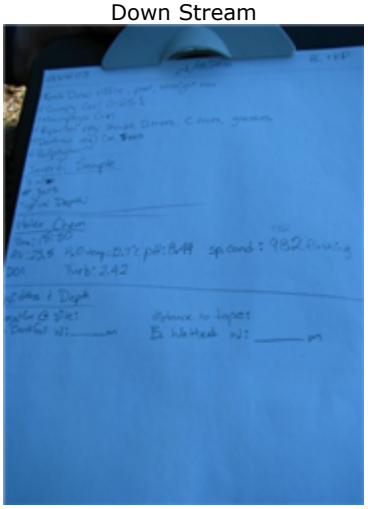
Site Description

Study Name	CBWQ-Windermere
Site	NAWIN03
Sampling Date	Aug 24 2010
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Southern Rocky Mountain Trench EcoRegion
Coordinates (decimal degrees)	50.46163 N, 115.98558 W
Altitude	3093
Local Basin Name	Windermere Creek
	Windermere Creek
Stream Order	4

Figure 1. Location Map

Across Reach
Aerial (No image found)

Down Stream



Field Sheet

Miscellaneous (No image found)

Substrate

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Columbia-Okanagan Preliminary March 2010
Analysis Date	November 07, 2017
Taxonomic Level	Family
Predictive Model Variables	Depth-Avg Latitude Longitude Reg-Ice Reg-SlopeLT30%

Reference Groups	**1**	**2**	**3**	**4**	**5**
Number of Reference Sites	9	43	17	12	33
Group Error Rate	22.2%	24.5%	22.2%	25.0%	32.4%
Overall Model Error Rate	26.4%				
Probability of Group Membership	0.1%	0.1%	35.8%	30.2%	33.7%
CABIN Assessment of NAWIN03 on Aug 24, 2010	Mildly Divergent				

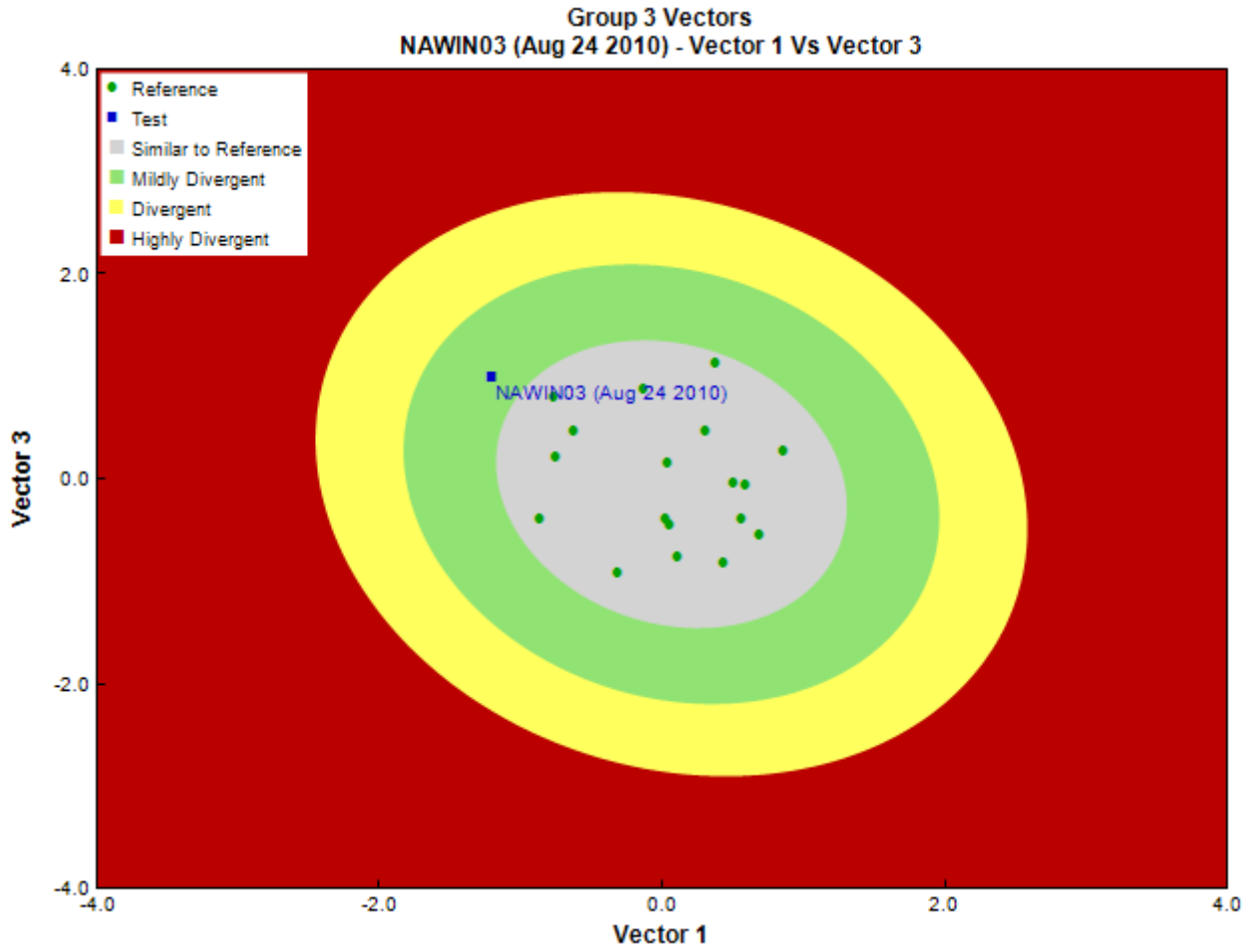


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Gary Lester, Ecoanalysts Inc.
Date Taxonomy Completed	March 09, 2011
	Marchant Box
Sub-Sample Proportion	6/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	2	33.3
		Tubificida		1	16.7
			Naididae	62	1,033.3
Arthropoda	Arachnida	Sarcoptiformes		1	16.7
	Insecta	Coleoptera	Elmidae	2	33.3
		Diptera	Chironomidae	23	383.3
			Empididae	17	283.3
			Tipulidae	2	33.3
		Ephemeroptera	Baetidae	154	2,566.7
			Ephemerellidae	5	83.3
			Heptageniidae	2	33.3
		Plecoptera	Capniidae	1	16.7
			Chloroperlidae	1	16.7
			Leuctridae	1	16.7
			Nemouridae	61	1,016.7

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Perlidae	4	66.7
		Trichoptera	Brachycentridae	3	50.0
Mollusca	Bivalvia	Veneroida	Pisidiidae	4	66.7
			Total	346	5,766.7

NAWIN04 2013 and 2014 - question of Group Placement. will run separate Reports

Metrics

Name	NAWIN03	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.81	0.4 ± 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	3.7	3.2 ± 0.7
Intolerant taxa	--	
Long-lived taxa	2.0	1.9 ± 1.3
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	0.9	1.8 ± 1.6
% Gatherers	47.7	52.4 ± 14.6
% Predatores	13.0	18.3 ± 13.3
% Scrapers	46.0	61.8 ± 17.2
% Shredder	20.2	30.3 ± 18.6
No. Clinger Taxa	10.0	19.8 ± 3.9
Number Of Individuals		
% Chironomidae	6.7	8.2 ± 13.6
% Coleoptera	0.6	0.8 ± 1.9
% Diptera + Non-insects	32.0	14.3 ± 14.2
% Ephemeroptera	46.8	43.3 ± 15.7
% Ephemeroptera that are Baetidae	95.7	33.9 ± 27.7
% EPT Individuals	67.4	84.9 ± 14.3
% Odonata	--	0.0 ± 0.0
% of 2 dominant taxa	62.8	58.9 ± 10.0
% of 5 dominant taxa	92.2	83.8 ± 7.3
% of dominant taxa	44.8	39.5 ± 10.9
% Plecoptera	19.8	34.7 ± 17.8
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	0.0	27.8 ± 25.2
% Tricoptera	0.9	6.9 ± 8.6
No. EPT individuals/Chironomids+EPT Individuals	0.9	0.9 ± 0.1
Total Abundance	5766.6	5780.5 ± 4895.3
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 ± 0.0
Coleoptera taxa	1.0	0.4 ± 0.6
Diptera taxa	3.0	3.4 ± 1.0
Ephemeroptera taxa	3.0	3.4 ± 0.5
EPT Individuals (Sum)	3866.6	4527.1 ± 3161.8
EPT taxa (no)	9.0	11.5 ± 1.2
Odonata taxa	--	0.0 ± 0.0
Pielou's Evenness	0.6	0.7 ± 0.1
Plecoptera taxa	5.0	5.3 ± 0.9
Shannon-Wiener Diversity	1.7	1.9 ± 0.3
Simpson's Diversity	0.7	0.8 ± 0.1
Simpson's Evenness	0.2	0.3 ± 0.1
Total No. of Taxa	16.0	17.7 ± 2.6
Trichoptera taxa	1.0	2.8 ± 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.98
Ephemerellidae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.85
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.96

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	0.75
RIVPACS : Expected taxa P>0.70	9.62
RIVPACS : Observed taxa P>0.70	6.00
RIVPACS : O:E (p > 0.7)	0.62

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 ± 0.00000
Intrusive (%)	0.00000	4.80136 ± 20.34839
Metamorphic (%)	0.00000	1.91481 ± 8.12386
Sedimentary (%)	100.00000	92.18813 ± 22.65908
Ultramafic (%)	0.00000	0.00000 ± 0.00000
Volcanic (%)	0.00000	1.09569 ± 2.57323
Channel		
Depth-Avg (cm)	18.2	22.5 ± 10.5
Depth-BankfullMinusWetted (cm)	31.00	67.33 ± 71.65
Depth-Max (cm)	20.5	32.9 ± 17.9
Macrophyte (PercentRange)	1	0 ± 0
Reach-%CanopyCoverage (PercentRange)	1.00	0.94 ± 0.80
Reach-DomStreamsideVeg (Category (1-4))	4	3 ± 1
Reach-Pools (Binary)	0	0 ± 1
Reach-Rapids (Binary)	0	0 ± 1
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0050000	0.0235102 ± 0.0284557
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	1.03	0.50 ± 0.25
Velocity-Max (m/s)	1.17	0.75 ± 0.28
Width-Bankfull (m)	4.3	15.6 ± 12.8
Width-Wetted (m)	2.9	10.2 ± 7.0
XSEC-VelMethod (Category (1-3))	1	2 ± 1
Climate		
Precip01_JAN (mm)	78.00000	86.74590 ± 34.16045
Precip02_FEB (mm)	63.00000	69.04735 ± 26.39011
Precip03_MAR (mm)	61.00000	64.57566 ± 18.91423
Precip04_APR (mm)	78.00000	86.74590 ± 34.16045
Precip05_MAY (mm)	63.00000	67.06098 ± 7.34190
Precip06_JUN (mm)	70.00000	73.16508 ± 8.19897
Precip07_JUL (mm)	64.00000	59.23624 ± 10.43324
Precip08_AUG (mm)	64.00000	57.24656 ± 12.22117
Precip09_SEP (mm)	52.00000	50.72037 ± 11.15833
Precip10_OCT (mm)	51.00000	52.92857 ± 22.22704

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Precip11_NOV (mm)	83.00000	87.53373 ± 31.98739
Precip12_DEC (mm)	91.00000	93.52725 ± 32.58764
PrecipTotal_ANNUAL (mm)	795.00000	818.18624 ± 207.74339
Temp01_JANMax (Degrees Celsius)	-6.00000	-5.23929 ± 1.38664
Temp01_JANmin (Degrees Celsius)	-16.00000	-13.71495 ± 2.15775
Temp02_FEBmax (Degrees Celsius)	-3.00000	-2.11812 ± 1.36153
Temp02_FEBmin (Degrees Celsius)	-13.00000	-11.26786 ± 1.82315
Temp03_MARmax (Degrees Celsius)	0.00000	0.95304 ± 1.72292
Temp03_MARmin (Degrees Celsius)	-9.00000	-7.99378 ± 1.86235
Temp04_APRmax (Degrees Celsius)	5.00000	5.89775 ± 2.29856
Temp04_APRmin (Degrees Celsius)	-5.00000	-3.52196 ± 1.40541
Temp05_MAYmax (Degrees Celsius)	10.00000	10.80516 ± 2.26497
Temp05_MAYmin (Degrees Celsius)	0.00000	0.15132 ± 0.77159
Temp06_JUNMax (Degrees Celsius)	14.00000	14.89775 ± 2.29856
Temp06_JUNMin (Degrees Celsius)	2.00000	2.98532 ± 1.30119
Temp07_JULmax (Degrees Celsius)	17.00000	18.39881 ± 2.25732
Temp07_JULmin (Degrees Celsius)	4.00000	5.51058 ± 1.28471
Temp08_AUGmax (Degrees Celsius)	17.00000	18.26442 ± 2.32790
Temp08_AUGmin (Degrees Celsius)	4.00000	5.11071 ± 1.22615
Temp09_SEPmax (Degrees Celsius)	12.00000	13.01495 ± 2.08648
Temp09_SEPmin (Degrees Celsius)	0.00000	1.09127 ± 1.16620
Temp10_OCTmax (Degrees Celsius)	6.00000	6.62235 ± 1.52687
Temp10_OCTmin (Degrees Celsius)	-3.00000	-1.89907 ± 1.00747
Temp11_NOVmax (Degrees Celsius)	-3.00000	-1.28638 ± 1.23662
Temp11_NOVmin (Degrees Celsius)	-10.00000	-8.37103 ± 1.70714
Temp12_DECmax (Degrees Celsius)	-7.00000	-5.50172 ± 1.56005
Temp12_DECmin (Degrees Celsius)	-15.00000	-12.82063 ± 2.01422
TempANNUALmax (Degrees Celsius)	5.00000	5.95278 ± 1.80268
TempANNUALmean (Degrees Celsius)	0.00000	0.92011 ± 1.31158
TempANNUALmin (Degrees Celsius)	-5.00000	-3.49114 ± 1.47732
Hydrology		
Drainage-Area (km^2)	91.83252	166.32560 ± 185.60049
Perimeter (Km)	79.35148	75.52547 ± 54.66392
StreamDensity (m/km^2)	2584.23664	2635.49639 ± 656.67294
StreamLength (m)	237316.95	398904.91 ± 414313.30
Landcover		
Natl-AnnCrops (%)	0.07839	0.00000 ± 0.00000
Natl-Barren (%)	0.00000	0.00000 ± 0.00000
Natl-BroadleafDense (%)	0.00000	0.53318 ± 1.35704
Natl-BroadleafOpen (%)	0.29967	0.81233 ± 2.68694
Natl-BroadleafSparse (%)	0.00000	0.00053 ± 0.00223
Natl-Coniferous (%)	0.00000	0.00000 ± 0.00000
Natl-ConiferousDense (%)	1.14301	9.07482 ± 13.04849
Natl-ConiferousOpen (%)	60.73512	46.52170 ± 20.90683
Natl-ConiferousSparse (%)	0.00000	0.88302 ± 1.79706
Natl-Deciduous (%)	0.00000	0.00000 ± 0.00000
Natl-Developed (%)	0.88094	0.00000 ± 0.00000
Natl-ExposedLand (%)	6.13744	14.05381 ± 9.29865
Natl-Grassland (%)	0.58482	4.92979 ± 5.99508
Natl-Herb (%)	3.10112	6.99262 ± 5.00471
Natl-MixedForest (%)	0.00000	0.00000 ± 0.00000
Natl-MixedwoodDense (%)	0.00000	0.00129 ± 0.00548
Natl-MixedwoodOpen (%)	0.00000	0.90796 ± 2.58154
Natl-MixedwoodSparse (%)	0.00000	0.00000 ± 0.00000
Natl-PerennCropsPast (%)	1.34832	0.00000 ± 0.00000
Natl-Rock/Rubble (%)	0.09676	2.56296 ± 3.90199
Natl-Shrubland (%)	0.00000	0.00000 ± 0.00000
Natl-ShrubLow (%)	3.90234	1.89085 ± 1.59075
Natl-ShrubTall (%)	0.00000	1.09076 ± 2.22843
Natl-SnowIce (%)	0.00000	0.50588 ± 1.17001
Natl-Water (%)	0.00644	0.22269 ± 0.34683
Natl-Wetland (%)	0.00000	0.00000 ± 0.00000

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Natl-WetlandHerb (%)	0.00000	0.03577 ± 0.04831
Natl-WetlandShrub (%)	0.00000	0.05535 ± 0.09516
Natl-WetlandTreed (%)	0.00000	0.00268 ± 0.01136
Reg-Ice (%)	0.00000	0.46949 ± 1.15785
Substrate Data		
%Bedrock (%)	0	0 ± 0
%Boulder (%)	0	6 ± 7
%Cobble (%)	15	61 ± 27
%Gravel (%)	36	1 ± 2
%Pebble (%)	39	31 ± 28
%Sand (%)	10	0 ± 0
%Silt+Clay (%)	0	0 ± 1
D50 (cm)	1.80	79.45 ± 47.98
Dg (cm)	1.6	73.9 ± 48.0
Dominant-1st (Category(0-9))	3	6 ± 1
Dominant-2nd (Category(0-9))	5	6 ± 2
Embeddedness (Category(1-5))	2	4 ± 1
PeriphytonCoverage (Category(1-5))	3	2 ± 1
Topography		
ElevationMax (m)	2629.00000	2690.61111 ± 390.38324
ElevationMin (m)	813.00000	1251.33333 ± 280.98168
ElevationStdev (m)	400.59302	287.70131 ± 73.20073
Reg-SlopeLT30% (%)	15.44962	27.92073 ± 14.83033
Slope30-50% (%)	27.98192	27.15573 ± 3.09032
Slope50-60% (%)	15.87713	12.76339 ± 3.54018
SlopeAvg (%)	50.90367	48.68089 ± 8.41381
SlopeGT60% (%)	34.61110	30.74349 ± 11.05846
SlopeLT30% (%)	21.52984	29.33739 ± 12.62448
SlopeMax (%)	249.34370	616.97887 ± 680.88955
SlopeMin (%)	0.00000	0.03296 ± 0.13984
SlopeStdev (%)	24.83154	28.19409 ± 6.96382
Water Chemistry		
General-Alkalinity (mg/L)	3.6000000	121.5944444 ± 36.7225924
General-DO (mg/L)	10.0000000	10.4922222 ± 0.8833463
General-pH (pH)	8.4	8.0 ± 0.6
General-SpCond (µS/cm)	982.0000000	214.2437500 ± 77.1891440
General-TempAir (Degrees Celsius)	23.5	10.5 ± 4.2
General-TempWater (Degrees Celsius)	12.7000000	6.6716667 ± 2.0277755
General-Turbidity (NTU)	2.4200000	0.0000000 ± 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0023889 ± 0.0063351
Nitrogen-NO2+NO3 (mg/L)	0.1000000	0.0130000 ± 0.0088111
Nitrogen-NO3 (mg/L)	0.1000000	0.0245003 ± 0.0229452
Phosphorus-OrthoP (mg/L)	0.0025000	0.0035000 ± 0.0018292

Landslide Upstream of NAWIN03 in 2011 smothered site in fine sediment, no macro-invertebrates found

Site Description

Study Name	CBWQ-Windermere
Site	NAWIN03
Sampling Date	Nov 06 2012
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Southern Rocky Mountain Trench EcoRegion
Coordinates (decimal degrees)	50.46163 N, 115.98558 W
Altitude	3093
Local Basin Name	Windermere Creek
	Windermere Creek
Stream Order	4

Figure 1. Location Map

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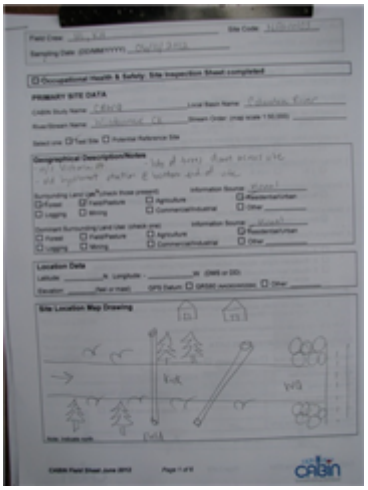
Down Stream



Field Sheet

Miscellaneous

Substrate

Up Stream

Cabin Assessment Results

Reference Model Summary	
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Analysis Date	November 07, 2017
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Predictive Model Variables	Depth-Avg Latitude Longitude Reg-Ice Reg-SlopeLT30%

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Overall Model Error Rate	26.4%				
Probability of Group Membership	0.4%	0.1%	35.4%	31.7%	32.4%
CABIN Assessment of NAWIN03 on Nov 06, 2012	Highly Divergent				

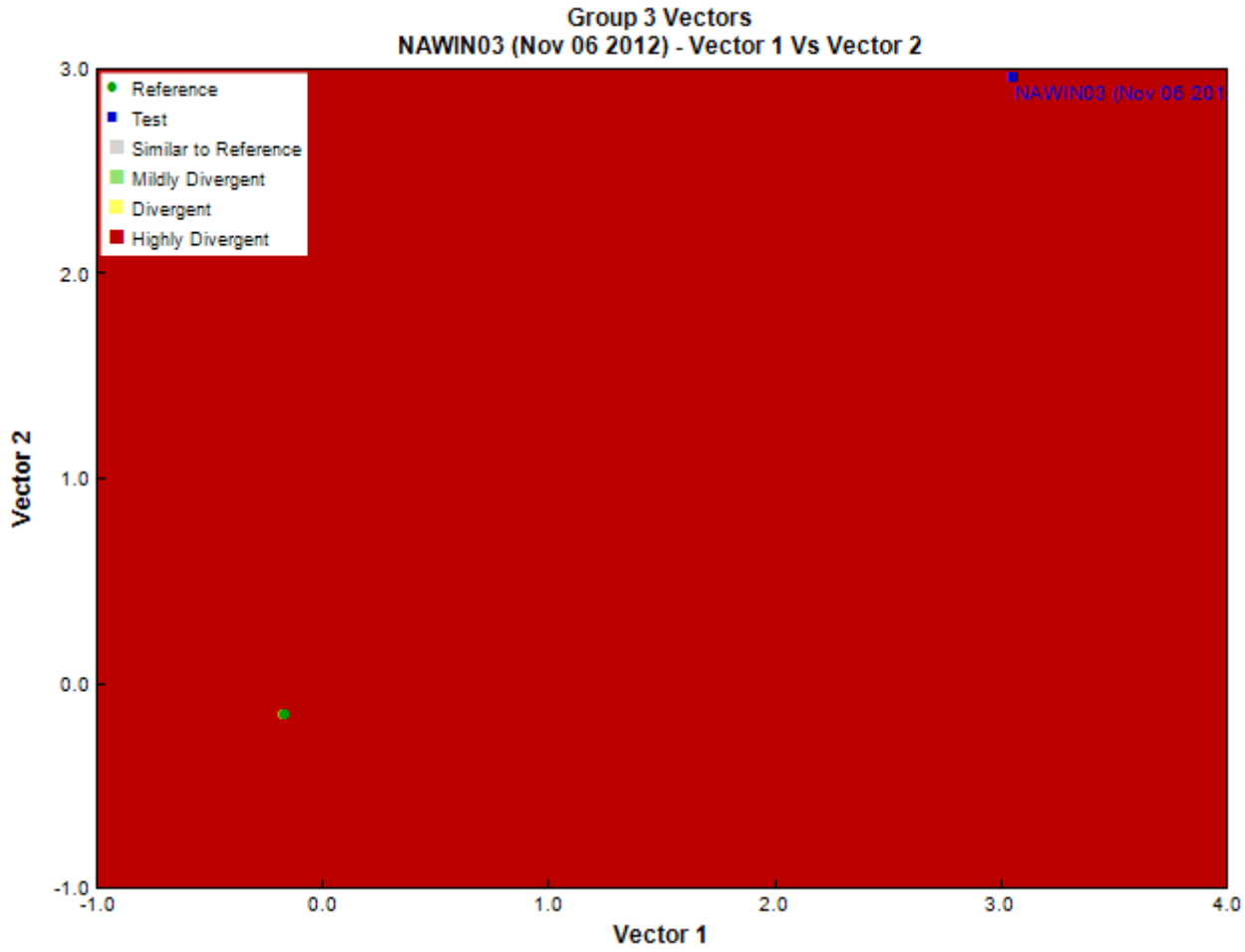


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Eco Analsyts, EcoAnalysts
Date Taxonomy Completed	February 12, 2013
	Marchant Box
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	1	1.0
Arthropoda	Arachnida			1	1.0
		Trombidiformes	Torrenticolidae	1	1.0
	Insecta	Diptera	Chironomidae	9	9.0
			Simuliidae	4	4.0
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	3	3.0
			Ephemerellidae	2	2.0
		Plecoptera	Capniidae	16	16.0
			Nemouridae	5	5.0
			Perlodidae	4	4.0
		Trichoptera	Rhyacophilidae	2	2.0
			Total	49	49.0

NAWIN04 2013 and 2014 - question of Group Placement. will run separate Reports

Metrics

Name	NAWIN03	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.98	0.4 ± 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	3.0	3.2 ± 0.7
Intolerant taxa	--	
Long-lived taxa	--	1.9 ± 1.3
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	8.2	1.8 ± 1.6
% Gatherers	36.7	52.4 ± 14.6
% Predatores	40.8	18.3 ± 13.3
% Scrapers	14.3	61.8 ± 17.2
% Shredder	44.9	30.3 ± 18.6
No. Clinger Taxa	7.0	19.8 ± 3.9
Number Of Individuals		
% Chironomidae	18.8	8.2 ± 13.6
% Coleoptera	0.0	0.8 ± 1.9
% Diptera + Non-insects	33.3	14.3 ± 14.2
% Ephemeroptera	10.4	43.3 ± 15.7
% Ephemeroptera that are Baetidae	60.0	33.9 ± 27.7
% EPT Individuals	66.7	84.9 ± 14.3
% Odonata	--	0.0 ± 0.0
% of 2 dominant taxa	52.1	58.9 ± 10.0
% of 5 dominant taxa	79.2	83.8 ± 7.3
% of dominant taxa	33.3	39.5 ± 10.9
% Plecoptera	52.1	34.7 ± 17.8
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	0.0	27.8 ± 25.2
% Tricoptera	4.2	6.9 ± 8.6
No. EPT individuals/Chironomids+EPT Individuals	0.8	0.9 ± 0.1
Total Abundance	49.0	5780.5 ± 4895.3
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 ± 0.0
Coleoptera taxa	0.0	0.4 ± 0.6
Diptera taxa	3.0	3.4 ± 1.0
Ephemeroptera taxa	2.0	3.4 ± 0.5
EPT Individuals (Sum)	32.0	4527.1 ± 3161.8
EPT taxa (no)	6.0	11.5 ± 1.2
Odonata taxa	--	0.0 ± 0.0
Pielou's Evenness	0.8	0.7 ± 0.1
Plecoptera taxa	3.0	5.3 ± 0.9
Shannon-Wiener Diversity	2.0	1.9 ± 0.3
Simpson's Diversity	0.8	0.8 ± 0.1
Simpson's Evenness	0.5	0.3 ± 0.1
Total No. of Taxa	11.0	17.7 ± 2.6
Trichoptera taxa	1.0	2.8 ± 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.98
Ephemerellidae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.85
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.96

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	0.58
RIVPACS : Expected taxa P>0.70	9.62
RIVPACS : Observed taxa P>0.70	6.00
RIVPACS : O:E (p > 0.7)	0.62

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 ± 0.00000
Intrusive (%)	0.00000	4.80136 ± 20.34839
Metamorphic (%)	0.00000	1.91481 ± 8.12386
Sedimentary (%)	100.00000	92.18813 ± 22.65908
Ultramafic (%)	0.00000	0.00000 ± 0.00000
Volcanic (%)	0.00000	1.09569 ± 2.57323
Channel		
Depth-Avg (cm)	26.0	22.5 ± 10.5
Depth-Max (cm)	29.0	32.9 ± 17.9
Macrophyte (PercentRange)	0	0 ± 0
Reach-%CanopyCoverage (PercentRange)	1.00	0.94 ± 0.80
Reach-Pools (Binary)	0	0 ± 1
Reach-Rapids (Binary)	0	0 ± 1
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0050000	0.0235102 ± 0.0284557
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	1.15	0.50 ± 0.25
Velocity-Max (m/s)	1.27	0.75 ± 0.28
Width-Bankfull (m)	3.5	15.6 ± 12.8
Width-Wetted (m)	3.2	10.2 ± 7.0
Climate		
Precip01_JAN (mm)	78.00000	86.74590 ± 34.16045
Precip02_FEB (mm)	63.00000	69.04735 ± 26.39011
Precip03_MAR (mm)	61.00000	64.57566 ± 18.91423
Precip04_APR (mm)	78.00000	86.74590 ± 34.16045
Precip05_MAY (mm)	63.00000	67.06098 ± 7.34190
Precip06_JUN (mm)	70.00000	73.16508 ± 8.19897
Precip07_JUL (mm)	64.00000	59.23624 ± 10.43324
Precip08_AUG (mm)	64.00000	57.24656 ± 12.22117
Precip09_SEP (mm)	52.00000	50.72037 ± 11.15833
Precip10_OCT (mm)	51.00000	52.92857 ± 22.22704
Precip11_NOV (mm)	83.00000	87.53373 ± 31.98739
Precip12_DEC (mm)	91.00000	93.52725 ± 32.58764
PrecipTotal_ANNUAL (mm)	795.00000	818.18624 ± 207.74339
Temp01_JANMax (Degrees Celsius)	-6.00000	-5.23929 ± 1.38664
Temp01_JANmin (Degrees Celsius)	-16.00000	-13.71495 ± 2.15775
Temp02_FEBmax (Degrees Celsius)	-3.00000	-2.11812 ± 1.36153
Temp02_FEBmin (Degrees Celsius)	-13.00000	-11.26786 ± 1.82315
Temp03_MARmax (Degrees Celsius)	0.00000	0.95304 ± 1.72292
Temp03_MARmin (Degrees Celsius)	-9.00000	-7.99378 ± 1.86235
Temp04_APRmax (Degrees Celsius)	5.00000	5.89775 ± 2.29856
Temp04_APRmin (Degrees Celsius)	-5.00000	-3.52196 ± 1.40541
Temp05_MAYmax (Degrees Celsius)	10.00000	10.80516 ± 2.26497
Temp05_MAYmin (Degrees Celsius)	0.00000	0.15132 ± 0.77159
Temp06_JUNMax (Degrees Celsius)	14.00000	14.89775 ± 2.29856
Temp06_JUNMin (Degrees Celsius)	2.00000	2.98532 ± 1.30119
Temp07_JULmax (Degrees Celsius)	17.00000	18.39881 ± 2.25732

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Temp07_JULmin (Degrees Celsius)	4.00000	5.51058 ± 1.28471
Temp08_AUGmax (Degrees Celsius)	17.00000	18.26442 ± 2.32790
Temp08_AUGmin (Degrees Celsius)	4.00000	5.11071 ± 1.22615
Temp09_SEPmax (Degrees Celsius)	12.00000	13.01495 ± 2.08648
Temp09_SEPmin (Degrees Celsius)	0.00000	1.09127 ± 1.16620
Temp10_OCTmax (Degrees Celsius)	6.00000	6.62235 ± 1.52687
Temp10_OCTmin (Degrees Celsius)	-3.00000	-1.89907 ± 1.00747
Temp11_NOVmax (Degrees Celsius)	-3.00000	-1.28638 ± 1.23662
Temp11_NOVmin (Degrees Celsius)	-10.00000	-8.37103 ± 1.70714
Temp12_DECmax (Degrees Celsius)	-7.00000	-5.50172 ± 1.56005
Temp12_DECmin (Degrees Celsius)	-15.00000	-12.82063 ± 2.01422
TempANNUALmax (Degrees Celsius)	5.00000	5.95278 ± 1.80268
TempANNUALmean (Degrees Celsius)	0.00000	0.92011 ± 1.31158
TempANNUALmin (Degrees Celsius)	-5.00000	-3.49114 ± 1.47732
Hydrology		
Drainage-Area (km^2)	91.83252	166.32560 ± 185.60049
Perimeter (Km)	79.35148	75.52547 ± 54.66392
StreamDensity (m/km^2)	2584.23664	2635.49639 ± 656.67294
StreamLength (m)	237316.95	398904.91 ± 414313.30
Landcover		
Natl-AnnCrops (%)	0.07839	0.00000 ± 0.00000
Natl-Barren (%)	0.00000	0.00000 ± 0.00000
Natl-BroadleafDense (%)	0.00000	0.53318 ± 1.35704
Natl-BroadleafOpen (%)	0.29967	0.81233 ± 2.68694
Natl-BroadleafSparse (%)	0.00000	0.00053 ± 0.00223
Natl-Coniferous (%)	0.00000	0.00000 ± 0.00000
Natl-ConiferousDense (%)	1.14301	9.07482 ± 13.04849
Natl-ConiferousOpen (%)	60.73512	46.52170 ± 20.90683
Natl-ConiferousSparse (%)	0.00000	0.88302 ± 1.79706
Natl-Deciduous (%)	0.00000	0.00000 ± 0.00000
Natl-Developed (%)	0.88094	0.00000 ± 0.00000
Natl-ExposedLand (%)	6.13744	14.05381 ± 9.29865
Natl-Grassland (%)	0.58482	4.92979 ± 5.99508
Natl-Herb (%)	3.10112	6.99262 ± 5.00471
Natl-MixedForest (%)	0.00000	0.00000 ± 0.00000
Natl-MixedwoodDense (%)	0.00000	0.00129 ± 0.00548
Natl-MixedwoodOpen (%)	0.00000	0.90796 ± 2.58154
Natl-MixedwoodSparse (%)	0.00000	0.00000 ± 0.00000
Natl-PerennCropsPast (%)	1.34832	0.00000 ± 0.00000
Natl-Rock/Rubble (%)	0.09676	2.56296 ± 3.90199
Natl-Shrubland (%)	0.00000	0.00000 ± 0.00000
Natl-ShrubLow (%)	3.90234	1.89085 ± 1.59075
Natl-ShrubTall (%)	0.00000	1.09076 ± 2.22843
Natl-SnowIce (%)	0.00000	0.50588 ± 1.17001
Natl-Water (%)	0.00644	0.22269 ± 0.34683
Natl-Wetland (%)	0.00000	0.00000 ± 0.00000
Natl-WetlandHerb (%)	0.00000	0.03577 ± 0.04831
Natl-WetlandShrub (%)	0.00000	0.05535 ± 0.09516
Natl-WetlandTreed (%)	0.00000	0.00268 ± 0.01136
Reg-Ice (%)	0.00000	0.46949 ± 1.15785
Sediment Chemistry		
Ag (ppm)	0.000	0.000 ± 0.000
Al (ppm)	3030.000	0.006 ± 0.004
As (ppm)	10.100	0.000 ± 0.000
Ba (ppm)	688.000	0.064 ± 0.045
Be (ppm)	0.000	0.000 ± 0.000
Bi (ppm)	0.000	0.000 ± 0.000
Ca (ppm)	170000.000	38.614 ± 14.846
Cd (ppm)	0.000	0.000 ± 0.000
Co (ppm)	1.820	0.000 ± 0.000
Cr (ppm)	5.500	0.000 ± 0.000
Cu (ppm)	3.750	0.000 ± 0.000

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Fe (ppm)	5480.000	0.009
Hg (ppm)	0.000	0.000 ± 0.000
K (ppm)	678.000	0.647 ± 0.715
Li (ppm)	6.000	0.001 ± 0.000
Mg (ppm)	34500.000	9.881 ± 6.160
Mn (ppm)	139.000	0.001 ± 0.002
Mo (ppm)	1.220	0.002 ± 0.007
Na (ppm)	0.000	2.636 ± 3.771
Ni (ppm)	7.310	0.000 ± 0.000
Pb (ppm)	5.110	0.000 ± 0.000
Sb (ppm)	0.150	0.000 ± 0.000
Se (ppm)	0.000	0.000 ± 0.000
Sn (ppm)	0.260	0.000 ± 0.000
Sr (ppm)	332.000	0.116 ± 0.098
Ti (ppm)	23.000	0.001
Tl (ppm)	0.115	0.000 ± 0.000
TP (ppm)	279.000	0.000 ± 0.000
U (ppm)	0.688	0.001 ± 0.000
V (ppm)	14.000	0.000 ± 0.000
Zn (ppm)	39.700	0.000 ± 0.001
Zr (ppm)	1.390	0.000 ± 0.000
Substrate Data		
%Bedrock (%)	0	0 ± 0
%Boulder (%)	0	6 ± 7
%Cobble (%)	23	61 ± 27
%Gravel (%)	17	1 ± 2
%Pebble (%)	60	31 ± 28
%Sand (%)	0	0 ± 0
%Silt+Clay (%)	0	0 ± 1
D50 (cm)	3.50	79.45 ± 47.98
Dg (cm)	3.3	73.9 ± 48.0
Dominant-1st (Category(0-9))	5	6 ± 1
Dominant-2nd (Category(0-9))	4	6 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	2	2 ± 1
SurroundingMaterial (Category(0-9))	3	3 ± 1
Topography		
ElevationMax (m)	2629.00000	2690.61111 ± 390.38324
ElevationMin (m)	813.00000	1251.33333 ± 280.98168
ElevationStdev (m)	400.59302	287.70131 ± 73.20073
Reg-SlopeLT30% (%)	15.45000	27.92073 ± 14.83033
Slope30-50% (%)	27.98192	27.15573 ± 3.09032
Slope50-60% (%)	15.87713	12.76339 ± 3.54018
SlopeAvg (%)	50.90367	48.68089 ± 8.41381
SlopeGT60% (%)	34.61110	30.74349 ± 11.05846
SlopeLT30% (%)	21.52984	29.33739 ± 12.62448
SlopeMax (%)	249.34370	616.97887 ± 680.88955
SlopeMin (%)	0.00000	0.03296 ± 0.13984
SlopeStdev (%)	24.83154	28.19409 ± 6.96382
Water Chemistry		
CO3 (mg/L)	0.2500000	0.0000000 ± 0.0000000
General-Alkalinity (mg/L)	144.0000000	121.5944444 ± 36.7225924
General-DO (mg/L)	10.0000000	10.4922222 ± 0.8833463
General-pH (pH)	8.2	8.0 ± 0.6
General-SpCond (µS/cm)	925.0000000	214.2437500 ± 77.1891440
General-TempAir (Degrees Celsius)	3.5	10.5 ± 4.2
General-TempWater (Degrees Celsius)	5.0000000	6.6716667 ± 2.0277755
General-Turbidity (NTU)	9.1800000	0.0000000 ± 0.0000000
HCO3 (mg/L)	176.0000000	0.0000000 ± 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0023889 ± 0.0063351
Nitrogen-NO2+NO3 (mg/L)	0.0830000	0.0130000 ± 0.0088111
Nitrogen-NO3 (mg/L)	0.0830000	0.0245003 ± 0.0229452

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Phosphorus-OrthoP (mg/L)	2.5000000	0.0035000 ± 0.0018292

Landslide Upstream of NAWIN03 in 2011 smothered site in fine sediment, no macro-invertebrates found

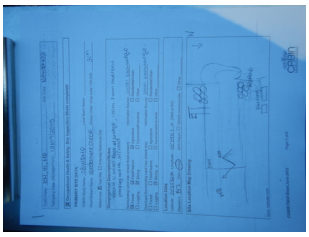
Site Description

Study Name	CBWQ-Windermere
Site	NAWIN03
Sampling Date	Sep 12 2015
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Southern Rocky Mountain Trench EcoRegion
Coordinates (decimal degrees)	50.45889 N, 115.98642 W
Altitude	2664
Local Basin Name	Windermere Creek
	Windermere Creek
Stream Order	4

Figure 1. Location Map

Across Reach
Aerial (No image found)

Down Stream



Field Sheet
Miscellaneous (No image found)

Substrate

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Columbia-Okanagan Preliminary March 2010
Analysis Date	September 08, 2016
Taxonomic Level	Family
Predictive Model Variables	Depth-Avg Latitude Longitude Reg-Ice Reg-SlopeLT30%

Reference Groups	**1**	**2**	**3**	**4**	**5**
Number of Reference Sites	9	43	17	12	33
Group Error Rate	22.2%	24.5%	22.2%	25.0%	32.4%
Overall Model Error Rate	26.4%				
Probability of Group Membership	67.3%	0.0%	1.6%	5.1%	26.0%
CABIN Assessment of NAWIN03 on Sep 12, 2015	Similar to Reference				

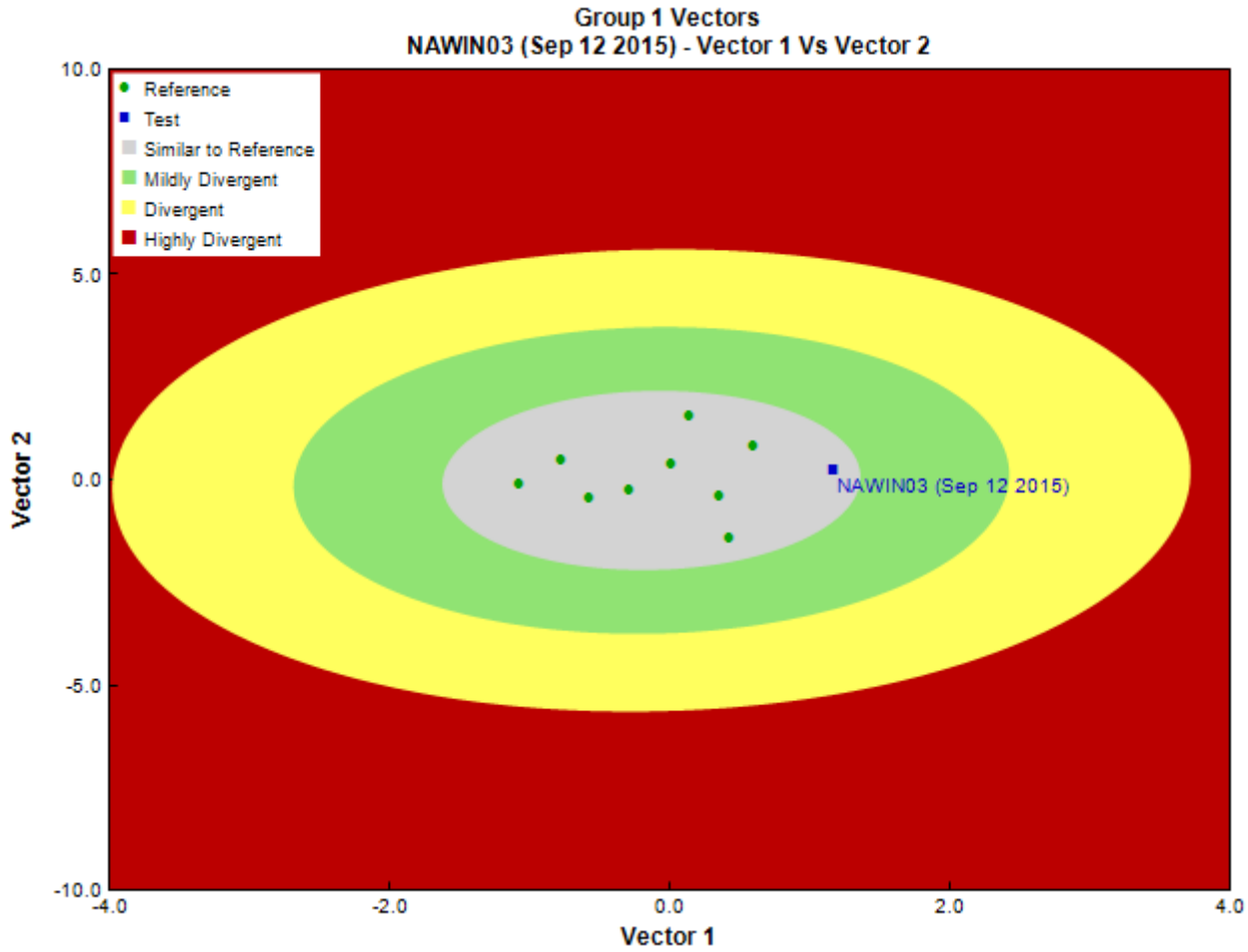


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	January 08, 2016
	Marchant Box
Sub-Sample Proportion	28/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	1	3.6
		Lumbriculida	Lumbriculidae	6	21.4
Arthropoda	Insecta	Coleoptera	Curculionidae	4	14.3
		Diptera	Chironomidae	79	282.1
			Empididae	4	14.3
			Simuliidae	9	32.1
			Stratiomyidae	1	3.6
		Ephemeroptera	Baetidae	65	232.1
			Ephemerellidae	1	3.6
			Heptageniidae	32	114.2
		Plecoptera	Capniidae	15	53.6
			Chloroperlidae	3	10.7
			Nemouridae	96	342.9
			Perlidae	3	10.7
			Perlodidae	4	14.3

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera	Glossosomatidae	2	7.1
			Rhyacophilidae	3	10.7
			Total	328	1,171.3

Metrics

Name	NAWIN03	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.72	0.4 ± 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	3.8	3.3 ± 0.5
Intolerant taxa	--	1.0
Long-lived taxa	2.0	2.3 ± 1.5
Tolerant individuals (%)	--	
Functional Measures		
% Filterers	2.7	
% Gatherers	57.0	
% Predatores	32.0	
% Scrapers	33.8	
% Shredder	35.1	
No. Clinger Taxa	19.0	18.6 ± 4.2
Number Of Individuals		
% Chironomidae	24.1	8.1 ± 6.9
% Coleoptera	1.2	0.5 ± 1.7
% Diptera + Non-insects	30.5	11.2 ± 7.6
% Ephemeroptera	29.9	61.6 ± 17.6
% Ephemeroptera that are Baetidae	66.3	50.3 ± 24.0
% EPT Individuals	68.3	88.3 ± 7.4
% Odonata	--	0.0 ± 0.0
% of 2 dominant taxa	53.4	59.1 ± 14.3
% of 5 dominant taxa	87.5	84.1 ± 7.1
% of dominant taxa	29.3	41.5 ± 15.1
% Plecoptera	36.9	23.9 ± 14.1
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	0.0	12.9 ± 23.9
% Tricoptera	1.5	2.8 ± 2.9
No. EPT individuals/Chironomids+EPT Individuals	0.7	0.9 ± 0.1
Total Abundance	1171.4	1453.9 ± 1355.4
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 ± 0.0
Coleoptera taxa	1.0	0.2 ± 0.4
Diptera taxa	4.0	2.9 ± 1.0
Ephemeroptera taxa	3.0	3.6 ± 0.6
EPT Individuals (Sum)	800.0	1288.9 ± 1149.7
EPT taxa (no)	10.0	11.1 ± 2.1
Odonata taxa	--	0.0 ± 0.0
Pielou's Evenness	0.7	0.7 ± 0.1
Plecoptera taxa	5.0	5.1 ± 1.2
Shannon-Wiener Diversity	1.9	1.8 ± 0.4
Simpson's Diversity	0.8	0.7 ± 0.1
Simpson's Evenness	0.3	0.3 ± 0.1
Total No. of Taxa	17.0	16.3 ± 3.2
Trichoptera taxa	2.0	2.3 ± 1.3

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Capniidae	78%	55%	50%	92%	68%	0.75
Chironomidae	100%	100%	100%	100%	95%	0.99
Chloroperlidae	78%	88%	94%	100%	100%	0.85
Ephemerellidae	78%	100%	100%	100%	100%	0.85

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Heptageniidae	100%	100%	100%	100%	100%	1.00
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.80
Rhyacophilidae	100%	92%	100%	100%	95%	0.99
Sperchontidae	78%	63%	50%	42%	65%	0.72
Taeniopterygidae	89%	49%	100%	92%	97%	0.91

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	12.16
RIVPACS : Observed taxa P>0.50	10.00
RIVPACS : O:E (p > 0.5)	0.82
RIVPACS : Expected taxa P>0.70	9.85
RIVPACS : Observed taxa P>0.70	9.00
RIVPACS : O:E (p > 0.7)	0.91

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Channel		
Depth-Avg (cm)	22.8	39.4 ± 23.6
Depth-BankfullMinusWetted (cm)	18.00	33.28 ± 13.75
Depth-Max (cm)	26.0	55.6 ± 30.6
Macrophyte (PercentRange)	0	0 ± 0
Reach-%CanopyCoverage (PercentRange)	1.00	0.67 ± 1.00
Reach-DomStreamsideVeg (Category (1-4))	2	3 ± 1
Reach-Pools (Binary)	0	0 ± 1
Reach-Rapids (Binary)	0	0 ± 0
Reach-Riffles (Binary)	1	1 ± 1
Reach-StraightRun (Binary)	1	1 ± 1
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	0	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.87	0.64 ± 0.31
Velocity-Max (m/s)	1.08	0.81 ± 0.28
Width-Bankfull (m)	3.7	27.7 ± 17.6
Width-Wetted (m)	3.2	17.6 ± 11.6
XSEC-VelMethod (Category (1-3))	1	1 ± 1
Landcover		
Reg-Ice (%)	15.41076	11.04418 ± 12.39512
Substrate Data		
%Bedrock (%)	0	1 ± 2
%Boulder (%)	0	1 ± 2
%Cobble (%)	7	55 ± 30
%Gravel (%)	40	2 ± 2
%Pebble (%)	48	40 ± 28
%Sand (%)	0	0 ± 0
%Silt+Clay (%)	5	0 ± 1
D50 (cm)	1.80	8.05 ± 3.69
Dg (cm)	1.7	7.4 ± 3.3
Dominant-1st (Category(0-9))	3	6 ± 2
Dominant-2nd (Category(0-9))	4	6 ± 1
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	2	3 ± 1
SurroundingMaterial (Category(0-9))	3	3 ± 2
Topography		
Reg-SlopeLT30% (%)	0.00000	27.80144 ± 15.50843
Water Chemistry		
Ag (mg/L)	0.0000100	0.0000000 ± 0.0000000
Al (mg/L)	0.0091000	0.0000000 ± 0.0000000

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Ba (mg/L)	0.0293000	0.0000000 ± 0.0000000
Be (mg/L)	0.0002500	0.0000000 ± 0.0000000
Bi (mg/L)	0.0005000	0.0000000 ± 0.0000000
Ca (mg/L)	0.1520000	0.0000000 ± 0.0000000
Cd (mg/L)	0.0000050	0.0000000 ± 0.0000000
Chloride-Dissolved (mg/L)	3.8000000	0.2777778 ± 0.3767552
Co (mg/L)	0.0002500	0.0000000 ± 0.0000000
CO3 (mg/L)	0.2500000	0.0000000 ± 0.0000000
Cr (mg/L)	0.0005000	0.0000000 ± 0.0000000
Cu (mg/L)	0.0007400	0.0000000 ± 0.0000000
Fe (mg/L)	0.0260000	0.0000000 ± 0.0000000
General-Alkalinity (mg/L)	168.0000000	50.0555556 ± 32.0615467
General-DO (mg/L)	9.5000000	11.4277778 ± 1.0113454
General-Hardness (mg/L)	534.0000000	60.6222222 ± 35.6256150
General-pH (pH)	8.6	7.6 ± 0.6
General-SolidsTSS (mg/L)	2.0000000	5.4421717 ± 12.7150011
General-SpCond (µS/cm)	977.0000000	121.1777778 ± 70.2563659
General-TempAir (Degrees Celsius)	11.5	4.2
General-TempWater (Degrees Celsius)	7.5000000	5.7844444 ± 2.4754197
General-Turbidity (NTU)	6.3200000	67.5295000 ± 95.4176962
HCO3 (mg/L)	205.0000000	0.0000000 ± 0.0000000
Hg (ng/L)	0.0000050	0.0000000 ± 0.0000000
K (mg/L)	0.0009000	0.0000000 ± 0.0000000
Li (mg/L)	0.0061000	0.0000000 ± 0.0000000
Mg (mg/L)	0.0377000	0.0000000 ± 0.0000000
Mn (mg/L)	0.0034000	0.0000000 ± 0.0000000
Mo (mg/L)	0.0013000	0.0000000 ± 0.0000000
Na (mg/L)	0.0033800	0.0000000 ± 0.0000000
Ni (mg/L)	0.0005000	0.0000000 ± 0.0000000
Nitrogen-NH3 (mg/L)	0.0025000	0.0020000 ± 0.0018708
Nitrogen-NO2 (mg/L)	0.0025000	0.0052222 ± 0.0048677
Nitrogen-NO2+NO3 (mg/L)	75.5000000	0.0000000 ± 0.0000000
Nitrogen-NO3 (mg/L)	0.1510000	0.1022222 ± 0.0873138
Nitrogen-TN (mg/L)	0.2030000	0.0000000 ± 0.0000000
Pb (mg/L)	0.0002800	0.0000000 ± 0.0000000
Phosphorus-TP (mg/L)	0.0025000	0.0218889 ± 0.0522409
S (mg/L)	0.1210000	0.0000000 ± 0.0000000
Sb (mg/L)	0.0002500	0.0000000 ± 0.0000000
Se (mg/L)	0.0001600	0.0000000 ± 0.0000000
Si (mg/L)	3.4000000	0.0000000 ± 0.0000000
Sn (mg/L)	0.0025000	0.0000000 ± 0.0000000
Sr (mg/L)	1.7770000	0.0000000 ± 0.0000000
Ti (mg/L)	0.0025000	0.0000000 ± 0.0000000
Tl (mg/L)	0.0000250	0.0000000 ± 0.0000000
U (mg/L)	0.0011800	0.0000000 ± 0.0000000
V (mg/L)	0.0025000	0.0000000 ± 0.0000000
Zn (mg/L)	0.0025000	0.0000000 ± 0.0000000
Zr (mg/L)	0.0002500	0.0000000 ± 0.0000000

Site Description

Study Name	CBWQ-Windermere
Site	NAWIN03
Sampling Date	Oct 23 2016
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Southern Rocky Mountain Trench EcoRegion
Coordinates (decimal degrees)	50.45889 N, 115.98642 W
Altitude	2664
Local Basin Name	Windermere Creek
	Windermere Creek
Stream Order	4

Figure 1. Location Map

Across Reach (No image found)
Down Stream (No image found)
Field Sheet (No image found)
Miscellaneous (No image found)
Substrate (No image found)
Up Stream (No image found)

Cabin Assessment Results

Reference Model Summary	
Model	Columbia-Okanagan Preliminary March 2010
Analysis Date	February 27, 2017
Taxonomic Level	Family
Predictive Model Variables	Depth-Avg Latitude Longitude Reg-Ice Reg-SlopeLT30%

Reference Groups	**1**	**2**	**3**	**4**	**5**
Number of Reference Sites	9	43	17	12	33
Group Error Rate	22.2%	24.5%	22.2%	25.0%	32.4%
Overall Model Error Rate	26.4%				
Probability of Group Membership	0.2%	0.1%	35.6%	30.9%	33.2%
CABIN Assessment of NAWIN03 on Oct 23, 2016	Highly Divergent				

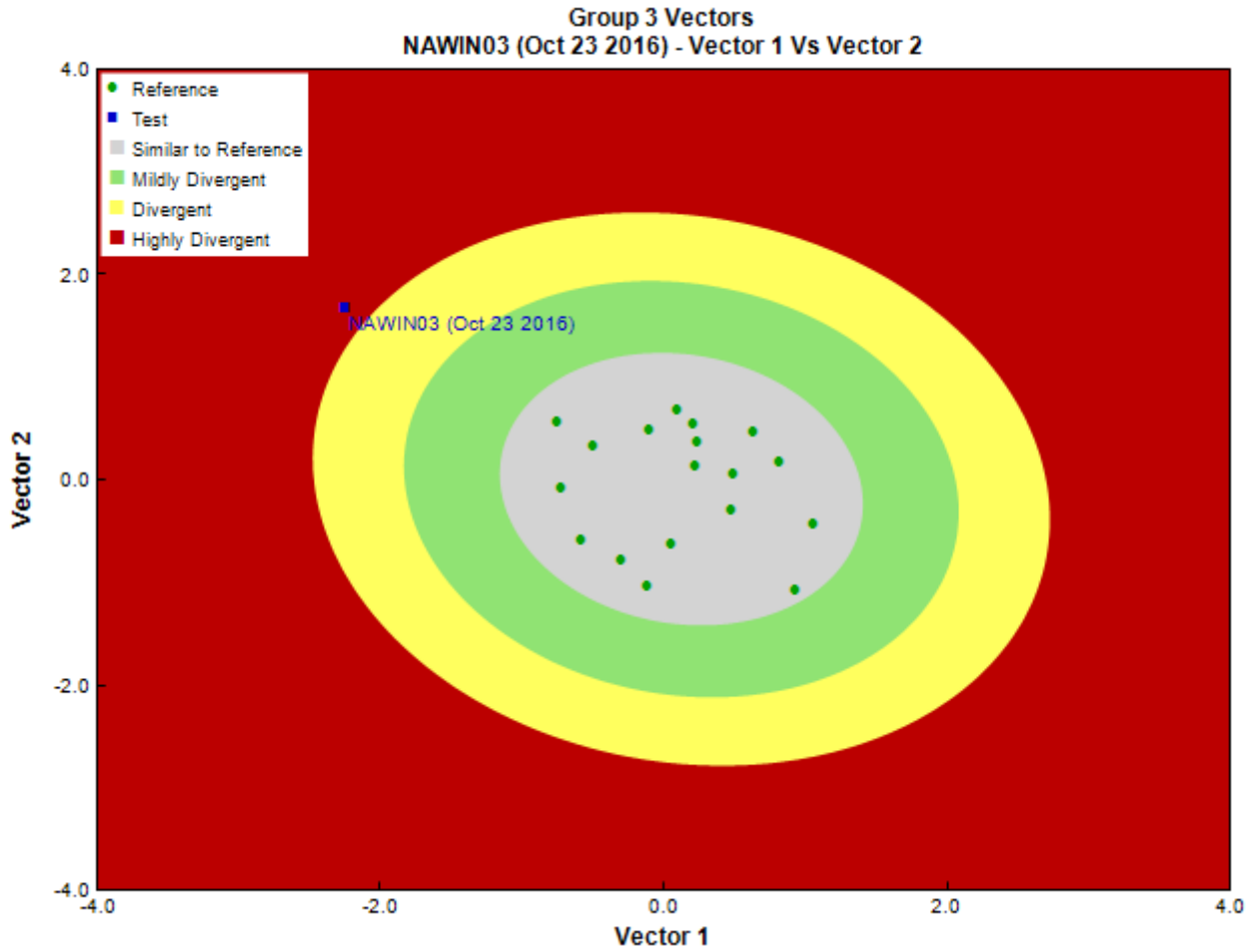


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	1
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	November 05, 2016
	Marchant Box
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	1	1.0
		Tubificida	Lumbricidae	1	1.0
Arthropoda	Insecta	Coleoptera	Curculionidae	1	1.0
		Diptera	Chironomidae	12	12.0
			Empididae	1	1.0
			Sciomyzidae	1	1.0
			Simuliidae	42	42.0
		Ephemeroptera	Baetidae	50	50.0
			Ephemerellidae	3	3.0
			Heptageniidae	14	14.0
		Plecoptera	Capniidae	28	28.0
			Chloroperlidae	7	7.0
			Nemouridae	26	26.0
			Perlidae	4	4.0
			Perlodidae	1	1.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera	Glossosomatidae	2	2.0
			Hydropsychidae	2	2.0
			Rhyacophilidae	6	6.0
			Total	202	202.0

Metrics

Name	NAWIN03	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.92	0.4 ± 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	3.5	3.2 ± 0.7
Intolerant taxa	--	
Long-lived taxa	1.0	1.9 ± 1.3
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	21.8	1.8 ± 1.6
% Gatherers	24.8	52.4 ± 14.6
% Predatores	37.6	18.3 ± 13.3
% Scrapers	56.9	61.8 ± 17.2
% Shredder	27.2	30.3 ± 18.6
No. Clinger Taxa	18.0	19.8 ± 3.9
Number Of Individuals		
% Chironomidae	5.9	8.2 ± 13.6
% Coleoptera	0.5	0.8 ± 1.9
% Diptera + Non-insects	28.7	14.3 ± 14.2
% Ephemeroptera	33.2	43.3 ± 15.7
% Ephemeroptera that are Baetidae	74.6	33.9 ± 27.7
% EPT Individuals	70.8	84.9 ± 14.3
% Odonata	0.0	0.0 ± 0.0
% of 2 dominant taxa	45.5	58.9 ± 10.0
% of 5 dominant taxa	79.2	83.8 ± 7.3
% of dominant taxa	24.8	39.5 ± 10.9
% Plecoptera	32.7	34.7 ± 17.8
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	20.0	27.8 ± 25.2
% Tricoptera	5.0	6.9 ± 8.6
No. EPT individuals/Chironomids+EPT Individuals	0.9	0.9 ± 0.1
Total Abundance	202.0	5780.5 ± 4895.3
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 ± 0.0
Coleoptera taxa	1.0	0.4 ± 0.6
Diptera taxa	4.0	3.4 ± 1.0
Ephemeroptera taxa	3.0	3.4 ± 0.5
EPT Individuals (Sum)	143.0	4527.1 ± 3161.8
EPT taxa (no)	11.0	11.5 ± 1.2
Odonata taxa	0.0	0.0 ± 0.0
Pielou's Evenness	0.8	0.7 ± 0.1
Plecoptera taxa	5.0	5.3 ± 0.9
Shannon-Wiener Diversity	2.2	1.9 ± 0.3
Simpson's Diversity	0.8	0.8 ± 0.1
Simpson's Evenness	0.4	0.3 ± 0.1
Total No. of Taxa	18.0	17.7 ± 2.6
Trichoptera taxa	3.0	2.8 ± 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.98
Ephemerellidae	78%	100%	100%	100%	100%	1.00

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.85
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.96

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	11.00
RIVPACS : O:E (p > 0.5)	0.92
RIVPACS : Expected taxa P>0.70	9.62
RIVPACS : Observed taxa P>0.70	9.00
RIVPACS : O:E (p > 0.7)	0.94

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Channel		
Depth-Avg (cm)	21.1	22.5 ± 10.5
Depth-BankfullMinusWetted (cm)	31.00	67.33 ± 71.65
Depth-Max (cm)	26.0	32.9 ± 17.9
Macrophyte (PercentRange)	1	0 ± 0
Reach-%CanopyCoverage (PercentRange)	1.00	0.94 ± 0.80
Reach-DomStreamsideVeg (Category (1-4))	4	3 ± 1
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0050000	0.0235102 ± 0.0284557
Veg-Deciduous (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	1.10	0.50 ± 0.25
Velocity-Max (m/s)	1.33	0.75 ± 0.28
Width-Bankfull (m)	3.5	15.6 ± 12.8
Width-Wetted (m)	3.4	10.2 ± 7.0
XSEC-VelMethod (Category (1-3))	1	2 ± 1
Landcover		
Reg-Ice (%)	0.00000	0.46949 ± 1.15785
Substrate Data		
%Bedrock (%)	0	0 ± 0
%Boulder (%)	0	6 ± 7
%Cobble (%)	25	61 ± 27
%Gravel (%)	11	1 ± 2
%Pebble (%)	61	31 ± 28
%Sand (%)	0	0 ± 0
%Silt+Clay (%)	2	0 ± 1
D50 (cm)	3.50	79.45 ± 47.98
Dg (cm)	3.4	73.9 ± 48.0
Dominant-1st (Category(0-9))	4	6 ± 1
Dominant-2nd (Category(0-9))	5	6 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	3	2 ± 1
SurroundingMaterial (Category(0-9))	2	3 ± 1
Topography		
Reg-SlopeLT30% (%)	15.41076	27.92073 ± 14.83033
Water Chemistry		
Ag (mg/L)	0.0000200	0.0000004 ± 0.0000014
Al (mg/L)	0.0110000	0.0059500 ± 0.0039700
As (mg/L)	0.0027100	0.0002175 ± 0.0001795
B (mg/L)	0.0610000	0.0500000
Ba (mg/L)	0.0305000	0.0639025 ± 0.0450861
Be (mg/L)	0.0000500	0.0000025 ± 0.0000062

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Bi (mg/L)	0.0000500	0.0000004 ± 0.0000014
Ca (mg/L)	0.1590000	38.6142857 ± 14.8464843
Cd (mg/L)	0.0000050	0.0000059 ± 0.0000067
Co (mg/L)	0.0002500	0.0000043 ± 0.0000057
CO3 (mg/L)	0.2500000	0.0000000 ± 0.0000000
Cr (mg/L)	0.0005000	0.0000833 ± 0.0001403
Cu (mg/L)	0.0002500	0.0001875 ± 0.0001434
Fe (mg/L)	0.0240000	0.0090000
General-Alkalinity (mg/L)	170.0000000	121.5944444 ± 36.7225924
General-DO (mg/L)	10.0000000	10.4922222 ± 0.8833463
General-Hardness (mg/L)	549.0000000	146.8222222 ± 41.6699011
General-pH (pH)	8.5	8.0 ± 0.6
General-SolidsTSS (mg/L)	2.0000000	0.5604289 ± 1.4627232
General-SpCond (µS/cm)	964.0000000	214.2437500 ± 77.1891440
General-TempAir (Degrees Celsius)	1.0	10.5 ± 4.2
General-TempWater (Degrees Celsius)	4.7000000	6.6716667 ± 2.0277755
HCO3 (mg/L)	207.0000000	0.0000000 ± 0.0000000
Hg (ng/L)	10.0000000	0.0000000 ± 0.0000000
K (mg/L)	0.0009150	0.6471429 ± 0.7154652
Li (mg/L)	0.0062000	0.0011817 ± 0.0004768
Mg (mg/L)	0.0365000	9.8814286 ± 6.1601202
Mn (mg/L)	0.0023000	0.0011426 ± 0.0016097
Mo (mg/L)	0.0014000	0.0024883 ± 0.0065339
Na (mg/L)	0.0030200	2.6357143 ± 3.7712414
Ni (mg/L)	0.0005000	0.0000808 ± 0.0000811
Nitrogen-NH3 (mg/L)	0.0590000	0.0019286 ± 0.0059286
Nitrogen-NO2 (mg/L)	0.0025000	0.0023889 ± 0.0063351
Nitrogen-NO2+NO3 (mg/L)	0.1550000	0.0130000 ± 0.0088111
Nitrogen-NO3 (mg/L)	0.1550000	0.0245003 ± 0.0229452
Nitrogen-TN (mg/L)	0.2610000	0.0688889 ± 0.0759171
Pb (mg/L)	0.0001000	0.0000224 ± 0.0000176
Phosphorus-OrthoP (mg/L)	0.0025000	0.0035000 ± 0.0018292
Phosphorus-TDP (mg/L)	0.0025000	0.0016667 ± 0.0020151
S (mg/L)	0.1320000	5.0000000
Sb (mg/L)	0.0002500	0.0000361 ± 0.0000135
Se (mg/L)	0.0001400	0.0004382 ± 0.0004486
Si (mg/L)	3.3500000	3.0657143 ± 1.4070046
Sn (mg/L)	0.0025000	0.0000167 ± 0.0000078
SO4 (mg/L)	336.0000000	14.9647059 ± 10.8432549
Sr (mg/L)	2.0700000	0.1159167 ± 0.0982749
Ti (mg/L)	0.0025000	0.0009000
Tl (mg/L)	0.0000250	0.0000038 ± 0.0000064
U (mg/L)	0.0012800	0.0005298 ± 0.0003220
V (mg/L)	0.0025000	0.0001642 ± 0.0001203
Zn (mg/L)	0.0025000	0.0004083 ± 0.0008361
Zr (mg/L)	0.0002500	0.0000000 ± 0.0000000

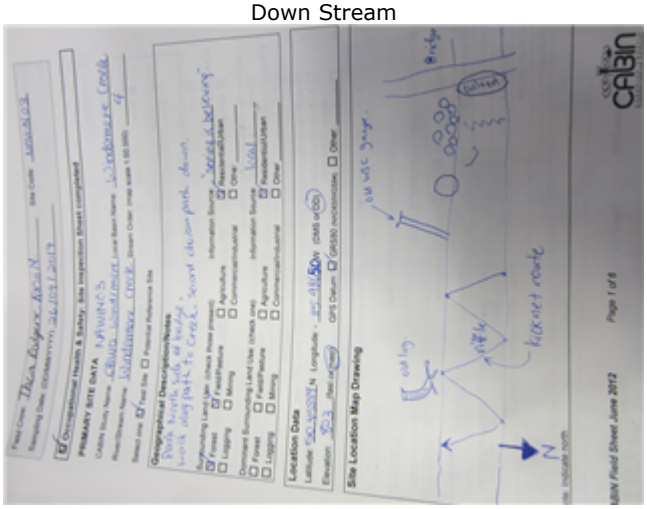
Site Description

Study Name	CBWQ-Windermere
Site	NAWIN03
Sampling Date	Sep 26 2017
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Southern Rocky Mountain Trench EcoRegion
Coordinates (decimal degrees)	50.45889 N, 115.98650 W
Altitude	2634
Local Basin Name	Windermere Creek
	Windermere Creek
Stream Order	4

Figure 1. Location Map

Across Reach
Aerial (No image found)

Down Stream



Field Sheet

Miscellaneous (No image found)

Substrate

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Columbia-Okanagan Preliminary March 2010
Analysis Date	January 30, 2018
Taxonomic Level	Family
Predictive Model Variables	Depth-Avg Latitude Longitude Reg-Ice Reg-SlopeLT30%

Reference Groups	**1**	**2**	**3**	**4**	**5**
Number of Reference Sites	9	43	17	12	33
Group Error Rate	22.2%	24.5%	22.2%	25.0%	32.4%
Overall Model Error Rate	26.4%				
Probability of Group Membership	0.5%	0.1%	35.3%	31.9%	32.2%
CABIN Assessment of NAWIN03 on Sep 26, 2017	Highly Divergent				

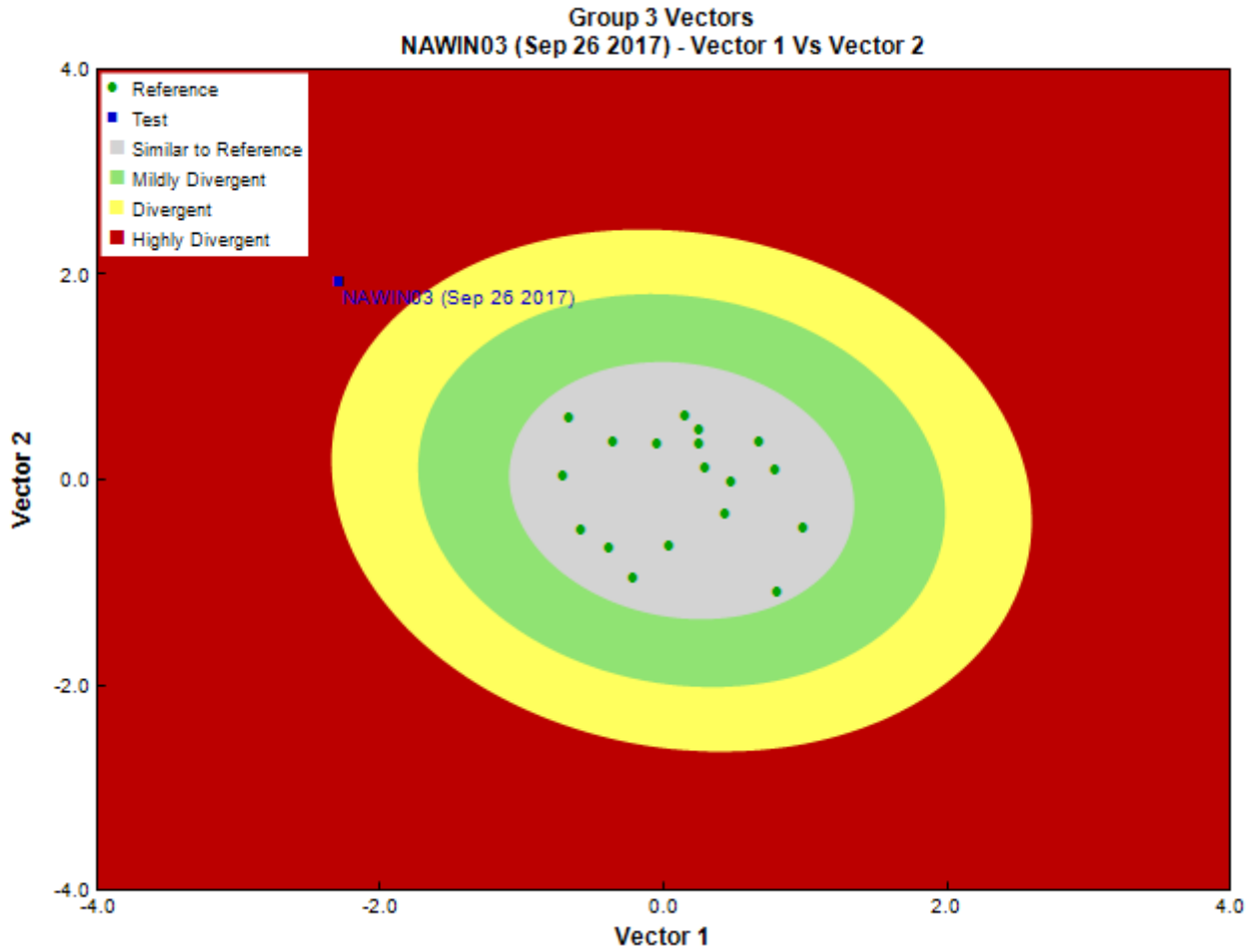


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	December 02, 2017
	Marchant Box
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	2	2.0
		Tubificida	Lumbricidae	1	1.0
Arthropoda	Insecta	Coleoptera	Curculionidae	1	1.0
		Diptera	Chironomidae	15	15.0
			Empididae	1	1.0
			Simuliidae	2	2.0
		Ephemeroptera	Baetidae	40	40.0
			Ephemerellidae	1	1.0
			Heptageniidae	12	12.0
		Plecoptera		1	1.0
			Capniidae	6	6.0
			Chloroperlidae	6	6.0
			Nemouridae	24	24.0
			Perlidae	16	16.0
			Perlodidae	4	4.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera	Brachycentridae	1	1.0
			Glossosomatidae	3	3.0
			Hydropsychidae	1	1.0
			Limnephilidae	1	1.0
			Rhyacophilidae	5	5.0
			Total	143	143.0

Metrics

Name	NAWIN03	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.93	0.4 ± 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	3.1	3.2 ± 0.7
Intolerant taxa	--	
Long-lived taxa	2.0	1.9 ± 1.3
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	2.8	1.8 ± 1.6
% Gatherers	35.0	52.4 ± 14.6
% Predatores	35.0	18.3 ± 13.3
% Scrapers	44.8	61.8 ± 17.2
% Shredder	23.1	30.3 ± 18.6
No. Clinger Taxa	20.0	19.8 ± 3.9
Number Of Individuals		
% Chironomidae	10.6	8.2 ± 13.6
% Coleoptera	0.7	0.8 ± 1.9
% Diptera + Non-insects	14.8	14.3 ± 14.2
% Ephemeroptera	37.3	43.3 ± 15.7
% Ephemeroptera that are Baetidae	75.5	33.9 ± 27.7
% EPT Individuals	84.5	84.9 ± 14.3
% Odonata	0.0	0.0 ± 0.0
% of 2 dominant taxa	45.1	58.9 ± 10.0
% of 5 dominant taxa	75.4	83.8 ± 7.3
% of dominant taxa	28.2	39.5 ± 10.9
% Plecoptera	39.4	34.7 ± 17.8
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	9.1	27.8 ± 25.2
% Tricoptera	7.7	6.9 ± 8.6
No. EPT individuals/Chironomids+EPT Individuals	0.9	0.9 ± 0.1
Total Abundance	143.0	5780.5 ± 4895.3
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 ± 0.0
Coleoptera taxa	1.0	0.4 ± 0.6
Diptera taxa	3.0	3.4 ± 1.0
Ephemeroptera taxa	3.0	3.4 ± 0.5
EPT Individuals (Sum)	120.0	4527.1 ± 3161.8
EPT taxa (no)	13.0	11.5 ± 1.2
Odonata taxa	0.0	0.0 ± 0.0
Pielou's Evenness	0.8	0.7 ± 0.1
Plecoptera taxa	5.0	5.3 ± 0.9
Shannon-Wiener Diversity	2.3	1.9 ± 0.3
Simpson's Diversity	0.9	0.8 ± 0.1
Simpson's Evenness	0.4	0.3 ± 0.1
Total No. of Taxa	19.0	17.7 ± 2.6
Trichoptera taxa	5.0	2.8 ± 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Chironomidae	100%	100%	100%	100%	95%	0.98

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Chloroperlidae	78%	88%	94%	100%	100%	0.98
Ephemerellidae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.85
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.96

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	11.00
RIVPACS : O:E (p > 0.5)	0.92
RIVPACS : Expected taxa P>0.70	9.62
RIVPACS : Observed taxa P>0.70	9.00
RIVPACS : O:E (p > 0.7)	0.94

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Channel		
Depth-Avg (cm)	26.7	22.5 ± 10.5
Depth-BankfullMinusWetted (cm)	40.00	67.33 ± 71.65
Depth-Max (cm)	30.0	32.9 ± 17.9
Macrophyte (PercentRange)	0	0 ± 0
Reach-%CanopyCoverage (PercentRange)	3.00	0.94 ± 0.80
Reach-DomStreamsideVeg (Category(1-4))	2	3 ± 1
Reach-Pools (Binary)	1	0 ± 1
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	15.4483000	0.0235102 ± 0.0284557
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.80	0.50 ± 0.25
Velocity-Max (m/s)	1.08	0.75 ± 0.28
Width-Bankfull (m)	3.5	15.6 ± 12.8
Width-Wetted (m)	3.3	10.2 ± 7.0
XSEC-VelMethod (Category(1-3))	1	2 ± 1
Landcover		
Reg-Ice (%)	0.00000	0.46949 ± 1.15785
Substrate Data		
%Bedrock (%)	0	0 ± 0
%Boulder (%)	0	6 ± 7
%Cobble (%)	39	61 ± 27
%Gravel (%)	5	1 ± 2
%Pebble (%)	56	31 ± 28
%Sand (%)	0	0 ± 0
%Silt+Clay (%)	0	0 ± 1
D50 (cm)	5.50	79.45 ± 47.98
Dg (cm)	5.2	73.9 ± 48.0
Dominant-1st (Category(0-9))	5	6 ± 1
Dominant-2nd (Category(0-9))	6	6 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	2	2 ± 1
SurroundingMaterial (Category(0-9))	3	3 ± 1
Topography		
Reg-SlopeLT30% (%)	15.41076	27.92073 ± 14.83033
Water Chemistry		

Habitat Description

Variable	NAWIN03	Predicted Group Reference Mean ±SD
Ag (mg/L)	0.0000100	0.0000004 ± 0.0000014
Al (mg/L)	0.0080000	0.0059500 ± 0.0039700
As (mg/L)	0.0019900	0.0002175 ± 0.0001795
B (mg/L)	0.0250000	0.0500000
Ba (mg/L)	0.0322000	0.0639025 ± 0.0450861
Be (mg/L)	0.0000500	0.0000025 ± 0.0000062
Bi (mg/L)	0.0005000	0.0000004 ± 0.0000014
Ca (mg/L)	0.1410000	38.6142857 ± 14.8464843
Cd (mg/L)	0.0000050	0.0000059 ± 0.0000067
Co (mg/L)	0.0001000	0.0000043 ± 0.0000057
CO3 (mg/L)	0.5000000	0.0000000 ± 0.0000000
Cr (mg/L)	0.0005000	0.0000833 ± 0.0001403
Cu (mg/L)	0.0002500	0.0001875 ± 0.0001434
Fe (mg/L)	0.0250000	0.0090000
General-Alkalinity (mg/L)	170.0000000	121.5944444 ± 36.7225924
General-DO (mg/L)	11.0000000	10.4922222 ± 0.8833463
General-Hardness (mg/L)	496.0000000	146.8222222 ± 41.6699011
General-pH (pH)	8.7	8.0 ± 0.6
General-SolidsTSS (mg/L)	2.0000000	0.5604289 ± 1.4627232
General-SpCond (µS/cm)	877.0000000	214.2437500 ± 77.1891440
General-TempAir (Degrees Celsius)	18.0	10.5 ± 4.2
General-TempWater (Degrees Celsius)	9.6000000	6.6716667 ± 2.0277755
General-Turbidity (NTU)	1.2800000	0.0000000 ± 0.0000000
HCO3 (mg/L)	207.0000000	0.0000000 ± 0.0000000
Hg (ng/L)	5.0000000	0.0000000 ± 0.0000000
K (mg/L)	0.0009190	0.6471429 ± 0.7154652
Li (mg/L)	0.0062000	0.0011817 ± 0.0004768
Mg (mg/L)	0.0350000	9.8814286 ± 6.1601202
Mn (mg/L)	0.0028000	0.0011426 ± 0.0016097
Mo (mg/L)	0.0014000	0.0024883 ± 0.0065339
Na (mg/L)	0.0028100	2.6357143 ± 3.7712414
Ni (mg/L)	0.0005000	0.0000808 ± 0.0000811
Nitrogen-NH3 (mg/L)	0.0100000	0.0019286 ± 0.0059286
Nitrogen-NO2 (mg/L)	0.0025000	0.0023889 ± 0.0063351
Nitrogen-NO2+NO3 (mg/L)	0.1150000	0.0130000 ± 0.0088111
Nitrogen-NO3 (mg/L)	0.1150000	0.0245003 ± 0.0229452
Nitrogen-TN (mg/L)	0.2140000	0.0688889 ± 0.0759171
Pb (mg/L)	0.0001000	0.0000224 ± 0.0000176
Phosphorus-OrthoP (mg/L)	0.0025000	0.0035000 ± 0.0018292
Phosphorus-TP (mg/L)	0.0025000	0.0032778 ± 0.0061816
S (mg/L)	0.1160000	5.0000000
Sb (mg/L)	0.0002500	0.0000361 ± 0.0000135
Se (mg/L)	0.0001300	0.0004382 ± 0.0004486
Si (mg/L)	3.3200000	3.0657143 ± 1.4070046
Sn (mg/L)	0.0025000	0.0000167 ± 0.0000078
SO4 (mg/L)	297.0000000	14.9647059 ± 10.8432549
Sr (mg/L)	1.6600000	0.1159167 ± 0.0982749
Ti (mg/L)	0.0025000	0.0009000
Tl (mg/L)	0.0000050	0.0000038 ± 0.0000064
U (mg/L)	0.0011700	0.0005298 ± 0.0003220
V (mg/L)	0.0025000	0.0001642 ± 0.0001203
Zn (mg/L)	0.0025000	0.0004083 ± 0.0008361
Zr (mg/L)	0.0000500	0.0000000 ± 0.0000000