

**F I N A L   R E P O R T**

## **LAX KW' ALAAMS FIRST NATION**

### **Assessment Studies of Water and Wastewater Systems and Associated Water Management Practices at Selected First Nation Communities**



Health Santé  
Canada Canada

729-2nd Avenue, Prince Rupert, B. C. V8J 1H4 Tel: (250) 627-3060 Fax: (250) 627-4258

HEALTH CANADA  
FIRST NATIONS & INUIT HEALTH BRANCH  
COASTAL DISTRICT

Date: Jan 7, 2002

FAX: 666-51

To/Destinataire: Nathalie Lapierre

From/Expéditeur: Lise Fish, C.P.H.I. (C) Environmental Health Officer  
e-mail: lise\_fish@hc-sc.gc.ca

Subject/Objet: Port Simpson Cox Ku alaan.

COMMENTS/COMMENTAIRES:  
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PAGES TO FOLLOW 22

Original Mailed  
Yes \_\_\_\_\_  
No \_\_\_\_\_



1988 Triumph Street, Vancouver, BC Canada V5L 1K5

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Ltd.

FAX: (604) 253-6700 TEL: (604) 253-4188



## CHEMICAL ANALYSIS REPORT

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**Date:** January 5, 2000

**ASL File No.** L3534

**Report On:** Port Simpson Water Analysis  
Lise Fish, EHO

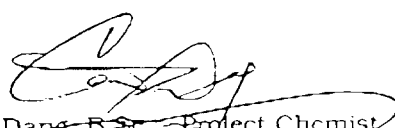
**Report To:** Health Canada - OHSa (Pacific)  
1230 Government Street  
Victoria, BC  
V8W 3G7

**Attention:** Mr. Peter Mazey, Sr. Environmental Health Officer

**Received:** December 21, 1999

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**ASL ANALYTICAL SERVICE LABORATORIES LTD.**  
per:

  
Can Dang, B.Sc. Project Chemist  
Joanne Patrick, B.Sc. Project Chemist

cc: Lise Fish, EHO  
Health Canada - Prince Rupert.

005020



**REMARKS**

File No. L3534

The water as represented by the sample submitted met the Canadian Drinking Water Guidelines for all parameters analysed. See the attached guidelines or contact ASL if you require any additional information.



**RESULTS OF ANALYSIS - Water**

File No. L3534

Sample ID	Port Simpson
Sample Date	99 12 17
Sample Time	11:30

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**Physical Tests**

Colour	(CU)	<5
Conductivity	(umhos/cm)	84
Total Dissolved Solids		60
Hardness	CaCO3	33.5
pH		7.60
Turbidity	(NTU)	0.8

**Dissolved Anions**

Alkalinity-Total		CaCO3	18
Chloride	Cl		3.0
Fluoride	F		<0.02
Sulphate	SO4		14

**Nutrients**

Nitrate Nitrogen		N	<0.1
Nitrite Nitrogen		N	<0.1

**Total Metals**

Aluminum	T-Al	0.039
Arsenic	T-As	0.0001
Barium	T-Ba	0.008
Boron	T-B	<0.05
Cadmium	T-Cd	<0.0002
Calcium	T-Ca	12.8
Chromium	T-Cr	<0.001
Copper	T-Cu	0.038
Iron	T-Fe	0.03
Lead	T-Pb	<0.001
Magnesium	T-Mg	0.38
Manganese	T-Mn	<0.001
Mercury	T-Hg	<0.00005
Potassium	T-K	0.35
Selenium	T-Se	<0.001
Sodium	T-Na	1.73
Uranium	T-U	0.00005
Zinc	T-Zn	<0.005

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Remarks regarding the analyses appear at the beginning of this report.  
 Results are expressed as milligrams per litre except for pH, Colour (CU),  
 Conductivity (umhos/cm), and Turbidity (NTU).  
 < = Less than the detection limit indicated.



**Appendix 1 - REGULATORY CRITERIA**

File No. L3534

**Health Canada**

Guidelines for Canadian Drinking Water Quality, Sixth Ed., 1996.  
 All limits are Maximum Acceptable Concentration (MAC) unless otherwise indicated.  
 Limits expressed as milligrams per litre except pH, Turbidity, Colour, and Coliform Bacteria.

		Lower Limit	Upper Limit	Notes
<b>Physical Tests</b>				
Colour	(CU)	-	15 CU	1
Total Dissolved Solids		-	500 mg/L	1
Hardness	CaCO3	-	-	2
pH		6.5	8.5	1
Turbidity	(NTU)	-	5 NTU	3, 4
<b>Dissolved Anions</b>				
Chloride	Cl	-	250 mg/L	1
Fluoride	F	-	1.5 mg/L	
Sulphate	SO4	-	500 mg/L	1, 5
<b>Nutrients</b>				
Nitrate Nitrogen	N	-	10.0 mg/L	
Nitrite Nitrogen	N	-	1.0 mg/L	
<b>Total Metals</b>				
Arsenic	T-As	-	0.025 mg/L	6
Barium	T-Ba	-	1.0 mg/L	
Boron	T-B	-	5.0 mg/L	6
Cadmium	T-Cd	-	0.005 mg/L	
Chromium	T-Cr	-	0.05 mg/L	
Copper	T-Cu	-	1.0 mg/L	1, 3
Iron	T-Fe	-	0.3 mg/L	1
Lead	T-Pb	-	0.01 mg/L	3, 7
Manganese	T-Mn	-	0.05 mg/L	1
Mercury	T-Hg	-	0.001 mg/L	
Selenium	T-Se	-	0.01 mg/L	
Sodium	T-Na	-	200 mg/L	1
Uranium	T-U	-	0.10 mg/L	
Zinc	T-Zn	-	5.0 mg/L	1, 3

- 1 Aesthetic Objective (AO) (taste, odour, appearance, etc.)
- 2 Maximum not established, levels > 200 mg/L are considered poor but may be tolerated (AO).
- 3 At point of consumption (AO).
- 4 1 NTU maximum allowed for water entering distribution systems.
- 5 There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L.
- 6 Interim Maximum Acceptable Concentration (IMAC)
- 7 First drawn water may be high, flush system before sampling(MAC)



## Appendix 2 - METHODOLOGY

File No. L3534

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows:

### Conventional Parameters in Water

These analyses are carried out in accordance with procedures described in "Methods for Chemical Analysis of Water and Wastes" (USEPA), "Manual for the Chemical Analysis of Water, Wastewaters, Sediments and Biological Tissues" (BCMOE), and/or "Standard Methods for the Examination of Water and Wastewater" (APHA). Further details are available on request.

### Metals in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by atomic absorption/emission spectrophotometry (EPA Method 7000 series), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

Recommended Holding Time:

Sample:	6 months
Reference:	EPA
For more detail see:	ASL "Collection & Sampling Guide"

### Mercury in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic absorption spectrophotometry (EPA Method 7470A/7471A).

Recommended Holding Time:



**Appendix 2 - METHODOLOGY (cont'd)**

File No. L3534

Sample: 28 days  
Reference: EPA  
For more detail see: ASL "Collection & Sampling Guide"

**End of Report**

-----REPORT AUDIT-----

D3534-1

Port Simpson

	Results		Cations	eq	Anions		TDS	cond	Conduct
				wt			cal't'd	factor	cal't'd
Sodium	1.73	mg/L	0.08	23	XXXXX		1.73	0.469	3.69
Potassium	0.35	mg/L	0.01	39	XXXXX		0.35	0.543	0.65
Calcium	12.8	mg/L	0.64	20	XXXXX		12.8	0.385	33.2
Magnesium	0.38	mg/L	0.03	12	XXXXX		0.38	0.262	1.46
Hardness	33.5	mg/L (CaCO3)	XXXXX	XXXXX	XXXXX		XXXXX	XXXXXX	XXXXX
Alkalinity	18	mg/L (CaCO3)	XXXXX	50	0.36	0.6	10.8	0.689	15.7
Sulfate	14	mg/L	XXXXX	48	0.29		13.7	0.649	21.1
Chloride	3.0	mg/L	XXXXX	35.5	0.08		3.00	0.467	6.42
Silica	XXXXX	mg/L	XXXXX	XXXXX	XXXXX		XXXXX	XXXXXX	XXXXX
Fluoride	0.00	mg/L	XXXXX	19	0.00		0.00	XXXXXX	XXXXX
Nitrate+Nitrite:N	0.00	mg/L	XXXXX	14	0.00	4.42	0.00	0.870	0.00
Ammonia:N	XXXXX	mg/L	XXXXX	14	XXXXX	1.29	XXXXX	0.245	XXXXX
Iron	0.03	mg/L	0.00	27.9	XXXXX		0.03	0.517	0.06
Manganese	0.00	mg/L	0.00	27.5	XXXXX		0.00	0.514	0.00
Copper	0.038	mg/L	0.00	31.8	XXXXX		0.04	0.578	0.07
Zinc	0.00	mg/L	0.00	32.7	XXXXX		0.00	0.619	0.00
Aluminum	0.039	mg/L	0.00	9	XXXXX		0.04	0.146	0.26
Barium	0.008	mg/L	0.00	68.7	XXXXX		0.01	XXXXXX	XXXXX
pH	7.60	units	0.00	1	XXXXX		0.00	0.003	0.01
Conductivity	84	µmho/cm							
TDS	60	mg/L							
TOC	XXXXX	mg/L							
							TOC		
							XXXXX		

	Cation	Anion	TDS	Conduct.
Σ	0.76	0.73	42.9	82.6

VALIDATION SUMMARY		Ion Balance % Diff	
		2.09%	
	TDS	Conductivity	
det'd	60.5	Cond/TDS % Diff	34.4
cal't'd	42.9	0.52	82.6 cal'd
% Diff	34.13	2.15%	% Diff

HEALTH ASSESSMENT: Pass

Assessment based on the Guidelines for Canadian Drinking Water Quality for all parameters analysed.

005026

# Lax Kw'alaams Band

200 Shashaak Street  
Port Simpson, B.C. V0V 1H0  
Phone (250) 625-3293 Fax (250) 625-3246

Fax \* Fax \* Fax \* Fax \* Fax \* Fax \* Fax \* Fax \* Fax \* Fax \* Fax \*

## Fax Transmission Cover Page

To:	LISE FISH
Fax #:	627 - 4256
From:	R DENNIS
Date:	Jan 7/02
Message:	

We Are Transmitting 7 Pages, Including This cover Page.

The message contained in this fax is CONFIDENTIAL ( ) Please forward only to whom this fax is Addressed. Thank You.

WATER SAMPLING LOG

s.19(1)

s.19(1)

Date	Time	Name and ID#	Total coliforms		Faecal
			Neg.	Pos.	
Dec 7/01	11:18	[REDACTED]	✓		
Dec 7/01	11:18	Band office	✓		
Dec 7/01	11:18	Health Clinic	✓		
Dec 7/01	11:18	WTP Post filter	✓		
Dec 7/01	11:18	WTP Raw		✓	
Dec 14/01	11:35	RV units	✓		
Dec 14/01	11:35	Band office	✓		
Dec 14/01	11:35	Health Clinic	✓		
Dec 14/01	11:35	Senior center	✓		
Dec 14/01	11:35	WTP Post filter	✓		
Dec 20/01	10:25	[REDACTED]	✓		
Dec 20/01	10:25	[REDACTED]	✓		
Dec 20/01	10:25	Health Clinic	✓		
Dec 20/01	10:25	Band office	✓		
Dec 20/01	10:25	WTP Raw		✓	
Dec 27/01	11:41	[REDACTED]	✓		
Dec 27/01	11:41	Band office	✓		
Dec 27/01	11:41	Health Clinic	✓		
Dec 27/01	11:41	[REDACTED]	✓		
Dec 27/01	11:41	WTP Post filter	✓		
Jan 4/02	11:15	[REDACTED]	✓		
Jan 4/02	11:15	Band office	✓		
Jan 4/02	11:15	Health Clinic	✓		
Jan 4/02	11:15	Water lift station	✓		
Jan 4/02	11:15	WTP Post filter	✓		

WATER SAMPLING LOG

	Date	Time	Name and ID#	Total coliforms		Faecal
				Neg.	Pos.	
s.19(1)	Nov. 16/01	11:18	[REDACTED]	✓		
	Nov. 16/01	11:18	Band Office	✓		
	Nov. 16/01	11:18	MAINT SHOP	✓		
	Nov. 16/01	11:18	Health Clinic	✓		
	Nov. 16/01	11:18	[REDACTED]	✓		
	Nov. 16/01	11:18	[REDACTED]	✓		
s.19(1)	Nov. 16/01	11:18	[REDACTED]	✓		
	Nov. 16/01	11:18	[REDACTED]	✓		
	Nov. 23/01	11:47	[REDACTED]	✓		
	Nov. 23/01	11:47	MAINT SHOP	✓		
	Nov. 23/01	11:47	Health Clinic	✓		
	Nov. 23/01	11:47	[REDACTED]	✓		
	Nov. 23/01	11:47	[REDACTED]	✓		
	Nov. 23/01	11:47	[REDACTED]	✓		
	Nov. 23/01	11:47	Band Office	✓		
s.19(1)	Nov. 23/01	11:47	W.P. Post.	✓		
	Nov. 30/01	11:24	[REDACTED]	✓		
	Nov. 30/01	11:24	MAINT Shop	✓		
	Nov. 30/01	11:24	Health Clinic	✓		
	Nov. 30/01	11:24	[REDACTED]	✓		
	Nov. 30/01	11:24	[REDACTED]	✓		
	Nov. 30/01	11:24	[REDACTED]	✓		
	Nov. 30/01	11:24	Band Office	✓		
	Nov. 30/01	11:24	W.P. RAW		✓	

WATER SAMPLING LOG

	Date	Time	Name and ID#	Total coliforms		Faecal
				Neg.	Pos.	
	Oct. 19/01	11:42	A.T.T.	✓		
	Oct. 26/01	11:25	Fish Plant.	✓		
	Oct. 26/01	11:25	MAINT SHOP	✓		
	Oct. 26/01	11:25	Band office	✓		
s.19(1)	Oct. 26/01	11:25	[REDACTED]	✓		
	Oct. 26/01	11:25	Health clinic	✓		
	Oct. 26/01	11:25	[REDACTED]	✓		
	Oct. 26/01	11:25	[REDACTED]	✓		
	Oct. 26/01	11:25	W.T.P. clear well	✓		
	Nov. 2/01	11:51	[REDACTED]	✓		
s.19(1)	Nov. 2/01	11:51	Band OFFICE	✓		
	Nov. 2/01	11:51	[REDACTED]	✓		
	Nov. 2/01	11:51	[REDACTED]	✓		
	Nov. 2/01	11:51	[REDACTED]	✓		
	Nov. 2/01	11:51	File Hall	✓		
	Nov. 2/01	11:51	Health Clinic	✓		
	Nov. 2/01	11:51	W.T.P. Post treatment	✓		
	Nov. 9/01	11:28	[REDACTED]	✓		
	Nov. 9/01	11:28	Band OFFICE	✓		
	Nov. 9/01	11:28	MAINT SHOP	✓		
	Nov. 9/01	11:28	Health Clinic	✓		
s.19(1)	Nov. 9/01	11:28	[REDACTED]	✓		
	Nov. 9/01	11:28	[REDACTED]	✓		
	Nov. 9/01	11:28	W.T.P. Raw w <sup>d</sup>		✓	
	Nov. 9/01	11:28	W.T.P. clear well	✓		

WATER SAMPLING LOG

	Date	Time	Name and ID#	Total coliforms		Faecal
				Neg.	Pos	
	Sept 21, 2001	11:46	WTP - Clear well	✓		
	Sept 21, 2001	11:46	WTP - raw water		✓	
	Sept 28, 2001	11:36	Fish Plant	✓		
	Sept 28/01	11:36	Maint' Shop	✓		
	Sept 28/01	11:36	Health Clinic	✓		
	Sept 28/01	11:36	Food Filler Hall	✓		
s.19(1)	Sept 28/01	11:36		✓		
	Sept 28/01	11:36		✓		
	Sept 28/01	11:36	WTP - Clear well	✓		
	Sept 28/01	11:36	WTP - Raw water		✓	
	Oct 12/01	11:45	Fish Plant	✓		
s.19(1)	Oct 12/01	11:45		✓		
	Oct 12/01	11:45		✓		
	Oct 12/01	11:45		✓		
	Oct 12/01	11:45	Health Clinic	✓		
	Oct 12/01	11:45	Maint' shop	✓		
	Oct 12/01	11:45	W.T.P. - clear well	✓		
	Oct 18/01	11:45	W.T.P. - raw		✓	
	Oct 19/01	11:42	W.T.P. - Post treat.	✓		
	Oct 19/01	11:42	W.T.P. - clear well	✓		
	Oct 19/01	11:42	Food Hall	✓		
	Oct 19/01	11:42	Band Office	✓		
s.19(1)	Oct 19/01	11:42		✓		
	Oct 19/01	11:42		✓		
	Oct 19/01	11:42	Fish Plant	✓		

WATER SAMPLING LOG

Date	Time	Name and ID#	Total coliforms		Faecal
			Neg.	Pos.	
Aug 30, 2001	11:40	FISH PLANT	✓		
Aug 30, 2001	11:40	Health Clinic	✓		
Aug 29, 2001	11:40	Band office	✓		
Sept 4/01	11:00 AM	Fish Plant	✓		
Sept 4/01	11:00 AM	Band office	✓		
Sept 4/01	11:00 AM	[REDACTED]	✓		
Sept 4/01	11:00 AM	Health Clinic	✓		
Sept 4/01	11:00 AM	Market	✓		
Sept 4/01	11:00 AM	Market Shop	✓		
Sept 4/01	11:00 AM	LAKE PLANT		✓	
Sept 4/01	11:00 AM	LAKE STORE	✓		
Sept. 14, 2001	11:25 AM	FISH PLANT	✓		
Sept. 14, 2001	11:25 AM	Health Clinic	✓		
Sept. 14, 2001	11:25 AM	[REDACTED]	✓		
Sept. 14, 2001	11:25 AM	[REDACTED]	✓		
Sept. 14, 2001	}				
Sept. 14, 2001		Need more Colifect			
Sept. 14, 2001		reagents packets			
Sept. 14, 2001	}				
Sept. 20, 2001					
Sept. 20, 2001	11:46	FISH PLANT	✓		
Sept. 21, 2001	11:46	[REDACTED]	✓		
Sept. 21, 2001	11:46	Health Clinic	✓		
Sept. 21, 2001	11:46	Market Shop	✓		
Sept. 21, 2001	11:46	Band office	✓		
Sept. 21, 2001	11:46	[REDACTED]	✓		

s.19(1)

s.19(1)

WATER SAMPLING LOG

s.19(1)

s.19(1)

Date	Time	Name and ID#	Total coliforms		Faecal
			Neg	Pos.	
Aug. 9, 2001	2:00 pm	FISH PLANT	✓		
Aug. 9, 2001	2:00 pm	BOARD OFFICE	✓		
Aug. 9, 2001	2:00 pm	[REDACTED]	✓		
Aug. 9, 2001	2:00 pm	Health Clinic	✓		
Aug. 9, 2001	2:00 pm	upper lift	✓		
Aug. 9, 2001	2:00 pm	Maint shop	✓		
Aug. 9, 2001	2:00 pm	WTP - raw		✓	
Aug. 9, 2001	2:00 pm	WTP - clear well	✓		
Aug. 9, 2001	2:00 pm	WTP - s.t post filter	✓		
Aug. 16, 2001	11:37 am	FISH PLANT	✓		
Aug. 16, 2001	11:37 am	BOARD OFFICE	✓		
Aug. 16, 2001	11:37 am	Accord Books SG	✓		
Aug. 16, 2001	11:37 am	RCMP OFFICE	✓		
Aug. 16, 2001	11:37 am	Health Clinic	✓		
Aug. 16, 2001	11:37 am	WTP clear well	✓		
Aug. 16, 2001	11:37 am	Maint Shop	✓		
Aug. 16, 2001	11:37 am	[REDACTED]	✓		
Aug. 24, 2001	11:30 am	MAINT SHOP	✓		
Aug. 24, 2001	11:30 am	FISH PLANT	✓		
Aug. 24, 2001	11:30 am	BOARD COUNCIL	✓		
Aug. 24, 2001	11:30 am	Health Clinic	✓		
Aug. 24, 2001	11:30 am	Alberta Green	✓		
Aug. 24, 2001	11:30 am	B.C. Tel	✓		
Aug. 24, 2001	11:30 am	WTP - clear well	✓		
Aug. 24, 2001	11:30 am	WTP - post filter	✓		

**Page(s) 005034 to\à 005041**

**Is(are) under consultation**