67.69938	2
06/08/2010	-106.41807	67.69936	2
06/08/2010	-106.41814	67.69936	2
06/08/2010	-106.41828	67.69935	2
06/08/2010	-106.41835	67.69934	2
06/08/2010	-106.41847	67.69933	3
06/08/2010	-106.41853	67.69933	4
06/08/2010	-106.41866	67.69931	4
06/08/2010	-106.41872	67.69930	4
06/08/2010	-106.41885	67.69928	4
06/08/2010	-106.41892	67.69927	4
06/08/2010	-106.41905	67.69926	4
06/08/2010	-106.41912	67.69925	4
06/08/2010	-106.41926	67.69925	4
06/08/2010	-106.41933	67.69924	4
06/08/2010	-106.41946	67.69924	4
06/08/2010	-106.41953	67.69924	4
06/08/2010	-106.41967	67.69923	2
06/08/2010	-106.41973	67.69923	4
06/08/2010	-106.41987	67.69922	4
06/08/2010	-106.41994	67.69921	3
06/08/2010	-106.42007	67.69920	4
06/08/2010	-106.42014	67.69919	4
06/08/2010	-106.42027	67.69917	4
06/08/2010	-106.42034	67.69916	4
06/08/2010	-106.42049	67.69915	4
06/08/2010	-106.42056	67.69914	4
06/08/2010	-106.42070	67.69913	4
06/08/2010	-106.42077	67.69912	4
06/08/2010	-106.42091	67.69911	4
06/08/2010	-106.42098	67.69910	4
06/08/2010	-106.42112	67.69908	4
06/08/2010	-106.42118	67.69907	4
06/08/2010	-106.42132	67.69905	4
06/08/2010	-106.42139	67.69904	4
06/08/2010	-106.42153	67.69903	4
06/08/2010	-106.42160	67.69902	4
06/08/2010	-106.42174	67.69900	4
06/08/2010	-106.42181	67.69899	4
06/08/2010	-106.42195	67.69897	4
06/08/2010	-106.42201	67.69896	4
06/08/2010	-106.42215	67.69894	4
06/08/2010	-106.42222	67.69893	4
06/08/2010	-106.42235	67.69892	4
06/08/2010	-106.42242	67.69891	4
06/08/2010	-106.42257	67.69890	4
06/08/2010	-106.42264	67.69889	4
06/08/2010	-106.42278	67.69889	4
06/08/2010	-106.42285	67.69888	4
06/08/2010	-106.42296	67.69888	4
06/08/2010	-106.42300	67.69888	4
06/08/2010	-106.42306	67.69890	4
06/08/2010	-106.41929	67.70678	3
06/08/2010	-106.41933	67.70679	3
06/08/2010	-106.41942	67.70680	3
06/08/2010	-106.41946	67.70680	3
06/08/2010	-106.41955	67.70681	3
06/08/2010	-106.41959	67.70682	3
06/08/2010	-106.41968	67.70683	3
06/08/2010	-106.41972	67.70684	3
06/08/2010	-106.41981	67.70686	3
06/08/2010	-106.41984	67.70687	4
06/08/2010	-106.41988	67.70690	3
06/08/2010	-106.41989	67.70692	4
06/08/2010	-106.41990	67.70695	4
06/08/2010	-106.41990	67.70699	3
06/08/2010	-106.41989	67.70701	3
06/08/2010	-106.41988	67.70704	4
06/08/2010	-106.41987	67.70706	3
06/08/2010	-106.41986	67.70710	3
06/08/2010	-106.41985	67.70712	2
06/08/2010	-106.41983	67.70715	3
06/08/2010	-106.41982	67.70717	3
06/08/2010	-106.41979	67.70721	3
06/08/2010	-106.41978	67.70722	4
06/08/2010	-106.41976	67.70725	4
06/08/2010	-106.41975	67.70726	4
06/08/2010	-106.41975	67.70727	4
06/08/2010	-106.41975	67.70728	4
06/08/2010	-106.41976	67.70729	4
06/08/2010	-106.41977	67.70729	3
06/08/2010	-106.41980	67.70729	4
06/08/2010	-106.41984	67.70730	4
06/08/2010	-106.41993	67.70729	3
06/08/2010	-106.41996	67.70728	3
06/08/2010	-106.42003	67.70728	3
06/08/2010	-106.42007	67.70727	3
06/08/2010	-106.42014	67.70726	3
06/08/2010	-106.42021	67.70726	3
06/08/2010	-106.42025	67.70725	3
06/08/2010	-106.42032	67.70725	3
06/08/2010	-106.42036	67.70725	3
06/08/2010	-106.42043	67.70725	3
06/08/2010	-106.42047	67.70724	3
06/08/2010	-106.42054	67.70724	3
06/08/2010	-106.42058	67.70724	3
06/08/2010	-106.42065	67.70723	3
06/08/2010	-106.42068	67.70723	4
06/08/2010	-106.42076	67.70722	4
06/08/2010	-106.42079	67.70722	3
06/08/2010	-106.42087	67.70721	3
06/08/2010	-106.42090	67.70720	4
06/08/2010	-106.42097	67.70719	3
06/08/2010	-106.42101	67.70719	3
06/08/2010	-106.42108	67.70717	3
06/08/2010	-106.42113	67.70717	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42122	67.70715	3
06/08/2010	-106.42127	67.70714	3
06/08/2010	-106.42137	67.70713	3
06/08/2010	-106.42142	67.70712	4
06/08/2010	-106.42151	67.70710	4
06/08/2010	-106.42156	67.70709	4
06/08/2010	-106.42166	67.70707	3
06/08/2010	-106.42171	67.70706	3
06/08/2010	-106.42180	67.70704	2
06/08/2010	-106.42190	67.70702	3
06/08/2010	-106.42195	67.70701	4
06/08/2010	-106.42205	67.70700	4
06/08/2010	-106.42209	67.70699	4
06/08/2010	-106.42219	67.70697	4
06/08/2010	-106.42224	67.70696	3
06/08/2010	-106.42234	67.70694	3
06/08/2010	-106.42239	67.70693	2
06/08/2010	-106.42244	67.70692	2
06/08/2010	-106.42253	67.70690	2
06/08/2010	-106.42258	67.70690	2
06/08/2010	-106.42268	67.70688	2
06/08/2010	-106.42273	67.70687	2
06/08/2010	-106.42283	67.70686	2
06/08/2010	-106.42288	67.70685	3
06/08/2010	-106.42298	67.70683	2
06/08/2010	-106.42303	67.70683	2
06/08/2010	-106.42314	67.70681	2
06/08/2010	-106.42321	67.70680	1
06/08/2010	-106.42334	67.70678	1
06/08/2010	-106.42340	67.70676	2
06/08/2010	-106.42352	67.70674	2
06/08/2010	-106.42357	67.70673	2
06/08/2010	-106.42369	67.70672	2
06/08/2010	-106.42373	67.70671	2
06/08/2010	-106.42377	67.70671	4
06/08/2010	-106.42384	67.70670	4
06/08/2010	-106.42387	67.70670	4
06/08/2010	-106.42393	67.70669	4
06/08/2010	-106.42395	67.70669	4
06/08/2010	-106.42401	67.70669	4
06/08/2010	-106.42403	67.70669	4
06/08/2010	-106.42408	67.70669	4
06/08/2010	-106.42377	67.70655	4
06/08/2010	-106.42374	67.70657	4
06/08/2010	-106.42367	67.70662	2
06/08/2010	-106.42364	67.70664	2
06/08/2010	-106.42357	67.70669	2
06/08/2010	-106.42353	67.70672	2
06/08/2010	-106.42346	67.70677	2
06/08/2010	-106.42342	67.70679	1
06/08/2010	-106.42333	67.70684	1
06/08/2010	-106.42329	67.70686	1
06/08/2010	-106.42320	67.70691	2
06/08/2010	-106.42315	67.70693	2
06/08/2010	-106.42305	67.70698	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42299	67.70700	2
06/08/2010	-106.42289	67.70704	2
06/08/2010	-106.42283	67.70706	2
06/08/2010	-106.42272	67.70710	2
06/08/2010	-106.42265	67.70711	3
06/08/2010	-106.42252	67.70714	3
06/08/2010	-106.42244	67.70714	3
06/08/2010	-106.42230	67.70714	3
06/08/2010	-106.42222	67.70713	2
06/08/2010	-106.42208	67.70712	2
06/08/2010	-106.42201	67.70712	4
06/08/2010	-106.42188	67.70709	3
06/08/2010	-106.42182	67.70709	3
06/08/2010	-106.42168	67.70709	3
06/08/2010	-106.42160	67.70709	3
06/08/2010	-106.42146	67.70708	3
06/08/2010	-106.42139	67.70706	3
06/08/2010	-106.42128	67.70703	3
06/08/2010	-106.42128	67.70703	3
06/08/2010	-106.42110	67.70698	3
06/08/2010	-106.42101	67.70694	3
06/08/2010	-106.42096	67.70691	3
06/08/2010	-106.42089	67.70686	3
06/08/2010	-106.42086	67.70684	3
06/08/2010	-106.42079	67.70679	3
06/08/2010	-106.42075	67.70677	4
06/08/2010	-106.42066	67.70672	3
06/08/2010	-106.42061	67.70670	3
06/08/2010	-106.42051	67.70666	3
06/08/2010	-106.42044	67.70665	3
06/08/2010	-106.42031	67.70663	4
06/08/2010	-106.42024	67.70662	3
06/08/2010	-106.42009	67.70660	4
06/08/2010	-106.42002	67.70660	3
06/08/2010	-106.41987	67.70658	2
06/08/2010	-106.41979	67.70657	4
06/08/2010	-106.41965	67.70655	2
06/08/2010	-106.41958	67.70654	3
06/08/2010	-106.41944	67.70652	3
06/08/2010	-106.41937	67.70651	4
06/08/2010	-106.41923	67.70649	2
06/08/2010	-106.41916	67.70648	2
06/08/2010	-106.41903	67.70645	3
06/08/2010	-106.41897	67.70643	2
06/08/2010	-106.41884	67.70640	2
06/08/2010	-106.41871	67.70637	2
06/08/2010	-106.41865	67.70635	2
06/08/2010	-106.41854	67.70631	2
06/08/2010	-106.41848	67.70629	3
06/08/2010	-106.41837	67.70625	2
06/08/2010	-106.41831	67.70624	2
06/08/2010	-106.41818	67.70622	3
06/08/2010	-106.41810	67.70622	2
06/08/2010	-106.41795	67.70621	3
06/08/2010	-106.41788	67.70621	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41773	67.70622	4
06/08/2010	-106.41765	67.70622	4
06/08/2010	-106.41750	67.70622	4
06/08/2010	-106.41742	67.70623	4
06/08/2010	-106.41727	67.70623	4
06/08/2010	-106.41719	67.70623	4
06/08/2010	-106.41703	67.70623	4
06/08/2010	-106.41695	67.70622	3
06/08/2010	-106.41680	67.70621	2
06/08/2010	-106.41673	67.70621	4
06/08/2010	-106.41657	67.70620	3
06/08/2010	-106.41650	67.70620	3
06/08/2010	-106.41634	67.70619	3
06/08/2010	-106.41626	67.70619	3
06/08/2010	-106.41611	67.70617	3
06/08/2010	-106.41604	67.70616	3
06/08/2010	-106.41590	67.70614	4
06/08/2010	-106.41583	67.70612	3
06/08/2010	-106.41571	67.70609	3
06/08/2010	-106.41558	67.70606	3
06/08/2010	-106.41552	67.70604	4
06/08/2010	-106.41539	67.70600	2
06/08/2010	-106.41534	67.70598	4
06/08/2010	-106.41522	67.70594	4
06/08/2010	-106.41517	67.70592	4
06/08/2010	-106.41506	67.70589	4
06/08/2010	-106.41499	67.70588	3
06/08/2010	-106.41485	67.70587	3
06/08/2010	-106.41478	67.70586	4
06/08/2010	-106.41462	67.70586	4
06/08/2010	-106.41455	67.70586	3
06/08/2010	-106.41441	67.70587	4
06/08/2010	-106.41434	67.70588	4
06/08/2010	-106.41421	67.70591	4
06/08/2010	-106.41415	67.70593	4
06/08/2010	-106.41402	67.70596	3
06/08/2010	-106.41396	67.70598	3
06/08/2010	-106.41383	67.70602	3
06/08/2010	-106.41376	67.70603	3
06/08/2010	-106.41362	67.70606	3
06/08/2010	-106.41355	67.70607	3
06/08/2010	-106.41340	67.70610	4
06/08/2010	-106.41333	67.70611	4
06/08/2010	-106.41318	67.70613	3
06/08/2010	-106.41311	67.70613	3
06/08/2010	-106.41295	67.70614	2
06/08/2010	-106.41287	67.70615	3
06/08/2010	-106.41272	67.70615	3
06/08/2010	-106.41264	67.70616	4
06/08/2010	-106.41248	67.70615	4
06/08/2010	-106.41240	67.70615	4
06/08/2010	-106.41225	67.70614	4
06/08/2010	-106.41217	67.70614	4
06/08/2010	-106.41202	67.70612	2
06/08/2010	-106.41194	67.70612	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41179	67.70611	2
06/08/2010	-106.41171	67.70611	2
06/08/2010	-106.41156	67.70611	2
06/08/2010	-106.41148	67.70611	2
06/08/2010	-106.41133	67.70613	3
06/08/2010	-106.41126	67.70613	2
06/08/2010	-106.41111	67.70615	2
06/08/2010	-106.41104	67.70616	2
06/08/2010	-106.41089	67.70618	2
06/08/2010	-106.41082	67.70619	3
06/08/2010	-106.41068	67.70621	3
06/08/2010	-106.41061	67.70622	2
06/08/2010	-106.41054	67.70623	2
06/08/2010	-106.41039	67.70626	2
06/08/2010	-106.41032	67.70627	3
06/08/2010	-106.41018	67.70629	2
06/08/2010	-106.41011	67.70630	2
06/08/2010	-106.40996	67.70632	2
06/08/2010	-106.40989	67.70632	2
06/08/2010	-106.40974	67.70634	4
06/08/2010	-106.40966	67.70635	4
06/08/2010	-106.40951	67.70636	4
06/08/2010	-106.40943	67.70637	4
06/08/2010	-106.40936	67.70637	4
06/08/2010	-106.40921	67.70639	4
06/08/2010	-106.40915	67.70639	3
06/08/2010	-106.40902	67.70640	3
06/08/2010	-106.40895	67.70641	4
06/08/2010	-106.40882	67.70642	4
06/08/2010	-106.40876	67.70643	4
06/08/2010	-106.40863	67.70645	3
06/08/2010	-106.40856	67.70645	3
06/08/2010	-106.40845	67.70648	3
06/08/2010	-106.40841	67.70649	2
06/08/2010	-106.40833	67.70653	2
06/08/2010	-106.40829	67.70655	2
06/08/2010	-106.40825	67.70660	2
06/08/2010	-106.40824	67.70662	2
06/08/2010	-106.40824	67.70664	3
06/08/2010	-106.40825	67.70669	3
06/08/2010	-106.40826	67.70671	3
06/08/2010	-106.40828	67.70675	2
06/08/2010	-106.40829	67.70676	2
06/08/2010	-106.40829	67.70680	2
06/08/2010	-106.40828	67.70682	2
06/08/2010	-106.40824	67.70685	2
06/08/2010	-106.40822	67.70686	2
06/08/2010	-106.40815	67.70688	4
06/08/2010	-106.40811	67.70689	2
06/08/2010	-106.40802	67.70689	2
06/08/2010	-106.39064	67.69305	3
06/08/2010	-106.39061	67.69300	3
06/08/2010	-106.39061	67.69297	3
06/08/2010	-106.39066	67.69292	3
06/08/2010	-106.39068	67.69289	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39074	67.69285	4
06/08/2010	-106.39078	67.69282	4
06/08/2010	-106.39087	67.69278	4
06/08/2010	-106.39093	67.69276	4
06/08/2010	-106.39104	67.69273	4
06/08/2010	-106.39110	67.69271	4
06/08/2010	-106.39121	67.69268	3
06/08/2010	-106.39127	67.69267	2
06/08/2010	-106.39139	67.69264	4
06/08/2010	-106.39145	67.69263	2
06/08/2010	-106.39158	67.69260	2
06/08/2010	-106.39164	67.69259	3
06/08/2010	-106.39176	67.69256	4
06/08/2010	-106.39181	67.69254	2
06/08/2010	-106.39192	67.69251	2
06/08/2010	-106.39197	67.69249	2
06/08/2010	-106.39203	67.69247	4
06/08/2010	-106.39212	67.69243	4
06/08/2010	-106.39217	67.69241	2
06/08/2010	-106.39226	67.69237	2
06/08/2010	-106.39230	67.69235	2
06/08/2010	-106.39240	67.69230	2
06/08/2010	-106.39245	67.69228	2
06/08/2010	-106.39256	67.69225	2
06/08/2010	-106.39261	67.69223	2
06/08/2010	-106.39274	67.69220	2
06/08/2010	-106.39280	67.69219	2
06/08/2010	-106.39293	67.69217	2
06/08/2010	-106.39299	67.69215	4
06/08/2010	-106.39312	67.69213	2
06/08/2010	-106.39319	67.69212	2
06/08/2010	-106.39332	67.69210	2
06/08/2010	-106.39338	67.69209	4
06/08/2010	-106.39352	67.69207	4
06/08/2010	-106.39359	67.69206	4
06/08/2010	-106.39372	67.69205	4
06/08/2010	-106.39379	67.69204	4
06/08/2010	-106.39393	67.69203	2
06/08/2010	-106.39400	67.69203	2
06/08/2010	-106.39414	67.69202	2
06/08/2010	-106.39421	67.69202	2
06/08/2010	-106.39435	67.69201	2
06/08/2010	-106.39442	67.69201	2
06/08/2010	-106.39449	67.69201	2
06/08/2010	-106.39463	67.69201	4
06/08/2010	-106.39470	67.69202	4
06/08/2010	-106.39484	67.69202	4
06/08/2010	-106.39491	67.69202	2
06/08/2010	-106.39505	67.69203	2
06/08/2010	-106.39512	67.69204	2
06/08/2010	-106.39526	67.69205	4
06/08/2010	-106.39533	67.69206	4
06/08/2010	-106.39546	67.69207	4
06/08/2010	-106.39553	67.69207	4
06/08/2010	-106.39566	67.69207	4
06/08/2010	-106.39573	67.69207	4
06/08/2010	-106.39580	67.69207	4
06/08/2010	-106.39594	67.69206	4
06/08/2010	-106.39601	67.69206	4
06/08/2010	-106.39614	67.69206	4
06/08/2010	-106.39621	67.69205	4
06/08/2010	-106.39634	67.69205	4
06/08/2010	-106.39641	67.69204	4
06/08/2010	-106.39654	67.69203	4
06/08/2010	-106.39661	67.69202	4
06/08/2010	-106.39674	67.69201	4
06/08/2010	-106.39681	67.69200	4
06/08/2010	-106.39694	67.69198	4
06/08/2010	-106.39700	67.69197	4
06/08/2010	-106.39713	67.69195	4
06/08/2010	-106.39719	67.69194	4
06/08/2010	-106.39725	67.69193	4
06/08/2010	-106.39738	67.69191	4
06/08/2010	-106.39745	67.69190	4
06/08/2010	-106.39758	67.69188	2
06/08/2010	-106.39764	67.69187	4
06/08/2010	-106.39777	67.69185	2
06/08/2010	-106.39784	67.69184	4
06/08/2010	-106.39797	67.69182	4
06/08/2010	-106.39803	67.69181	4
06/08/2010	-106.39816	67.69180	4
06/08/2010	-106.39822	67.69179	2
06/08/2010	-106.39836	67.69177	2
06/08/2010	-106.39843	67.69177	2
06/08/2010	-106.39856	67.69175	2
06/08/2010	-106.39863	67.69175	2
06/08/2010	-106.39869	67.69174	3
06/08/2010	-106.39883	67.69173	3
06/08/2010	-106.39889	67.69172	3
06/08/2010	-106.39902	67.69170	4
06/08/2010	-106.39909	67.69170	4
06/08/2010	-106.39922	67.69168	4
06/08/2010	-106.39929	67.69167	4
06/08/2010	-106.39942	67.69165	4
06/08/2010	-106.39948	67.69164	4
06/08/2010	-106.39961	67.69162	4
06/08/2010	-106.39968	67.69161	4
06/08/2010	-106.39981	67.69159	4
06/08/2010	-106.39988	67.69158	4
06/08/2010	-106.40001	67.69156	4
06/08/2010	-106.40007	67.69155	4
06/08/2010	-106.40020	67.69153	4
06/08/2010	-106.40026	67.69152	4
06/08/2010	-106.40040	67.69151	4
06/08/2010	-106.40047	67.69150	4
06/08/2010	-106.40060	67.69148	4
06/08/2010	-106.40067	67.69148	4
06/08/2010	-106.40081	67.69147	4
06/08/2010	-106.40088	67.69146	4
06/08/2010	-106.40102	67.69146	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40110	67.69146	4
06/08/2010	-106.40124	67.69145	4
06/08/2010	-106.40130	67.69145	4
06/08/2010	-106.40137	67.69145	4
06/08/2010	-106.40151	67.69144	4
06/08/2010	-106.40158	67.69144	2
06/08/2010	-106.40172	67.69143	2
06/08/2010	-106.40179	67.69143	2
06/08/2010	-106.40192	67.69142	4
06/08/2010	-106.40199	67.69141	2
06/08/2010	-106.40212	67.69140	2
06/08/2010	-106.40219	67.69139	2
06/08/2010	-106.40232	67.69137	2
06/08/2010	-106.40238	67.69136	2
06/08/2010	-106.40251	67.69134	2
06/08/2010	-106.40257	67.69132	2
06/08/2010	-106.40270	67.69130	2
06/08/2010	-106.40276	67.69128	2
06/08/2010	-106.40288	67.69126	2
06/08/2010	-106.40294	67.69125	2
06/08/2010	-106.40307	67.69123	2
06/08/2010	-106.40313	67.69122	4
06/08/2010	-106.40326	67.69120	4
06/08/2010	-106.40333	67.69118	4
06/08/2010	-106.40345	67.69116	4
06/08/2010	-106.40352	67.69115	4
06/08/2010	-106.40358	67.69114	4
06/08/2010	-106.40370	67.69111	4
06/08/2010	-106.40377	67.69110	4
06/08/2010	-106.40389	67.69108	4
06/08/2010	-106.40396	67.69107	4
06/08/2010	-106.40409	67.69105	4
06/08/2010	-106.40415	67.69104	4
06/08/2010	-106.40427	67.69101	4
06/08/2010	-106.40433	67.69099	4
06/08/2010	-106.40444	67.69096	4
06/08/2010	-106.40449	67.69094	4
06/08/2010	-106.40461	67.69091	4
06/08/2010	-106.40467	67.69090	4
06/08/2010	-106.40481	67.69088	4
06/08/2010	-106.40487	67.69087	4
06/08/2010	-106.40501	67.69086	4
06/08/2010	-106.40508	67.69085	4
06/08/2010	-106.40515	67.69085	4
06/08/2010	-106.40529	67.69084	4
06/08/2010	-106.40536	67.69084	4
06/08/2010	-106.40550	67.69084	4
06/08/2010	-106.40557	67.69083	2
06/08/2010	-106.40571	67.69083	2
06/08/2010	-106.40578	67.69083	2
06/08/2010	-106.40592	67.69082	2
06/08/2010	-106.40599	67.69082	2
06/08/2010	-106.40612	67.69080	2
06/08/2010	-106.40619	67.69079	2
06/08/2010	-106.40632	67.69078	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40639	67.69077	2
06/08/2010	-106.40651	67.69075	2
06/08/2010	-106.40657	67.69074	2
06/08/2010	-106.40664	67.69072	2
06/08/2010	-106.40683	67.69070	2
06/08/2010	-106.40690	67.69069	2
06/08/2010	-106.40703	67.69068	2
06/08/2010	-106.40710	67.69067	2
06/08/2010	-106.40723	67.69065	2
06/08/2010	-106.40730	67.69065	2
06/08/2010	-106.40744	67.69063	2
06/08/2010	-106.40750	67.69063	4
06/08/2010	-106.40764	67.69062	2
06/08/2010	-106.40771	67.69061	2
06/08/2010	-106.40778	67.69061	4
06/08/2010	-106.40792	67.69061	2
06/08/2010	-106.40799	67.69061	2
06/08/2010	-106.40813	67.69061	2
06/08/2010	-106.40820	67.69060	2
06/08/2010	-106.40833	67.69060	2
06/08/2010	-106.40840	67.69060	2
06/08/2010	-106.40854	67.69059	2
06/08/2010	-106.40860	67.69059	2
06/08/2010	-106.40874	67.69057	2
06/08/2010	-106.40881	67.69057	2
06/08/2010	-106.40894	67.69055	2
06/08/2010	-106.40901	67.69055	1
06/08/2010	-106.40914	67.69054	1
06/08/2010	-106.40921	67.69053	1
06/08/2010	-106.40934	67.69051	1
06/08/2010	-106.40940	67.69050	1
06/08/2010	-106.40947	67.69050	1
06/08/2010	-106.40959	67.69047	1
06/08/2010	-106.40965	67.69046	1
06/08/2010	-106.40977	67.69043	1
06/08/2010	-106.40982	67.69042	1
06/08/2010	-106.40994	67.69039	1
06/08/2010	-106.41000	67.69038	1
06/08/2010	-106.41012	67.69035	1
06/08/2010	-106.41019	67.69034	2
06/08/2010	-106.41032	67.69033	2
06/08/2010	-106.41038	67.69032	2
06/08/2010	-106.41052	67.69031	2
06/08/2010	-106.41059	67.69030	2
06/08/2010	-106.41065	67.69029	2
06/08/2010	-106.41078	67.69028	3
06/08/2010	-106.41085	67.69027	2
06/08/2010	-106.41098	67.69025	2
06/08/2010	-106.41104	67.69024	3
06/08/2010	-106.41117	67.69022	4
06/08/2010	-106.41124	67.69021	4
06/08/2010	-106.41137	67.69019	4
06/08/2010	-106.41143	67.69018	4
06/08/2010	-106.41157	67.69016	4
06/08/2010	-106.41163	67.69015	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41170	67.69015	4
06/08/2010	-106.41183	67.69013	4
06/08/2010	-106.41190	67.69013	4
06/08/2010	-106.41204	67.69012	2
06/08/2010	-106.41211	67.69011	2
06/08/2010	-106.41224	67.69010	2
06/08/2010	-106.41231	67.69009	4
06/08/2010	-106.41243	67.69007	4
06/08/2010	-106.41249	67.69005	4
06/08/2010	-106.41261	67.69003	2
06/08/2010	-106.41267	67.69002	4
06/08/2010	-106.41274	67.69001	4
06/08/2010	-106.41286	67.68999	4
06/08/2010	-106.41293	67.68999	4
06/08/2010	-106.41306	67.68998	4
06/08/2010	-106.41313	67.68997	4
06/08/2010	-106.41327	67.68997	4
06/08/2010	-106.41334	67.68997	4
06/08/2010	-106.41348	67.68997	3
06/08/2010	-106.41355	67.68997	4
06/08/2010	-106.41369	67.68997	4
06/08/2010	-106.41375	67.68997	4
06/08/2010	-106.41382	67.68996	4
06/08/2010	-106.41395	67.68995	4
06/08/2010	-106.41402	67.68994	4
06/08/2010	-106.41415	67.68993	4
06/08/2010	-106.41422	67.68992	4
06/08/2010	-106.41435	67.68990	4
06/08/2010	-106.41441	67.68990	4
06/08/2010	-106.41454	67.68988	4
06/08/2010	-106.41461	67.68987	2
06/08/2010	-106.41474	67.68985	2
06/08/2010	-106.41480	67.68984	2
06/08/2010	-106.41493	67.68983	2
06/08/2010	-106.41500	67.68982	2
06/08/2010	-106.41512	67.68979	2
06/08/2010	-106.41518	67.68978	2
06/08/2010	-106.41530	67.68975	2
06/08/2010	-106.41536	67.68974	2
06/08/2010	-106.41548	67.68972	2
06/08/2010	-106.41554	67.68971	2
06/08/2010	-106.41561	67.68970	2
06/08/2010	-106.41574	67.68969	2
06/08/2010	-106.41580	67.68968	2
06/08/2010	-106.41593	67.68967	2
06/08/2010	-106.41600	67.68967	2
06/08/2010	-106.41613	67.68965	3
06/08/2010	-106.41620	67.68965	3
06/08/2010	-106.41632	67.68964	2
06/08/2010	-106.41639	67.68963	2
06/08/2010	-106.41651	67.68962	3
06/08/2010	-106.41658	67.68961	2
06/08/2010	-106.41670	67.68959	4
06/08/2010	-106.41676	67.68959	2
06/08/2010	-106.41689	67.68957	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41695	67.68956	2
06/08/2010	-106.41707	67.68954	2
06/08/2010	-106.41713	67.68954	2
06/08/2010	-106.41726	67.68952	2
06/08/2010	-106.41732	67.68951	2
06/08/2010	-106.41739	67.68950	3
06/08/2010	-106.41751	67.68949	2
06/08/2010	-106.41757	67.68948	4
06/08/2010	-106.41770	67.68946	2
06/08/2010	-106.41777	67.68946	3
06/08/2010	-106.41789	67.68944	2
06/08/2010	-106.41795	67.68943	2
06/08/2010	-106.41808	67.68941	2
06/08/2010	-106.41814	67.68940	2
06/08/2010	-106.41826	67.68938	2
06/08/2010	-106.41832	67.68937	3
06/08/2010	-106.41843	67.68934	3
06/08/2010	-106.41849	67.68933	3
06/08/2010	-106.41860	67.68931	3
06/08/2010	-106.41866	67.68929	3
06/08/2010	-106.41872	67.68928	4
06/08/2010	-106.41885	67.68927	2
06/08/2010	-106.41892	67.68926	3
06/08/2010	-106.41905	67.68925	3
06/08/2010	-106.41912	67.68924	4
06/08/2010	-106.41925	67.68923	4
06/08/2010	-106.41932	67.68923	4
06/08/2010	-106.41945	67.68922	3
06/08/2010	-106.41952	67.68922	3
06/08/2010	-106.41964	67.68920	4
06/08/2010	-106.41971	67.68919	4
06/08/2010	-106.41983	67.68918	4
06/08/2010	-106.41990	67.68917	2
06/08/2010	-106.42002	67.68914	2
06/08/2010	-106.42008	67.68913	2
06/08/2010	-106.42021	67.68911	2
06/08/2010	-106.42027	67.68910	2
06/08/2010	-106.42033	67.68909	2
06/08/2010	-106.42046	67.68907	3
06/08/2010	-106.42053	67.68907	4
06/08/2010	-106.42066	67.68905	2
06/08/2010	-106.42073	67.68904	4
06/08/2010	-106.42086	67.68903	4
06/08/2010	-106.42093	67.68902	4
06/08/2010	-106.42106	67.68901	4
06/08/2010	-106.42113	67.68900	3
06/08/2010	-106.42126	67.68898	4
06/08/2010	-106.42132	67.68897	3
06/08/2010	-106.42146	67.68896	3
06/08/2010	-106.42152	67.68895	2
06/08/2010	-106.42165	67.68894	2
06/08/2010	-106.42172	67.68894	2
06/08/2010	-106.42185	67.68893	3
06/08/2010	-106.42192	67.68892	4
06/08/2010	-106.42206	67.68891	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42212	67.68890	3
06/08/2010	-106.42225	67.68889	3
06/08/2010	-106.42232	67.68889	3
06/08/2010	-106.42245	67.68887	3
06/08/2010	-106.42252	67.68887	2
06/08/2010	-106.42264	67.68885	2
06/08/2010	-106.42271	67.68884	2
06/08/2010	-106.42281	67.68883	4
06/08/2010	-106.42285	67.68882	4
06/08/2010	-106.42291	67.68882	3
06/08/2010	-106.42294	67.68881	2
06/08/2010	-106.42297	67.68882	2
06/08/2010	-106.42302	67.68882	4
06/08/2010	-106.40795	67.70688	4
06/08/2010	-106.40788	67.70686	4
06/08/2010	-106.40783	67.70683	4
06/08/2010	-106.40781	67.70682	4
06/08/2010	-106.40776	67.70679	4
06/08/2010	-106.40773	67.70678	4
06/08/2010	-106.40769	67.70675	4
06/08/2010	-106.40767	67.70673	4
06/08/2010	-106.40762	67.70670	4
06/08/2010	-106.40760	67.70668	4
06/08/2010	-106.40756	67.70665	4
06/08/2010	-106.40753	67.70664	4
06/08/2010	-106.40749	67.70660	4
06/08/2010	-106.40748	67.70659	3
06/08/2010	-106.40744	67.70656	3
06/08/2010	-106.40741	67.70654	3
06/08/2010	-106.40737	67.70651	4
06/08/2010	-106.40735	67.70649	3
06/08/2010	-106.40731	67.70646	4
06/08/2010	-106.40729	67.70645	4
06/08/2010	-106.40725	67.70642	4
06/08/2010	-106.40721	67.70638	4
06/08/2010	-106.40719	67.70637	4
06/08/2010	-106.40714	67.70634	4
06/08/2010	-106.40712	67.70632	4
06/08/2010	-106.40708	67.70629	4
06/08/2010	-106.40706	67.70627	4
06/08/2010	-106.40702	67.70624	4
06/08/2010	-106.40701	67.70622	4
06/08/2010	-106.40697	67.70619	4
06/08/2010	-106.40696	67.70617	4
06/08/2010	-106.40692	67.70614	4
06/08/2010	-106.40689	67.70612	4
06/08/2010	-106.40685	67.70609	4
06/08/2010	-106.40683	67.70608	4
06/08/2010	-106.40678	67.70605	4
06/08/2010	-106.40676	67.70603	4
06/08/2010	-106.40672	67.70600	4
06/08/2010	-106.40669	67.70598	4
06/08/2010	-106.40665	67.70595	4
06/08/2010	-106.40663	67.70593	4
06/08/2010	-106.40658	67.70590	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40656	67.70589	2
06/08/2010	-106.40650	67.70586	3
06/08/2010	-106.40644	67.70583	4
06/08/2010	-106.40641	67.70582	3
06/08/2010	-106.40635	67.70579	4
06/08/2010	-106.40632	67.70577	3
06/08/2010	-106.40626	67.70574	3
06/08/2010	-106.40623	67.70573	3
06/08/2010	-106.40616	67.70570	3
06/08/2010	-106.40613	67.70568	3
06/08/2010	-106.40606	67.70566	3
06/08/2010	-106.40602	67.70564	3
06/08/2010	-106.40596	67.70562	3
06/08/2010	-106.40593	67.70560	3
06/08/2010	-106.40586	67.70558	3
06/08/2010	-106.40582	67.70557	4
06/08/2010	-106.40574	67.70554	3
06/08/2010	-106.40570	67.70553	3
06/08/2010	-106.40562	67.70551	4
06/08/2010	-106.40558	67.70550	4
06/08/2010	-106.40550	67.70549	3
06/08/2010	-106.40545	67.70548	3
06/08/2010	-106.40537	67.70546	4
06/08/2010	-106.40532	67.70545	3
06/08/2010	-106.40524	67.70544	3
06/08/2010	-106.40520	67.70543	3
06/08/2010	-106.40511	67.70541	4
06/08/2010	-106.40507	67.70540	3
06/08/2010	-106.40498	67.70538	3
06/08/2010	-106.40494	67.70537	3
06/08/2010	-106.40486	67.70535	2
06/08/2010	-106.40482	67.70534	2
06/08/2010	-106.40474	67.70532	3
06/08/2010	-106.40470	67.70532	3
06/08/2010	-106.40462	67.70530	2
06/08/2010	-106.40458	67.70529	3
06/08/2010	-106.40450	67.70527	3
06/08/2010	-106.40446	67.70526	3
06/08/2010	-106.40438	67.70524	3
06/08/2010	-106.40434	67.70523	2
06/08/2010	-106.40426	67.70521	3
06/08/2010	-106.40422	67.70520	4
06/08/2010	-106.40414	67.70519	4
06/08/2010	-106.40405	67.70517	4
06/08/2010	-106.40401	67.70517	4
06/08/2010	-106.40393	67.70515	3
06/08/2010	-106.40388	67.70515	3
06/08/2010	-106.40380	67.70513	3
06/08/2010	-106.40376	67.70512	3
06/08/2010	-106.40367	67.70511	4
06/08/2010	-106.40363	67.70510	4
06/08/2010	-106.40355	67.70508	3
06/08/2010	-106.40351	67.70507	3
06/08/2010	-106.40344	67.70506	3
06/08/2010	-106.40340	67.70505	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40332	67.70503	3
06/08/2010	-106.40328	67.70502	3
06/08/2010	-106.40321	67.70500	3
06/08/2010	-106.40317	67.70499	3
06/08/2010	-106.40309	67.70497	3
06/08/2010	-106.40305	67.70496	3
06/08/2010	-106.40297	67.70494	3
06/08/2010	-106.40293	67.70493	3
06/08/2010	-106.40286	67.70491	4
06/08/2010	-106.40282	67.70490	3
06/08/2010	-106.40275	67.70488	4
06/08/2010	-106.40271	67.70487	4
06/08/2010	-106.40264	67.70485	4
06/08/2010	-106.40256	67.70483	4
06/08/2010	-106.40253	67.70482	4
06/08/2010	-106.40245	67.70480	4
06/08/2010	-106.40242	67.70478	3
06/08/2010	-106.40235	67.70476	3
06/08/2010	-106.40232	67.70475	4
06/08/2010	-106.40225	67.70472	3
06/08/2010	-106.40222	67.70471	3
06/08/2010	-106.40216	67.70468	3
06/08/2010	-106.40213	67.70467	3
06/08/2010	-106.40210	67.70466	4
06/08/2010	-106.40203	67.70463	4
06/08/2010	-106.40197	67.70461	4
06/08/2010	-106.40193	67.70460	4
06/08/2010	-106.40186	67.70458	4
06/08/2010	-106.40182	67.70457	4
06/08/2010	-106.40174	67.70455	4
06/08/2010	-106.40170	67.70454	4
06/08/2010	-106.40163	67.70452	3
06/08/2010	-106.40157	67.70450	3
06/08/2010	-106.40155	67.70448	3
06/08/2010	-106.40152	67.70445	3
06/08/2010	-106.40151	67.70443	3
06/08/2010	-106.40149	67.70440	4
06/08/2010	-106.40148	67.70438	4
06/08/2010	-106.40146	67.70435	3
06/08/2010	-106.40145	67.70433	3
06/08/2010	-106.40144	67.70430	3
06/08/2010	-106.40143	67.70428	2
06/08/2010	-106.40142	67.70425	4
06/08/2010	-106.40142	67.70423	4
06/08/2010	-106.40142	67.70420	3
06/08/2010	-106.40143	67.70418	4
06/08/2010	-106.40142	67.70414	4
06/08/2010	-106.40142	67.70413	4
06/08/2010	-106.40142	67.70409	4
06/08/2010	-106.40142	67.70407	4
06/08/2010	-106.40142	67.70404	3
06/08/2010	-106.40141	67.70402	4
06/08/2010	-106.40140	67.70398	4
06/08/2010	-106.40139	67.70397	3
06/08/2010	-106.40137	67.70393	3
06/08/2010	-106.40135	67.70390	3
06/08/2010	-106.40133	67.70388	3
06/08/2010	-106.40130	67.70385	3
06/08/2010	-106.40128	67.70383	3
06/08/2010	-106.40126	67.70382	3
06/08/2010	-106.40121	67.70379	3
06/08/2010	-106.40116	67.70376	2
06/08/2010	-106.40114	67.70374	4
06/08/2010	-106.40109	67.70371	3
06/08/2010	-106.40108	67.70369	3
06/08/2010	-106.40104	67.70366	4
06/08/2010	-106.40102	67.70364	3
06/08/2010	-106.40098	67.70361	3
06/08/2010	-106.40096	67.70359	2
06/08/2010	-106.40093	67.70355	3
06/08/2010	-106.40091	67.70353	3
06/08/2010	-106.40088	67.70349	3
06/08/2010	-106.40087	67.70347	4
06/08/2010	-106.40083	67.70342	3
06/08/2010	-106.40082	67.70340	2
06/08/2010	-106.40078	67.70336	3
06/08/2010	-106.40076	67.70334	3
06/08/2010	-106.40073	67.70329	3
06/08/2010	-106.40071	67.70327	4
06/08/2010	-106.40067	67.70323	3
06/08/2010	-106.40065	67.70321	3
06/08/2010	-106.40058	67.70314	3
06/08/2010	-106.40056	67.70312	3
06/08/2010	-106.40051	67.70308	3
06/08/2010	-106.40049	67.70306	4
06/08/2010	-106.40044	67.70302	4
06/08/2010	-106.40041	67.70300	4
06/08/2010	-106.40035	67.70296	4
06/08/2010	-106.40032	67.70294	4
06/08/2010	-106.40026	67.70290	3
06/08/2010	-106.40023	67.70288	3
06/08/2010	-106.40017	67.70285	3
06/08/2010	-106.40014	67.70283	4
06/08/2010	-106.40008	67.70279	4
06/08/2010	-106.40005	67.70277	4
06/08/2010	-106.39999	67.70273	4
06/08/2010	-106.39992	67.70269	3
06/08/2010	-106.39989	67.70267	3
06/08/2010	-106.39982	67.70263	4
06/08/2010	-106.39979	67.70261	3
06/08/2010	-106.39973	67.70257	4
06/08/2010	-106.39970	67.70255	3
06/08/2010	-106.39965	67.70251	3
06/08/2010	-106.39962	67.70249	3
06/08/2010	-106.39957	67.70245	3
06/08/2010	-106.39955	67.70243	2
06/08/2010	-106.39950	67.70239	4
06/08/2010	-106.39948	67.70237	3
06/08/2010	-106.39945	67.70232	2
06/08/2010	-106.39944	67.70230	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39940	67.70225	4
06/08/2010	-106.39939	67.70223	4
06/08/2010	-106.39937	67.70219	3
06/08/2010	-106.39937	67.70216	3
06/08/2010	-106.39935	67.70212	4
06/08/2010	-106.39934	67.70210	3
06/08/2010	-106.39931	67.70205	3
06/08/2010	-106.39930	67.70203	3
06/08/2010	-106.39929	67.70199	2
06/08/2010	-106.39929	67.70196	2
06/08/2010	-106.39928	67.70192	2
06/08/2010	-106.39928	67.70190	3
06/08/2010	-106.39928	67.70184	3
06/08/2010	-106.39928	67.70182	3
06/08/2010	-106.39927	67.70176	2
06/08/2010	-106.39927	67.70174	2
06/08/2010	-106.39927	67.70168	3
06/08/2010	-106.39927	67.70163	2
06/08/2010	-106.39927	67.70160	2
06/08/2010	-106.39926	67.70157	4
06/08/2010	-106.39924	67.70152	2
06/08/2010	-106.39923	67.70149	2
06/08/2010	-106.39920	67.70144	2
06/08/2010	-106.39916	67.70139	4
06/08/2010	-106.39913	67.70136	4
06/08/2010	-106.39907	67.70132	4
06/08/2010	-106.39903	67.70129	4
06/08/2010	-106.39895	67.70125	4
06/08/2010	-106.39891	67.70123	3
06/08/2010	-106.39882	67.70118	4
06/08/2010	-106.39877	67.70116	2
06/08/2010	-106.39867	67.70112	3
06/08/2010	-106.39862	67.70110	2
06/08/2010	-106.39853	67.70106	3
06/08/2010	-106.39848	67.70104	2
06/08/2010	-106.39838	67.70100	3
06/08/2010	-106.39834	67.70098	2
06/08/2010	-106.39824	67.70094	4
06/08/2010	-106.39818	67.70093	3
06/08/2010	-106.39806	67.70090	3
06/08/2010	-106.39799	67.70089	3
06/08/2010	-106.39787	67.70088	4
06/08/2010	-106.39781	67.70088	4
06/08/2010	-106.39769	67.70088	4
06/08/2010	-106.39763	67.70088	4
06/08/2010	-106.39751	67.70088	4
06/08/2010	-106.39745	67.70088	3
06/08/2010	-106.39733	67.70089	4
06/08/2010	-106.39727	67.70089	4
06/08/2010	-106.39715	67.70089	4
06/08/2010	-106.39709	67.70090	4
06/08/2010	-106.39697	67.70090	3
06/08/2010	-106.39692	67.70089	4
06/08/2010	-106.39680	67.70088	2
06/08/2010	-106.39675	67.70087	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39665	67.70085	3
06/08/2010	-106.39660	67.70084	4
06/08/2010	-106.39653	67.70081	4
06/08/2010	-106.39649	67.70079	4
06/08/2010	-106.39644	67.70075	4
06/08/2010	-106.39639	67.70072	4
06/08/2010	-106.39637	67.70070	3
06/08/2010	-106.39634	67.70067	3
06/08/2010	-106.39632	67.70065	3
06/08/2010	-106.39631	67.70062	4
06/08/2010	-106.39630	67.70060	3
06/08/2010	-106.39629	67.70057	4
06/08/2010	-106.39628	67.70055	4
06/08/2010	-106.39626	67.70051	4
06/08/2010	-106.39626	67.70050	4
06/08/2010	-106.39624	67.70046	4
06/08/2010	-106.39624	67.70045	4
06/08/2010	-106.39622	67.70041	4
06/08/2010	-106.39621	67.70040	4
06/08/2010	-106.39619	67.70036	4
06/08/2010	-106.39618	67.70034	4
06/08/2010	-106.39615	67.70031	3
06/08/2010	-106.39614	67.70029	3
06/08/2010	-106.39611	67.70026	3
06/08/2010	-106.39610	67.70024	3
06/08/2010	-106.39607	67.70021	3
06/08/2010	-106.39603	67.70018	3
06/08/2010	-106.39601	67.70016	3
06/08/2010	-106.39596	67.70013	2
06/08/2010	-106.39594	67.70012	3
06/08/2010	-106.39588	67.70009	3
06/08/2010	-106.39586	67.70008	4
06/08/2010	-106.39580	67.70005	3
06/08/2010	-106.39578	67.70003	3
06/08/2010	-106.39573	67.70000	4
06/08/2010	-106.39571	67.69999	4
06/08/2010	-106.39567	67.69995	3
06/08/2010	-106.39566	67.69994	2
06/08/2010	-106.39563	67.69990	2
06/08/2010	-106.39562	67.69989	4
06/08/2010	-106.39559	67.69985	4
06/08/2010	-106.39558	67.69984	4
06/08/2010	-106.39556	67.69980	3
06/08/2010	-106.39556	67.69979	4
06/08/2010	-106.39554	67.69975	4
06/08/2010	-106.39553	67.69973	3
06/08/2010	-106.39551	67.69970	4
06/08/2010	-106.39549	67.69967	3
06/08/2010	-106.39548	67.69965	3
06/08/2010	-106.39546	67.69961	4
06/08/2010	-106.39544	67.69960	4
06/08/2010	-106.39541	67.69956	4
06/08/2010	-106.39539	67.69955	4
06/08/2010	-106.39534	67.69952	4
06/08/2010	-106.39532	67.69951	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39526	67.69948	3
06/08/2010	-106.39523	67.69947	4
06/08/2010	-106.39518	67.69944	4
06/08/2010	-106.39516	67.69942	4
06/08/2010	-106.39512	67.69939	4
06/08/2010	-106.39509	67.69938	4
06/08/2010	-106.39505	67.69935	4
06/08/2010	-106.39504	67.69933	4
06/08/2010	-106.39501	67.69930	4
06/08/2010	-106.39501	67.69928	4
06/08/2010	-106.39500	67.69925	4
06/08/2010	-106.39499	67.69921	4
06/08/2010	-106.39498	67.69920	4
06/08/2010	-106.39497	67.69916	4
06/08/2010	-106.39497	67.69914	4
06/08/2010	-106.39496	67.69911	4
06/08/2010	-106.39495	67.69909	4
06/08/2010	-106.39493	67.69906	3
06/08/2010	-106.39492	67.69904	4
06/08/2010	-106.39489	67.69901	3
06/08/2010	-106.39487	67.69899	3
06/08/2010	-106.39485	67.69896	4
06/08/2010	-106.39484	67.69894	3
06/08/2010	-106.39482	67.69891	3
06/08/2010	-106.39481	67.69889	4
06/08/2010	-106.39479	67.69886	3
06/08/2010	-106.39477	67.69885	4
06/08/2010	-106.39473	67.69882	3
06/08/2010	-106.39471	67.69880	4
06/08/2010	-106.39465	67.69878	3
06/08/2010	-106.39462	67.69877	4
06/08/2010	-106.39456	67.69874	4
06/08/2010	-106.39453	67.69873	3
06/08/2010	-106.39446	67.69870	3
06/08/2010	-106.39441	67.69868	4
06/08/2010	-106.39438	67.69866	4
06/08/2010	-106.39433	67.69863	4
06/08/2010	-106.39431	67.69862	4
06/08/2010	-106.39428	67.69859	4
06/08/2010	-106.40806	67.69879	4
06/08/2010	-106.40799	67.69880	4
06/08/2010	-106.40784	67.69882	4
06/08/2010	-106.40777	67.69882	4
06/08/2010	-106.40763	67.69884	4
06/08/2010	-106.40756	67.69885	3
06/08/2010	-106.40742	67.69887	3
06/08/2010	-106.40735	67.69888	4
06/08/2010	-106.40721	67.69890	4
06/08/2010	-106.40714	67.69890	4
06/08/2010	-106.40700	67.69892	4
06/08/2010	-106.40694	67.69893	2
06/08/2010	-106.40680	67.69895	3
06/08/2010	-106.40673	67.69896	3
06/08/2010	-106.40659	67.69898	2
06/08/2010	-106.40653	67.69899	2

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40639	67.69901	2
06/08/2010	-106.40632	67.69902	2
06/08/2010	-106.40618	67.69904	3
06/08/2010	-106.40612	67.69905	2
06/08/2010	-106.40598	67.69907	4
06/08/2010	-106.40591	67.69908	2
06/08/2010	-106.40577	67.69910	3
06/08/2010	-106.40571	67.69911	4
06/08/2010	-106.40557	67.69913	2
06/08/2010	-106.40550	67.69914	2
06/08/2010	-106.40536	67.69915	2
06/08/2010	-106.40529	67.69916	2
06/08/2010	-106.40522	67.69917	2
06/08/2010	-106.40508	67.69919	2
06/08/2010	-106.40494	67.69920	3
06/08/2010	-106.40487	67.69921	2
06/08/2010	-106.40473	67.69922	2
06/08/2010	-106.40466	67.69923	3
06/08/2010	-106.40452	67.69924	3
06/08/2010	-106.40445	67.69925	4
06/08/2010	-106.40431	67.69926	4
06/08/2010	-106.40424	67.69927	3
06/08/2010	-106.40410	67.69929	3
06/08/2010	-106.40403	67.69930	4
06/08/2010	-106.40389	67.69932	3
06/08/2010	-106.40382	67.69933	4
06/08/2010	-106.40368	67.69934	3
06/08/2010	-106.40362	67.69935	3
06/08/2010	-106.40347	67.69937	3
06/08/2010	-106.40340	67.69938	3
06/08/2010	-106.40326	67.69939	2
06/08/2010	-106.40319	67.69940	2
06/08/2010	-106.40305	67.69941	2
06/08/2010	-106.40298	67.69942	2
06/08/2010	-106.40284	67.69943	3
06/08/2010	-106.40276	67.69944	3
06/08/2010	-106.40263	67.69945	4
06/08/2010	-106.40255	67.69946	3
06/08/2010	-106.40242	67.69947	3
06/08/2010	-106.40235	67.69948	3
06/08/2010	-106.40221	67.69949	4
06/08/2010	-106.40214	67.69950	4
06/08/2010	-106.40200	67.69952	4
06/08/2010	-106.40194	67.69953	4
06/08/2010	-106.40180	67.69955	4
06/08/2010	-106.40173	67.69956	4
06/08/2010	-106.40159	67.69958	4
06/08/2010	-106.40153	67.69959	4
06/08/2010	-106.40139	67.69961	4
06/08/2010	-106.40132	67.69962	4
06/08/2010	-106.40119	67.69964	2
06/08/2010	-106.40112	67.69965	3
06/08/2010	-106.40098	67.69967	4
06/08/2010	-106.40091	67.69968	4
06/08/2010	-106.40078	67.69970	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.40071	67.69971	4
06/08/2010	-106.40064	67.69972	4
06/08/2010	-106.40051	67.69974	4
06/08/2010	-106.40043	67.69975	2
06/08/2010	-106.40029	67.69976	2
06/08/2010	-106.40022	67.69977	2
06/08/2010	-106.40008	67.69979	2
06/08/2010	-106.40001	67.69980	2
06/08/2010	-106.39987	67.69981	3
06/08/2010	-106.39980	67.69982	2
06/08/2010	-106.39965	67.69983	4
06/08/2010	-106.39958	67.69984	4
06/08/2010	-106.39944	67.69985	3
06/08/2010	-106.39937	67.69985	3
06/08/2010	-106.39923	67.69987	4
06/08/2010	-106.39916	67.69988	3
06/08/2010	-106.39902	67.69989	4
06/08/2010	-106.39895	67.69990	4
06/08/2010	-106.39881	67.69992	4
06/08/2010	-106.39874	67.69993	4
06/08/2010	-106.39860	67.69994	4
06/08/2010	-106.39853	67.69995	4
06/08/2010	-106.39842	67.69997	4
06/08/2010	-106.39837	67.69997	4
06/08/2010	-106.39827	67.69999	4
06/08/2010	-106.39822	67.70000	4
06/08/2010	-106.39812	67.70001	4
06/08/2010	-106.39807	67.70002	4
06/08/2010	-106.39797	67.70003	3
06/08/2010	-106.39792	67.70003	3
06/08/2010	-106.39781	67.70004	3
06/08/2010	-106.39776	67.70004	3
06/08/2010	-106.39765	67.70005	3
06/08/2010	-106.39760	67.70005	3
06/08/2010	-106.39749	67.70005	3
06/08/2010	-106.39744	67.70006	3
06/08/2010	-106.39735	67.70007	4
06/08/2010	-106.39730	67.70007	4
06/08/2010	-106.39720	67.70009	4
06/08/2010	-106.39715	67.70009	4
06/08/2010	-106.39706	67.70011	4
06/08/2010	-106.39701	67.70012	3
06/08/2010	-106.39692	67.70013	4
06/08/2010	-106.39682	67.70015	3
06/08/2010	-106.39677	67.70015	4
06/08/2010	-106.39669	67.70016	4
06/08/2010	-106.39665	67.70016	4
06/08/2010	-106.39656	67.70017	4
06/08/2010	-106.39652	67.70017	4
06/08/2010	-106.39644	67.70018	3
06/08/2010	-106.39640	67.70018	4
06/08/2010	-106.39632	67.70019	4
06/08/2010	-106.39628	67.70020	4
06/08/2010	-106.39621	67.70021	4
06/08/2010	-106.39617	67.70021	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39610	67.70022	4
06/08/2010	-106.39607	67.70023	4
06/08/2010	-106.39601	67.70024	4
06/08/2010	-106.39598	67.70025	4
06/08/2010	-106.39593	67.70026	4
06/08/2010	-106.39590	67.70027	4
06/08/2010	-106.39584	67.70028	4
06/08/2010	-106.39581	67.70028	4
06/08/2010	-106.39576	67.70029	4
06/08/2010	-106.39573	67.70029	4
06/08/2010	-106.39568	67.70030	4
06/08/2010	-106.39563	67.70032	4
06/08/2010	-106.39560	67.70032	4
06/08/2010	-106.39555	67.70034	4
06/08/2010	-106.39553	67.70034	4
06/08/2010	-106.39548	67.70035	4
06/08/2010	-106.39546	67.70036	4
06/08/2010	-106.39543	67.70037	4
06/08/2010	-106.39542	67.70038	4
06/08/2010	-106.39541	67.70038	4
06/08/2010	-106.39427	67.69855	2
06/08/2010	-106.39428	67.69852	3
06/08/2010	-106.39428	67.69850	3
06/08/2010	-106.39431	67.69847	3
06/08/2010	-106.39433	67.69846	2
06/08/2010	-106.39436	67.69843	3
06/08/2010	-106.39437	67.69842	3
06/08/2010	-106.39438	67.69838	3
06/08/2010	-106.39439	67.69837	2
06/08/2010	-106.39441	67.69834	4
06/08/2010	-106.39442	67.69832	3
06/08/2010	-106.39445	67.69828	3
06/08/2010	-106.39448	67.69826	4
06/08/2010	-106.39454	67.69822	3
06/08/2010	-106.39457	67.69821	4
06/08/2010	-106.39466	67.69817	4
06/08/2010	-106.39470	67.69815	4
06/08/2010	-106.39478	67.69812	4
06/08/2010	-106.39481	67.69810	3
06/08/2010	-106.39486	67.69806	3
06/08/2010	-106.39488	67.69804	3
06/08/2010	-106.39493	67.69799	2
06/08/2010	-106.39495	67.69797	3
06/08/2010	-106.39498	67.69793	2
06/08/2010	-106.39498	67.69790	2
06/08/2010	-106.39500	67.69786	2
06/08/2010	-106.39500	67.69783	2
06/08/2010	-106.39501	67.69779	2
06/08/2010	-106.39502	67.69776	3
06/08/2010	-106.39502	67.69771	2
06/08/2010	-106.39503	67.69769	2
06/08/2010	-106.39503	67.69764	2
06/08/2010	-106.39503	67.69762	2
06/08/2010	-106.39503	67.69757	3
06/08/2010	-106.39503	67.69754	2

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39500	67.69750	2
06/08/2010	-106.39499	67.69747	3
06/08/2010	-106.39495	67.69742	2
06/08/2010	-106.39494	67.69740	3
06/08/2010	-106.39490	67.69735	2
06/08/2010	-106.39487	67.69733	3
06/08/2010	-106.39481	67.69729	3
06/08/2010	-106.39478	67.69726	4
06/08/2010	-106.39472	67.69722	4
06/08/2010	-106.39468	67.69720	3
06/08/2010	-106.39461	67.69716	4
06/08/2010	-106.39458	67.69713	3
06/08/2010	-106.39450	67.69709	4
06/08/2010	-106.39447	67.69707	4
06/08/2010	-106.39439	67.69703	4
06/08/2010	-106.39435	67.69701	4
06/08/2010	-106.39428	67.69697	4
06/08/2010	-106.39424	67.69695	4
06/08/2010	-106.39415	67.69691	4
06/08/2010	-106.39411	67.69689	4
06/08/2010	-106.39403	67.69685	4
06/08/2010	-106.39398	67.69683	4
06/08/2010	-106.39390	67.69679	4
06/08/2010	-106.39385	67.69677	4
06/08/2010	-106.39377	67.69673	4
06/08/2010	-106.39372	67.69671	4
06/08/2010	-106.39364	67.69667	4
06/08/2010	-106.39359	67.69665	3
06/08/2010	-106.39350	67.69662	3
06/08/2010	-106.39342	67.69658	3
06/08/2010	-106.39337	67.69656	3
06/08/2010	-106.39329	67.69652	4
06/08/2010	-106.39325	67.69650	4
06/08/2010	-106.39316	67.69646	4
06/08/2010	-106.39312	67.69644	4
06/08/2010	-106.39304	67.69641	4
06/08/2010	-106.39300	67.69639	4
06/08/2010	-106.39291	67.69635	4
06/08/2010	-106.39286	67.69633	3
06/08/2010	-106.39278	67.69629	4
06/08/2010	-106.39274	67.69627	3
06/08/2010	-106.39267	67.69623	3
06/08/2010	-106.39264	67.69621	3
06/08/2010	-106.39256	67.69617	4
06/08/2010	-106.39253	67.69614	4
06/08/2010	-106.39246	67.69610	3
06/08/2010	-106.39242	67.69609	4
06/08/2010	-106.39233	67.69605	4
06/08/2010	-106.39228	67.69603	4
06/08/2010	-106.39219	67.69600	4
06/08/2010	-106.39209	67.69596	4
06/08/2010	-106.39205	67.69594	4
06/08/2010	-106.39199	67.69590	4
06/08/2010	-106.39197	67.69588	4
06/08/2010	-106.39193	67.69584	4
06/08/2010	-106.39191	67.69582	4
06/08/2010	-106.39188	67.69578	4
06/08/2010	-106.39187	67.69576	4
06/08/2010	-106.39185	67.69572	4
06/08/2010	-106.39184	67.69570	4
06/08/2010	-106.39182	67.69566	4
06/08/2010	-106.39180	67.69564	4
06/08/2010	-106.39177	67.69560	4
06/08/2010	-106.39175	67.69558	4
06/08/2010	-106.39173	67.69553	4
06/08/2010	-106.39172	67.69551	4
06/08/2010	-106.39171	67.69547	4
06/08/2010	-106.39170	67.69545	4
06/08/2010	-106.39167	67.69541	4
06/08/2010	-106.39165	67.69536	3
06/08/2010	-106.39164	67.69534	4
06/08/2010	-106.39163	67.69530	4
06/08/2010	-106.39162	67.69528	3
06/08/2010	-106.39161	67.69524	3
06/08/2010	-106.39160	67.69521	3
06/08/2010	-106.39158	67.69517	4
06/08/2010	-106.39156	67.69515	4
06/08/2010	-106.39154	67.69511	3
06/08/2010	-106.39153	67.69509	2
06/08/2010	-106.39151	67.69505	4
06/08/2010	-106.39150	67.69503	3
06/08/2010	-106.39149	67.69498	4
06/08/2010	-106.39149	67.69496	4
06/08/2010	-106.39152	67.69492	3
06/08/2010	-106.39154	67.69490	3
06/08/2010	-106.39158	67.69486	3
06/08/2010	-106.39160	67.69484	3
06/08/2010	-106.39164	67.69480	3
06/08/2010	-106.39166	67.69478	3
06/08/2010	-106.39170	67.69474	3
06/08/2010	-106.39172	67.69470	4
06/08/2010	-106.39174	67.69468	4
06/08/2010	-106.39174	67.69464	4
06/08/2010	-106.39174	67.69462	4
06/08/2010	-106.39174	67.69458	4
06/08/2010	-106.39175	67.69456	4
06/08/2010	-106.39176	67.69452	4
06/08/2010	-106.39176	67.69450	4
06/08/2010	-106.39175	67.69445	4
06/08/2010	-106.39174	67.69443	4
06/08/2010	-106.39171	67.69439	4
06/08/2010	-106.39170	67.69437	4
06/08/2010	-106.39166	67.69433	4
06/08/2010	-106.39164	67.69431	4
06/08/2010	-106.39159	67.69427	4
06/08/2010	-106.39157	67.69425	3
06/08/2010	-106.39152	67.69421	3
06/08/2010	-106.39150	67.69419	2
06/08/2010	-106.39146	67.69415	3
06/08/2010	-106.39145	67.69413	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.39141	67.69409	2
06/08/2010	-106.39139	67.69407	2
06/08/2010	-106.39135	67.69403	4
06/08/2010	-106.39133	67.69401	3
06/08/2010	-106.39129	67.69396	3
06/08/2010	-106.39127	67.69394	4
06/08/2010	-106.39124	67.69390	4
06/08/2010	-106.39123	67.69388	3
06/08/2010	-106.39120	67.69383	3
06/08/2010	-106.39119	67.69381	2
06/08/2010	-106.39118	67.69377	3
06/08/2010	-106.39117	67.69375	3
06/08/2010	-106.39116	67.69371	2
06/08/2010	-106.39115	67.69368	4
06/08/2010	-106.39113	67.69364	2
06/08/2010	-106.39112	67.69362	3
06/08/2010	-106.39109	67.69357	4
06/08/2010	-106.39107	67.69354	3
06/08/2010	-106.39105	67.69349	3
06/08/2010	-106.39101	67.69344	3
06/08/2010	-106.39099	67.69341	2
06/08/2010	-106.39096	67.69336	2
06/08/2010	-106.39095	67.69333	3
06/08/2010	-106.39092	67.69328	3
06/08/2010	-106.39090	67.69325	3
06/08/2010	-106.39084	67.69320	3
06/08/2010	-106.39081	67.69317	2
06/08/2010	-106.39074	67.69313	3
06/08/2010	-106.42276	67.69715	4
06/08/2010	-106.42269	67.69716	4
06/08/2010	-106.42255	67.69719	4
06/08/2010	-106.42248	67.69720	4
06/08/2010	-106.42242	67.69720	4
06/08/2010	-106.42229	67.69721	4
06/08/2010	-106.42222	67.69721	4
06/08/2010	-106.42211	67.69721	4
06/08/2010	-106.42205	67.69721	4
06/08/2010	-106.42193	67.69722	4
06/08/2010	-106.42187	67.69722	4
06/08/2010	-106.42175	67.69723	4
06/08/2010	-106.42169	67.69724	4
06/08/2010	-106.42158	67.69726	4
06/08/2010	-106.42152	67.69727	4
06/08/2010	-106.42140	67.69729	4
06/08/2010	-106.42135	67.69730	4
06/08/2010	-106.42123	67.69731	4
06/08/2010	-106.42117	67.69732	4
06/08/2010	-106.42105	67.69734	4
06/08/2010	-106.42099	67.69734	4
06/08/2010	-106.42087	67.69736	4
06/08/2010	-106.42080	67.69736	4
06/08/2010	-106.42068	67.69738	4
06/08/2010	-106.42062	67.69738	4
06/08/2010	-106.42050	67.69740	4
06/08/2010	-106.42043	67.69740	4

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.42028	67.69741	4
06/08/2010	-106.42021	67.69742	4
06/08/2010	-106.42006	67.69742	4
06/08/2010	-106.41998	67.69742	4
06/08/2010	-106.41985	67.69743	4
06/08/2010	-106.41979	67.69743	4
06/08/2010	-106.41966	67.69745	4
06/08/2010	-106.41959	67.69745	4
06/08/2010	-106.41945	67.69746	3
06/08/2010	-106.41938	67.69746	2
06/08/2010	-106.41924	67.69748	2
06/08/2010	-106.41916	67.69748	2
06/08/2010	-106.41902	67.69750	2
06/08/2010	-106.41895	67.69751	3
06/08/2010	-106.41888	67.69752	4
06/08/2010	-106.41873	67.69754	4
06/08/2010	-106.41867	67.69755	3
06/08/2010	-106.41853	67.69757	2
06/08/2010	-106.41846	67.69758	2
06/08/2010	-106.41832	67.69761	2
06/08/2010	-106.41826	67.69762	2
06/08/2010	-106.41813	67.69765	2
06/08/2010	-106.41806	67.69766	3
06/08/2010	-106.41793	67.69769	3
06/08/2010	-106.41786	67.69770	4
06/08/2010	-106.41772	67.69773	2
06/08/2010	-106.41765	67.69774	3
06/08/2010	-106.41751	67.69775	3
06/08/2010	-106.41744	67.69776	3
06/08/2010	-106.41729	67.69777	2
06/08/2010	-106.41722	67.69778	2
06/08/2010	-106.41707	67.69779	3
06/08/2010	-106.41700	67.69779	2
06/08/2010	-106.41685	67.69779	4
06/08/2010	-106.41677	67.69779	2
06/08/2010	-106.41663	67.69780	2
06/08/2010	-106.41656	67.69781	2
06/08/2010	-106.41641	67.69782	2
06/08/2010	-106.41634	67.69782	3
06/08/2010	-106.41620	67.69784	3
06/08/2010	-106.41613	67.69784	3
06/08/2010	-106.41598	67.69786	3
06/08/2010	-106.41591	67.69787	3
06/08/2010	-106.41577	67.69788	3
06/08/2010	-106.41570	67.69789	4
06/08/2010	-106.41556	67.69791	4
06/08/2010	-106.41549	67.69792	2
06/08/2010	-106.41535	67.69794	3
06/08/2010	-106.41528	67.69795	3
06/08/2010	-106.41514	67.69797	4
06/08/2010	-106.41507	67.69798	4
06/08/2010	-106.41493	67.69800	4
06/08/2010	-106.41486	67.69801	4
06/08/2010	-106.41472	67.69803	4
06/08/2010	-106.41458	67.69804	4

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-2. Substrate Data Collected from Hydroacoustic Surveys of the Aimaokatalok Lake Reference Area, Hope Bay Belt Project, 2010

Date	Longitude	Latitude	Substrate Type
06/08/2010	-106.41451	67.69806	4
06/08/2010	-106.41444	67.69807	4
06/08/2010	-106.41430	67.69809	4
06/08/2010	-106.41423	67.69810	3
06/08/2010	-106.41409	67.69812	2
06/08/2010	-106.41402	67.69813	4
06/08/2010	-106.41388	67.69815	2
06/08/2010	-106.41381	67.69816	2
06/08/2010	-106.41368	67.69818	2
06/08/2010	-106.41361	67.69819	3
06/08/2010	-106.41347	67.69821	2
06/08/2010	-106.41340	67.69822	4
06/08/2010	-106.41326	67.69824	2
06/08/2010	-106.41319	67.69824	4
06/08/2010	-106.41305	67.69826	4
06/08/2010	-106.41297	67.69826	4
06/08/2010	-106.41283	67.69828	4
06/08/2010	-106.41275	67.69828	4
06/08/2010	-106.41261	67.69830	4
06/08/2010	-106.41253	67.69830	4
06/08/2010	-106.41239	67.69831	4
06/08/2010	-106.41232	67.69832	4
06/08/2010	-106.41218	67.69834	4
06/08/2010	-106.41211	67.69834	4
06/08/2010	-106.41197	67.69836	4
06/08/2010	-106.41190	67.69837	4
06/08/2010	-106.41175	67.69838	4
06/08/2010	-106.41168	67.69839	4
06/08/2010	-106.41154	67.69841	4
06/08/2010	-106.41146	67.69842	4
06/08/2010	-106.41132	67.69844	4
06/08/2010	-106.41125	67.69845	4
06/08/2010	-106.41111	67.69846	4
06/08/2010	-106.41104	67.69847	4
06/08/2010	-106.41089	67.69849	3
06/08/2010	-106.41082	67.69849	3
06/08/2010	-106.41068	67.69851	2
06/08/2010	-106.41061	67.69852	2
06/08/2010	-106.41047	67.69853	3
06/08/2010	-106.41040	67.69854	3
06/08/2010	-106.41026	67.69856	3
06/08/2010	-106.41019	67.69858	2
06/08/2010	-106.41006	67.69860	3
06/08/2010	-106.40999	67.69861	4
06/08/2010	-106.40985	67.69863	3
06/08/2010	-106.40978	67.69864	4
06/08/2010	-106.40964	67.69865	3
06/08/2010	-106.40957	67.69866	4
06/08/2010	-106.40942	67.69868	3
06/08/2010	-106.40935	67.69869	3
06/08/2010	-106.40921	67.69870	4
06/08/2010	-106.40914	67.69871	4
06/08/2010	-106.40900	67.69872	3
06/08/2010	-106.40893	67.69873	4
06/08/2010	-106.40878	67.69874	4
06/08/2010	-106.40871	67.69875	3
06/08/2010	-106.40857	67.69876	4
06/08/2010	-106.40849	67.69876	4
06/08/2010	-106.40834	67.69877	4
06/08/2010	-106.40827	67.69878	3

Notes:
Substrate Types: 0 = unclassified, 1 = soft fines, 2 = mud, 3 = sand and gravel, 4 = cobble and large rock

Appendix 3.1-3

Fish Habitat Stream Surveys, Hope Bay Belt Project, 2010

Rescan™
Engineers and Scientists

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	Roberts Bay Inflow	Survey Date (d/m/y):	27-Jun-10	Coordinates:	Coordinates:
SITE:	N01	Survey Crew:	EL/CM/EG	433759/7564295	
Survey Distance (m)	200			DS at ocean	

Temperature (°C):	18.2	Transparency:	clear
Channel Velocity (m/s):		Conductivity (uS/cm):	436
Current Flow Conditions:	high	pH:	7.14
Discharge estimate (m^3/s)			

Comments

one of the ponds flowing into Roberts Bay, at low tide

Weather:

sunny, clear skies

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					min	max	min	max	Fines/clay (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	G	0	200	0.5	0.11	0.18	1.5	2.5	90	5	5	2	0				N	
2									0	0	0	0	0					
3			transect 2		0.43	0.57	1.0	1.3	90	5	5	2	0				N	
4			transect 3		0.19	0.41	0.5	3	90	5	5	2	0				N	
5																		
6																		
7																		
8																		
9																		
10																		
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15																		
16																		
17																		
18																		
19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating: marginal/poor

Spawning: fair

presence of gravel esp. near ocean

Rearing: fair

not much cover

Adult Feeding: poor

Over-wintering: poor

Migration: poor

unlikely to be connected at low flows

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: RB1 **SITE:** N01 **DATE:** 27/06/2010 **CREW:** EG/CB/EL

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1					0	0	2	0	0	0	0	254-265				
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
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17																
18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

marginal/poor fish habitat- unlikely to be connected year round with low flows

continous glide with some small pools
observed fish about 20cm long ~50m from ocean
could try electroshocking but llikely from shore

near ocean, distinct channel, up until ~ 130m and then turns into pools separated with flooded grasses.
unlikely to stay connected up with ponds with lower flow condition
several possible upstream barriers ~130m up (photo 262)

Photos

254 looking at ocean
255 upstream from ocean
256 substrate next to stram near ocean (sink deep!!)
257 moving upstream
258 moving upstream
265 pond upstream

set 10 MTs overnight

Data Entered ☐ **QA/QC** ☐

N01

N01

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:		Survey Date (d/m/y):	22-Jun-10	Coordinates:	Coordinates:
SITE:	N02	Survey Crew:	C. Martin, IK	downstream 434742/7564105	
Survey Distance (m)	200				
Temperature (°C):	7	Transparency:	low	Comments	
Channel Velocity (m/s):		Conductivity (uS/cm):	400	flood area of small stream, very turbid, 25cm of fines which sank into	
Current Flow Conditions:	low	pH:		Weather:	
Discharge estimate (m^3/s)				overcast	

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Depth (m) Max	Depth (m) Crest	Type	T/P
1	G	0	150	0.5	0.40	0.40	0.4	5.5	100	0	0	0	0					
2	R	150	50	1.0	0.50	0.50	0.7	3.4	80	20	0	0	0					
3																		
4																		
5																		
6																		
7																		
8																		
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16																		
17																		
18																		
19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: poor

Rearing: poor

Adult Feeding: poor

Over-wintering: poor

Migration: poor

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: _____ **SITE:** N02 **DATE:** June 22 2010 **CREW:** C. Martin

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	0.00	0.00	U	U												
2	0.00	0.00	S	S												
3												101-0008	view looking up from beginning of section			
4												101-0009	view looking below section			
5												101-0010	looking upstream from elbow			
6												101-0011	looking downstream from elbow			
7												101-0012	looking upstream from end point			
8												101-0013	looking downstream from end point			
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

point #208 in GPS #02681

Comments:

small stream with low flow
high siltation of fines
wide "delta" floodplains area
up from end point (and road), low lying shrub with defined defined bank walls
throughout and below reach, wide, fine substrate with braiding channels

overall
low habitat quality
low flow, high siltation

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	E of Rob Bay	**Survey Date (d/m/y):**	04-Aug-10	**Coordinates:**	**Coordinates:**
SITE:	N02	**Survey Crew:**		434742/7564105	734947/7564094
Survey Distance (m)	100				

Temperature (°C):	11.1	**Transparency:**	opaque
Channel Velocity (m/s):		**Conductivity (uS/cm):**	297
Current Flow Conditions:	M	**pH:**	7.47
Discharge estimate (m^3/s)			

Comments

very high sediment load

Weather:

sunny, windy

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Depth (m) Max	Depth (m) Crest	Type	T/P
1	R	0	100	0.2	0.10	0.10	0.2	0.3	100	0	0	0	0				N	
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: poor

Rearing: poor

Adult Feeding: poor

Over-wintering: poor

Migration: poor

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: east of Roberts Bay **SITE:** N02 **DATE:** 04/08/2010 **CREW:** MS/MT

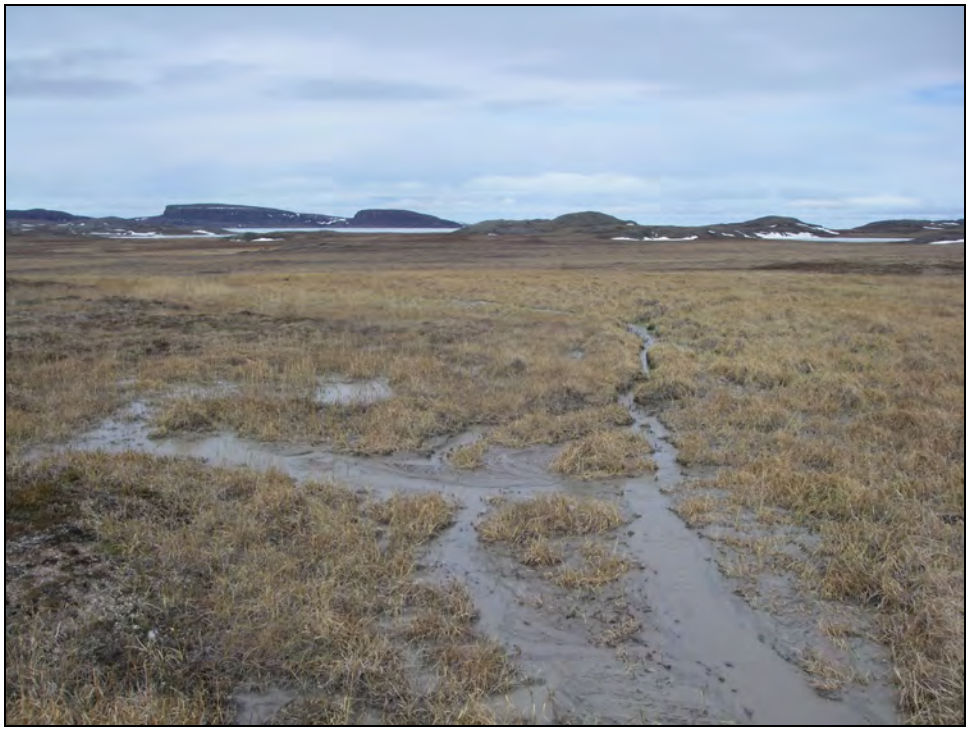
Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	0.05	0.05	U	U	0	0	30	0	0	0	0		muddy stream	0	0	0
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments: *muddy braided channel. First stream we assessed with no fish*

Data Entered ☐ **QA/QC** ☐

N02



N02

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	Little Roberts Outflow	**Survey Date (d/m/y):**	21-Jun-10	**Coordinates:**	**Coordinates:**
SITE:	N03	**Survey Crew:**	C. Martin	DS 433679/7563669	upstream 433873/7563609
Survey Distance (m)	200				

Temperature (°C):		**Transparency:**	M	**Comments**
Channel Velocity (m/s):		**Conductivity (uS/cm):**	164.8	
Current Flow Conditions:	high-freshet	**pH:**	8.2	**Weather:**
Discharge estimate (m^3/s)	M			overcast

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Depth (m) Max	Depth (m) Crest	Type	T/P
1	R	0	55	2.0	0.70	1.10	40.0	50.0	25	15	25	35	0					
2	G	55	52	1.0	no safe access		25.0	38.0	no safe access									
3	R	107	93	2.0	no safe access		12.0	12.0	no safe access									
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: M

Rearing: P

Adult Feeding: G

Over-wintering: P

Migration: G

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Little Roberts Outflow **SITE:** N03 **DATE:** 21/06/2010 **CREW:** C.M.

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	1.00	2.00	S	U	0	3	0	0	0	0	0	101-0001	looking up from start			
2	1.00	2.00	S	H	0	0	0	0	0	0	0	101-0002	looking down towards Roberts Bay			
3			S	S	0	0	10	0	0	0	0					
4												101-0003	upstream view of glide			
5												101-0004	downstream view of riffle			
6												101-0005	upstream view of reach			
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

multi-meter temp off (8.2 degrees C)
riffle, strong flow, glide, riffle
flow strong at riffles
ice shelfs at riffles and fast flow made entry unsafe
possible wading crossing below
mixture of fines in glide
on GPS 02687 waypoint 4001 taken at upstream of reach

OVERALL: Critical

some spawning sediment
at inlet to ocean
definitely important for migration with Roberts Lake upstream

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Little Roberts Outflow	**Survey Date (d/m/y):** 03-Aug-10	**Coordinates:**	**Coordinates:**
SITE: N03	**Survey Crew:** MS/CA	DS 433602/7563731	US 433800/7563622
Survey Distance (m) 200			

Temperature (°C): 11	**Transparency:** moderately turbid	**Comments**	
Channel Velocity (m/s): 0.5	**Conductivity (uS/cm):** 294	heavy rain, increased discharge and decreased clarity	
Current Flow Conditions: M	**pH:** 7.9	**Weather:**	
Discharge estimate (m^3/s)		strong north wind, rain, cool	

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Depth (m) Max	Depth (m) Crest	Type	T/P
1	G	0	170	0.5	1.50	2.00	65.0	70.0	70	30	0	0	10					
2	G	170	172	0.5	0.70	0.00	1.0	15.0	20	20	30	20	10					
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
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Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: _____

Rearing: _____

Adult Feeding: _____

Over-wintering: _____

Migration: _____

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Little Roberts Lake OF **SITE:** N03 **DATE:** 03/08/2010 **CREW:** MS/CA

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	0.00	0.00	S	S	0	5	0	0	95 *	0	0	936-D	estuary at high tide			
2	30.00	60.00	U	S	0	60	20	0	20	0	0	937-D	fluvial			
3																
4																
5																
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Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

all water measurements taken upstream of estuary

** note undercut banks cover was mid channel at high tide*

Data Entered ☐ **QA/QC** ☐

N03

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	Glenn Lake OF	Survey Date (d/m/y):	21-Jun-10	Coordinates:	Coordinates:
SITE:	N04	Survey Crew:	EL/EG/BM/IK	upstream 431027/7563215	downstream 431179/7563338
Survey Distance (m)	200				

Temperature (°C):	5.8	Transparency:	poor	Comments
Channel Velocity (m/s):		Conductivity (uS/cm):	162	
Current Flow Conditions:	M	pH:	7.24	Weather:
Discharge estimate (m^3/s)		O2:	65.6	overcast

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
									Fines/clay	Gravel	Cobble	Boulder	Bedrock		Depth (m)			
					min	max	min	max	(%)	(%)	(%)	(%)	(%)	Type	Max	Crest	Type	T/P
1	P	0	10.5		0.10	1.50	3.0	6.0	100	0	0	0	0	S	>1	1	N	
2	G	10.5	42		0.20	1.50	1.5	6.0	100	0	0	0	0					
3	R	52.5	23		0.68	1.00	2.5	2.5	30	30	0	0	40					
4	P	76	12		0.70	1.50	3.5	4	100	0	0	0	0	S	>1		N	
5	G	88	112		0.55	1.50	1.5	7	100	0	0	0	0					
6																		
7																		
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Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: poor

Rearing: fair

Adult Feeding: unknown, no fish survey done

Over-wintering: fair

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Glenn Lake OF **SITE:** N04 **DATE:** 21/06/2010 **CREW:** EL/EG/BM/IK

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1					90	0	10	0	0	0	0					
2					0	0	10	0	0	0	0					
3					0	0	10	0	5	0	0					
4					0	0	10	0	0	0	0					
5					0	0	10	0	10	0	0					
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Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Glenn Lake OF | Survey Date (d/m/y): 02-Aug-10 | Coordinates: | Coordinates:
SITE: N04 | Survey Crew: MS/DA/CA | DS 431477/7563402 | upstream 431300/7563307
Survey Distance (m) 200

Temperature (°C): 14.2 | Transparency: turbid | Comments
Channel Velocity (m/s): | Conductivity (uS/cm): 405 | started site 100 m downstream of crossing (coords from map)
Current Flow Conditions: M | pH: 7.9 | Weather:
Discharge estimate (m^3/s) 0.5 | few broken clouds, mostly sunny, light breeze

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Depth (m) Max	Depth (m) Crest	Type	T/P
1	G	0	50	1.0	0.50	0.80	7.0	9.0	70	10	5	15	0					
2	P	50	12	0.5	0.80	1.30	8.0	9.0	80	10	5	5	0	S	0.95	0.5		
3	C	65	30	10.0	0.30	0.50	7.0	8.0	5	5	40	40	10					
4	G	92	14	0.5	0.80	1.00	2.5	3	5	5	40	40	0					
5	P	106	30	0.5	1.00	1.20	5	9	80	10	5	5	0	S	1.40	0.8		
6	P	136	10	0.5	1.30	1.50	7	7.5	60	10	10	10	0	S	1.60	0.7		
7	R	146	30	1.0	0.70	0.90	1.5	2	20	20	20	40	0					
8	P	176	16	0.5	2.00	2.30	12	15	40	30	10	20	0	S	2	0.7		
9	G	192	204	0.5	0.5	0.7	6	9	60	20	10	10	0					
10																		
11																		
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Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: fair

Rearing: good

Adult Feeding: good

Over-wintering: fair

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Glenn Lake Outflow DS Crossing **SITE:** N04 **DATE:** 02/08/2010 **CREW:** MS/DA/CA

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	0.30	0.70	S	U	0	10	30	30	30	0	0	909/10				
2	0.50	2.00	S	U	60	10	10	0	20	0	0	911				
3	0.30	0.50	S	S	10	70	10	0	10	0	0	912/3				
4	0.90	0.80	S	S	0	50	10	0	40	0	0					
5	1.20	0.80	S	S	70	5	10	0	15	0	0	914	long deep pool			
6	1.00	0.80	S	S	70	5	5	0	20	0	0	915				
7	0.50	0.80	S	S	0	10	0	10	80	0	0	916	deep riffle			
8	1.00	1.20	S	S	80	5	5	0	10	0	0	971				
9	0.50	0.30	S	S	0	5	10	0	85	0	0	918	downstream			
10																
11																
12																
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Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

sinuous series of scour pools separated by glides and periodic riffle
surrounding substrate mostly clay/fines with large substrate mixed in
HIGH turbidity proivdes good cover
limited gravel observed for spawning but high turbidity limited ability to assess

OVERALL: IMPORTANT habitat for rearing and spawning but CRITICAL migration corridor for anadromous fishes

Data Entered ☐ **QA/QC** ☐

N04

N04

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	Glen Lake OF (#2)	Survey Date (d/m/y):	22-Jun-10	Coordinates:	Coordinates:
SITE:	N05	Survey Crew:	CM, EG, IK, BM	upstream 430827/7563186	walked DS to 2003 ~200m
Survey Distance (m)	~200m				

Temperature (°C):	6	Transparency:	moderate
Channel Velocity (m/s):		Conductivity (uS/cm):	147
Current Flow Conditions:		pH:	6.67
Discharge estimate (m^3/s)			

Comments

constant glide, clay, high mud ??? on RDB

Weather:

sunny, cool, windy

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					min	max	min	max	Fines/clay (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	G	0	200		0.25	0.60	1.2	0.6	85	10	0	5	0				N	
2					0.60	0.70	2.0	0.7	85	10	0	5	0				N	
3					0.40	0.95	4.0	1.0	85	10	0	5	0				N	
4					0.35	0.60	2	0.6	85	10	0	5	0				N	
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Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: poor

Rearing: good

Adult Feeding: NA

Over-wintering: poor

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Glen Lake OF #2 **SITE:** N05 **DATE:** June 22/2010 **CREW:** EG/CM/IK/BM

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1			U (clay)	U	0	5	5	0	0	0	0	257-261		0	0	0
2																
3																
4																
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20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

all of reach is slow glide, took multiple transects

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	Glenn Lake OF	Survey Date (d/m/y):	04-Aug-10	Coordinates:	Coordinates:
SITE:	N05	Survey Crew:	MT/MS	0430911/7563244	0430829/7563189
Survey Distance (m)	100				

Temperature (°C):	11	Transparency:	
Channel Velocity (m/s):		Conductivity (uS/cm):	342
Current Flow Conditions:	M	pH:	7.82
Discharge estimate (m^3/s)			

Comments

very unstable area, banks slumping

Weather:

sunny, breezy (10-15km)

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	G	0	41	0.1	0.40	70.00	3.0	8.0	75	25	0	0	0				N	
2	P	41	10	0.0	0.50	80.00	8.0	10.0	100	0	0	0	0	S	80.00	40	N	
3	R	51	13	0.3	0.40	70.00	1.5	2.0	85	0	0	15	0				N	
4	P	64	16	0.0	0.80	120.00	6	7	70	30	0	0	0	D	110.00	30	N	
5	G	70	45	0.1	0.90	110.00	5	7	60	40	0	0	0					
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Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating: IMPORTANT

Spawning: fair

Rearing: good

Adult Feeding: fair

Over-wintering: poor

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Glenn Lake OF **SITE:** N05 **DATE:** 04/08/2010 **CREW:** MT/MS

	Banks of Channel				Instream Cover									Riparian Cover		
Hab Unit No.	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %	Photos #	Comments	Canopy %	LB %	RB %
1	0.30	0.30	U	S	0	0	25	0	0	0	0	952-3	very turbid	0	0	0
2	10.00	0.30	U	S	100	0	25	0	0	0	0	950-1		0	0	0
3	10.00	0.30	U	S	0	0	20	0	0	0	0	948-9		0	0	0
4	10.00	0.30	U	S	100	0	30	0	0	0	0	946-7		0	0	0
5	10.00	0.30	U	S	0	0	30	0	0	0	0	946-7		0	0	0
6																
7																
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Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

shocked- no fish 1066s, 175 V, 4ms, 30Hz, 12% DC

430837/7563202

Important migration route for ARCH and anadromous lake trout, connects Glenn Lake directly to Roberts Bay

Data Entered ☐ **QA/QC** ☐

N05

N05

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	Roberts Outflow	**Survey Date (d/m/y):**	20-Jun-10	**Coordinates:** upstream 435059/7562919	**Coordinates:** downstream 434889/7562856
SITE:	N06	**Survey Crew:**	MS/CM/EG/EL		
Survey Distance (m)	200				

Temperature (°C):	2.8	**Transparency:**	moderate
Channel Velocity (m/s):	1	**Conductivity (uS/cm):**	181.3
Current Flow Conditions:	H	**pH:**	7.7
Discharge estimate (m^3/s)			

Comments

large fish rising! Assessed fish fence reach

Weather:

high overcase, light cool breeze

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					Mean	Max	Mean	Max	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	G	0	200	0.5	0.60	2.00	25.0	40.0	30	20	0	50	0				B	
2																		
3																		
4																		
5																		
6																		
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Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: good

Rearing: good

Adult Feeding: good

Over-wintering: good

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Roberts Lake Outflow **SITE:** N06 **DATE:** 20-Jun-10 **CREW:** MS

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	NR	NR	H	U	0	1	0	0	0	0	0	0001-0002	instream veg terrestrial willow			
2													photo 0001 looking upstream			
3													photo 0002 looking downstream			
4																
5																
6																
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13																
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15																
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18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

OVERALL HABITAT =IMPORTANT- habitat for all life history stages present for multiple species. Good migration between lakes
R bank stab U rating Section ~20m sloughing clay bank on ride bank on outside turn

complex sinuous glide, lower flow probabaly riffle/pool habitat --> 40m wide slow X'ing flow, deep @
large mid channel depth change at defined channel
downstream end flows onto Little Roberts Lake

sketches on data sheet of cross section of stream and of bend in stream

visual estimate of depth
mid-channel deep @ defined channel
stream marginal sloping and flowing over terrestrial veg
substrate: fines on margins, boulder mid channel, mid channel defined, but difficult to see substrate mid-channel

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Roberts Lake OF | Survey Date (d/m/y): 04-Aug-10 | Coordinates: DS 0434899/7562859 | Coordinates: 434980/7562898

SITE: N06 | Survey Crew: MS/MT/CA/BM

Survey Distance (m)

Temperature (°C): 10.2 | Transparency:

Channel Velocity (m/s): 0.25 | Conductivity (uS/cm): 275

Current Flow Conditions: M | pH: 7.6

Discharge estimate (m^3/s)

Comments

Weather: sunny, windy (20km)

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	G	0	74	0.0	0.50	1.00	7.0	8.0	70	20	5	5	0				N	
2	P	74	26		0.70	1.20	33.0	37.0	80	0	5	15	0	S	0.80	0.6	N	
3																		
4																		
5																		
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19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating: IMPORTANT

Spawning: fair

Rearing: good

Adult Feeding: fair

Over-wintering: poor

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Roberts Lake Outflow **SITE:** N06 **DATE:** 04/08/2010 **CREW:** MT/MS

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	0.60	0.50	S	S	0	5	20	0	10	0	0	217-219				
2	0.70	2.00	S	S	100	15	20	0	0	0	0	220-221				
3																
4																
5																
6																
7																
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14																
15																
16																
17																
18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

lake trout rearing in boulders
small sticklebacks in grassy veg

Data Entered ☐ **QA/QC** ☐

N06 (June freshet)

N06 (August low water)

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Hope Bay	Survey Date (d/m/y): 22-Jun-10	Coordinates:	Coordinates:	
SITE: N07	Survey Crew: C. Martin	upstream 434569/7561367	downstream 434584/7561481	
Survey Distance (m) 200				
Temperature (°C): 4	Transparency: med	Comments		
Channel Velocity (m/s): low	Conductivity (uS/cm): 196			
Current Flow Conditions:	pH:	Weather:		
Discharge estimate (m^3/s)		overcast		

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
									Fines	Gravel	Cobble	Boulder	Bedrock		Depth (m)			
					max	full	Mean	max	(%)	(%)	(%)	(%)	(%)	Type	Max	Crest	Type	T/P
1	G	0	200	0.5	0.85	0.95	5.0	5.0	85	0	0	0	15				N	
2					0.85	1.30	4.0	12.0	85	0	0	0	15				N	
3					0.70	0.90	5.0	12.0	85	0	0	0	15				N	
4																		
5																		
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20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: poor

Rearing: mod

Adult Feeding: good

Over-wintering: poor

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Hope Bay **SITE:** N07 **DATE:** June 22 2010 **CREW:** C. Martin

	Banks of Channel				Instream Cover									Riparian Cover		
Hab Unit No.	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %	Photos #	Comments	Canopy %	LB %	RB %
1	0.00	0.00	S	S	0	0	60	0	0	0	0	102-0015	view looking down sample reach			
2	0.00	0.00	S	S	0	0	80	0	0	0	0	102-0016	view of stream upstream of sample			
3	0.00	0.00	S	S	0	0	60	0	0	0	0	102-0017	view looking up sample reach			
4												102-0018	view of stream downstream of sample			
5																
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17																
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19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

waypoint 2005-1 (upstream end)

permafrost

gentle flowing, smooth glide
high water, overflowing banks and onto adjacent vegetation
lots of submerged shrubs and grasses (wide at parts)
single long habitat unit
good to excellent fish habitat
low-lying valley between between two bluffs

overall

marginal habitat
gentle flow upstream of lake
migration route but waterfall upstream

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	Doris Outflow	Survey Date (d/m/y):	03-Aug-10	Coordinates:	Coordinates:
SITE:	N07	Survey Crew:	MS/CA	DS 434485/7561536	US 434511/7561313
Survey Distance (m)	200				

Temperature (°C):	10.8	Transparency:	mod. Turbid
Channel Velocity (m/s):	0.5 (estimate)	Conductivity (uS/cm):	287
Current Flow Conditions:	M	pH:	7.57
Discharge estimate (m^3/s)			

Comments

Weather:

overcast, wind, no rain

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Depth (m) Max	Depth (m) Crest	Type	T/P
1	P	0	15	0.5	2.00	2.30	6.0	10.0	80	20	0	0	0					
2	G		6															
3																		
4																		
5																		
6																		
7																		
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19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: fair

Rearing: good

Adult Feeding: good

Over-wintering: fair-good- deep pools

Migration: fair

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Doris OF **SITE:** N07 **DATE:** 03/08/2010 **CREW:** MS/CA

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	0.60	0.60	H	H	80	0	10	0	10	0	0	938-D				
2																
3																
4																
5																
6																
7																
8																
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18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

OVERALL habitat: IMPORTANT- rearing and overwintering, possible spawning

meandering stream through tundra, long glide varying depths between 2.5-3.0m deep sections
abundant cover provided but vertical and undercut banks
deep pools provide resting and foraging areas for adult fish (eg large LKTR or ARCH observed)
juvenile rearing areas among instream veg and undercut banks
migration upstream limited by cascaed
good access to downstream lakes (Roberts and Little Roberts
Classic grayling stream

Data Entered ☐ **QA/QC** ☐

N07

N07

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	Windy OF to Glenn	Survey Date (d/m/y):	22-Jun-10	Coordinates:	Coordinates:
SITE:	N08	Survey Crew:	EG/BM	430925/7556570	
Survey Distance (m)	200				

Temperature (°C):	7.5	Transparency:	clear	Comments: shallow, grassy
Channel Velocity (m/s):		Conductivity (uS/cm):	186.8	
Current Flow Conditions:		pH:	6.77	Weather:
Discharge estimate (m^3/s)	low	O2:	135 ppm	cool, windy!

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					Mean	max	Mean	max	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	G/R	0	200	0.0	0.22	0.48	1.5	7.8	100	0	0	0	0				N	
2																		
3																		
4																		
5																		
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19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: poor

Rearing: fair-cover

Adult Feeding: poor

Over-wintering: poor

Migration: poor

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Windy OF **SITE:** N08 **DATE:** June 22/2010 **CREW:**

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1					0	0	90	0	0	0	0	244-248				
2																
3																
4																
5																
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18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

site 2005 done by Chris

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	potential stream crossing	**Survey Date (d/m/y):**	17-Sep-10	**Coordinates:**	**Coordinates:**
SITE:	N08	**Survey Crew:**	JG/LK	430925E/7556570N	
Survey Distance (m)	200				

Temperature (°C):	5.1	**Transparency:**	clear
Channel Velocity (m/s):	~1	**Conductivity (uS/cm):**	444
Current Flow Conditions:	L	**pH:**	8.25
Discharge estimate (m^3/s)	NA		

Comments

great cyprinid habitat, no pools for overwintering. Substrate provides a lot of cover for NSSB

Weather:

overcast, light wind

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Depth (m) Max	Depth (m) Crest	Type	T/P
1	G	0	200	0.3	0.25	0.35	5.0	10.0									N	T
2																		
3																		
4																		
5																		
6																		
7																		
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18																		
19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: maybe

Rearing: good

Adult Feeding: good

Over-wintering: poor

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: _____ **SITE:** N08 **DATE:** _____ **CREW:** _____

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	0.05	0.05	U	U	0	0	70	0	0	0	0	129	slow moving channel, good NSSB habitat	0	100	100
2																
3																
4																
5																
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Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

Data Entered ☐ **QA/QC** ☐

N08

N08

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	Doris IF @SE	Survey Date (d/m/y):	22-Jun-10	Coordinates:	Coordinates:
SITE:	N09	Survey Crew:	EG/BM	435355/7555256	
Survey Distance (m)	~200				

Temperature (°C):	3	Transparency:	clear, 204 tds
Channel Velocity (m/s):		Conductivity (uS/cm):	289
Current Flow Conditions:	high	pH:	7.16
Discharge estimate (m^3/s)			

Comments

high flow, surveyed closeby in 2009

Weather:

sunny, light wind, cool

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					min	max	min	min	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	G	0	16		0.52	0.50	5.0	9.5	50	0	0	0	50				N	
2	C	16	53		0.20	0.50	6.5	12.2	25	0	0	65	10				N	
3	G	69	101		0.22	1.12	18.0	20.4	80	0	0	10	10				N	
4	R	170	23		0.30	1.05	4	5.5	85	0	0	15	0				N	
5																		
6																		
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Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: fair

Rearing: good-cover

Adult Feeding: NA- no fish survey

Over-wintering: fair

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Doris SE Inflow **SITE:** N09 **DATE:** June 22/ 2010 **CREW:** EG/BM

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1					0	0	25	0	0	0	0	251	bedrock ridge			
2					0	60	10	0	0	0	0	252	ridge ends			
3					0	10	20	0	0	0	0					
4					0	10	30	0	0	0	0					
5																
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16																
17																
18																
19																
20																

Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

photos- U/S from 254
U/S R/C 255

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	potential stream crossing	Survey Date (d/m/y):	17-Sep-10	Coordinates:	Coordinates:
SITE:	N09	Survey Crew:	JG/LK	435355E/7555257N	
Survey Distance (m)	100				

Temperature (°C):		Transparency:	cloudy
Channel Velocity (m/s):		Conductivity (uS/cm):	
Current Flow Conditions:	H/M	pH:	
Discharge estimate (m^3/s)			

Comments

variety of habitat typers, no sport fish, turbid water

Weather:

overcast, wind NW 15km/h, no sun at all...

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					Mean	Bank-full	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	P	0	29	1.5			18.0	22.0	100	0	0	0	0	S	1.10	0.6	N	T
2	G	29	8	1.0	0.60	0.90	10.0	16.0	100	0	0	0	0				N	T
3	P	37	18	1.0			15.0	18.0	95	0	0	0	0	S	1.20	0.5	N	T
4	R	55	59	2.5	0.40	0.60	8	15	10	5	50	30	5				N	T
5	G	114	86	2.0	0.90	1.20	4	10	100	0	0	0	0				N	T
6																		
7																		
8																		
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16																		
17																		
18																		
19																		
20																		

Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: good for NSSB

Rearing: good for NSSB

Adult Feeding: good for NSSB

Over-wintering: probably not

streams freeze throughout

Migration: great

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: _____ **SITE:** N09 **DATE:** _____ **CREW:** _____

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	0.20	5.00	S	H	80	0	20	0	0	0	0	130		0	100	100
2	0.20	5.00	S	H	45	5	50	0	0	0	0	131		0	100	100
3	0.10	1.50	S	H	95	5	0	0	0	0	0	132		0	100	100
4	0.10	0.25	S	S	75	0	15	5	5	0	0	133		0	100	100
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Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

looks like good sportfish habitat but none present

Data Entered ☐ **QA/QC** ☐

N09

N09

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:	PO inflow	Survey Date (d/m/y):	23-Jun-10	Coordinates:	Coordinates:
SITE:	N11	Survey Crew:	EG/BM	upstream 437196/7549851	437166/7500015
Survey Distance (m)	218				

Temperature (°C):		Transparency:	clear
Channel Velocity (m/s):		Conductivity (uS/cm):	160.8
Current Flow Conditions:	high	pH:	6.87
Discharge estimate (m^3/s)			114 tds

Comments

slow meandering stream with deep pools

Weather:

sunny, light wind, gorgeous

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					min	max	min	max	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	P	0	27	0.5	0.25	0.60	2.0	13.0	100	0	0	0	0	S	1.20	0.6	N	
2	R	27	4	0.5	0.20	0.75	1.5	12.0	100	0	0	0	0				N	
3	P	31	24	0.5	0.25	0.85	13.0	16.0	100	0	0	0	0	S	0.85	0.75	N	
4	G	55	95	0.5	0.28	0.72	12	15	100	0	0	0	0				N	
5	P	150	30	0.5	0.40	1.20	8	30	100	0	0	0	0	S	1.20	0.3	N	
6	P	180	27	0.5	1.00	>1.5	15	25	100	0	0	0	0	S	>1.5	0.75	N	
7	R	207	11	0.5	0.60	0.80	1.2	15	95	0	0	5	0				N	
8																		
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Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: poor

Rearing: fair

Adult Feeding: no fish survey

Over-wintering: good

Migration: good

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: PO inflow **SITE:** N11 **DATE:** June 23/2010 **CREW:** EG/BM

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1	0.00	0.00	0	0	70	2.00	10	0	0	0	0	264-267		0	0	0
2																
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Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

note site 2008 done by Chris

this page is for all habitat units (=218m)

series of deep pools and short glides, good fish holding habitat
very little/no gravel/cobble/boulder

Data Entered ☐ **QA/QC** ☐

N11

N11

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION:		Survey Date (d/m/y):	23-Jun-10	Coordinates:	Coordinates:
SITE:	N12	Survey Crew:	C. Martin, IK	upstream 434809/7547676	434800/7547552
Survey Distance (m)	200				

Temperature (°C):	12	Transparency:	high	Comments: more pond-ish
Channel Velocity (m/s):		Conductivity (uS/cm):	53	
Current Flow Conditions:	low	pH:		Weather: clear, sunny
Discharge estimate (m^3/s)				

Hab Unit No.	Hab Type	Dist. fr start (m)	Length (m)	Slope (%)	Depth (m)		Width (m)		Bed Material					Pool Info			Fish Passage Barriers	
															Depth (m)			
					Mean	?	Mean	Bank-full	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Type	Max	Crest	Type	T/P
1	G	0	200	0.3	0.10	0.15	8.0	26.0	100	0	0	0	0					almost dry
2		-100			0.10	0.25	1.0	29.0	100	0	0	0	0					
3		-200			0.10	0.15	0.5	35.0	100	0	0	0	0					
4																		
5																		
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Flow Conditions H = High flow, M = Medium flow, L = Low flow

Habitat Unit Under bankfull conditions: 0 - 2.5 m = > 1 m2, 2.5 - 5 m = > 2 m2, 5 - 10 m = > 4 m2, 10 -15 m = > 6 m2, 15 -20 = > 8 m2, > 20 m = > 10 m2

Hab Type P = pool, G = glide, R = riffle, C = cascade, UG = underground, BG = boulder garden

Dist. fr start distance from beginning of the survey to the beginning of the habitat unit being surveyed

Pool Type S = scour, D = dammed, U = unknown

Substrate Sand (< 2 mm), Gravel (2 - 64 mm), Cobble (64 - 256), Boulders (256 - 4000 mm), Bedrock (>4000 mm)

Fish Passage Barriers IF = Impassible waterfall

BF = Boulder Field, passage through the boulder arrangement is not possible for fish

D = dry channel, no stream flow

NC = no distinct channel, water drains over land

N = no barrier to fish passage through the habitat unit

T/P T = temporary, portion of open water season

P = Permanent, all year round

Overall Rating:

Spawning: P

Rearing: M

Adult Feeding: P

Over-wintering: P

Migration: P

Data Entered ☐ **QA/QC** ☐

Hope Bay Belt Project - Fish Habitat Stream Survey Form

LOCATION: Wolverine OF **SITE:** N12 **DATE:** June 23 2010 **CREW:** C. Martin

Hab Unit No.	Banks of Channel				Instream Cover							Photos #	Comments	Riparian Cover		
	L Bank Height (m)	R Bank Height (m)	L Bank Stab	R Bank Stab	Pool %	Boulder %	Instream Veg %	Overhang Veg %	Undercut Bank %	LWD %	SWD %			Canopy %	LB %	RB %
1			S	S	0	0	75	0	0	0	0	102-0022	view downstream of sample reach			
2			S	S	0	0	75	0	0	0	0					
3			S	S	0	0	75	0	0	0	0	102-0023	view of sample reach from below			
4												102-0024	view down from middle sample reach			
5												102-0025	view up from middle sample reach			
6												102-0026	view upstream of sample reach			
7												102-0027	view of sample reach from upstream			
8												102-0028	off-channel flood area to west of upstream?			
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Banks of Channel (Stability) H = highly stable, S = stable, U = unstable

Comments:

low lying valley between two rises
small amount of flow
lots of instream veg (Nuna=grass spp)
YOY rearing rearing, but low depth + flow = higher temp
more a depression w/ snow melt forming ponds

waypoint 4002 (downstream)

Overall:
low
no consistent flow
some shallow pools, but little connectivity

Data Entered ☐ **QA/QC** ☐