Assessment Study of Water and Wastewater Systems and Associated Water Management Practices at the Whispering Pines-Clinton First Nation Community

for the
Indian and Northern Affairs Canada
BC Region

July, 2002

Appendix C
Water Quality Test Results

Page(s) 007788 to\à 007814

Is(are) under consultation

Page(s) 007815 to/à 007815

is(are) not relevant

n'est(ne sont) pas pertinente(s)

Page(s) 007816 to\à 007819

Is(are) under consultation

Health Canada / Santé Canada

Environmental Health Services
First Nations and Inuit Health
Central Interior District
202 - 1315 Summit Drive
Kamloops, BC V2C 5R9

Your file / Votre référence

March 16, 1998

Our file / Notre référence 151-5-7-IR-91A

Whispering Pines/Clinton Band
RR1, Site 8, Comp 4
Kamloops, BC
V2C 1Z3

s.19(1)

ATTENTION: COLLEEN LeBOURDAIS, CHR

RE: CHEMICAL WATER QUALITY RESULTS

Attached please find a copy of the chemical water quality results from the samples taken on February 16, 1998. As you can see from the "Results" section of the report, the "Band Office CWS" failed to meet the Canadian Drinking Water Quality Guidelines for Total Dissolved Solids and Nitrate. TDS is usually limited for aesthetic purposes while Nitrate is limited to health considerations. The [redacted] and J[redacted] samples met the Canadian Drinking Water Guidelines for all parameters analysed with the exception of Iron and Manganese. These parameters are usually limited for aesthetic purposes rather than health considerations.

Nitrate

Nitrates and nitrites can come from the decomposition of plant and animal wastes as well as agricultural run-off. Given the distance from the well to the septic system for the Band Office, the most likely source of the elevated nitrate is the septic system. Wastes from the septic system decompose and leach nitrate into the soil. The nitrate then works down to the water table where it is taken up by the well and pump. The main health problem that is associated with consuming water contaminated with nitrate and/or nitrite is the development of the condition, methaemoglobinaemia, commonly referred to as blue baby syndrome. Pre-term babies and young infants under the age of six months are more likely to develop this condition than older children and adults. The symptoms of methaemoglobinaemia are; cyanosis (a bluish tinge to the skin), weakness, headaches, laboured breathing, loss of consciousness, and in extreme cases death.

The removal of nitrates from water is complex. First, the nitrates must be chlorinated, then removed by ion exchange. Typical jug-type or under-the-counter type treatment systems may not lower the nitrate level to below the Maximum Acceptable Concentration (MAC).

../2/

Page(s) 007821 to\à 007825

Is(are) under consultation

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Fax (604) 573-4557

CHEMICAL ANALYSIS REPORT

Date:	20-Dec-95
Et. File No.	1860
Report On:	Water Analysis
Report To:	KALA GROUNDWATER 208-220-4th Avenue KAMLOOPS, BC V2C 3N6
Attention:	Paul Blackett

Project Name: Whispering Pines

Received:	28-Nov-95
Sample Date:	27-Nov-95

ECO-TECH LABORATORIES LTD.
per:

Kathy Mathieu
Environmental Lab Manager

KM/vc

KALA GROUNDWATER
Project Name: Whipering Pines 20-Dec-95

RESULTS OF ANALYSIS - Water **Et. No. #** 1860
Samples Dated: November 27, 1995

PARAMETERS	***Whispering Pines IR#4, Sample #3***
pH (units)	8.34
Conductivity (umhos/cm)	557
Color (Co/Pt units)	<5
Turbidity (NTU)	.33
Total Dissolved Solids	360
Hardness (as $CaCO_3$)	254
Alkalinity (as $CaCO_3$)	213
Chloride	2.0
Fluoride	0.2
Nitrogen, NO_2 + NO_3 (as N)	0.085
Nitrogen, Nitrate (as N)	0.085
Nitrogen, Nitrite (as N)	<.003
Sulfate (as SO_4)	84
Cyanide (S.A.D.)	<.005
Total Coliform (CFU/100ml)	6
Fecal Coliform (CFU/100ml)	6

Results expressed as mg/l unless otherwise indicated

KALA GROUNDWATER
Project Name: Whipering Pines

20-Dec-95

RESULTS OF ANALYSIS - Water
Samples Dated: November 27, 1995

Et. No. # 1860

PARAMETERS	*Whispering Pines IR#4, Sample #3*
Aluminum	<.05
Antimony	<.04
Arsenic	<.001
Barium	<.08
Beryllium	<.001
Bismuth	<.05
Boron	<.01
Cadmium	<.0005
Calcium	72.3
Chromium	<.004
Cobalt	<.003
Copper	<.005
Iron	0.12
Lanthanum	<.001
Lead	<.001
Magnesium	17.8
Manganese	0.109
Mercury (ppb)	<.05
Molybdenum	<.005
Nickel	<.01
Phosphorus	<.08
Potassium	2.7
Silicon	8.46
Sodium	5.03
Silver	<.01
Strontium	0.69
Tin	<.06
Titanium	<.04
Uranium	<.01
Vanadium	<.03
Yttrium	<.005
Zinc	0.008

Results expressed as mg/l unless otherwise indicated

End of Report

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CHEMICAL ANALYSIS REPORT

Date: 20-Dec-95

Et. File No. 1873

Report On: Water Analysis

Report To: KALA GROUNDWATER
208-220-4th Avenue

KAMLOOPS, BC
V2C 3N6

Attention: Paul Blackett

Project Name: Whispering Pines

Received: 30-Nov-95
Sample Date: Nov. 28 & 29, 1995

ECO-TECH LABORATORIES LTD.
per:

K. Mathieu

Kathy Mathieu
Environmental Lab Manager

KM/vc

KALA GROUNDWATER
Project Name: Whispering Pines

20-Dec-95

RESULTS OF ANALYSIS - Water
Samples Dated: Nov. 28 & 29, 1995

Et. No. # 1873

	Whispering Pines	
PARAMETERS	***#4***	***#5***
pH (units)	7.53	7.88
Conductivity (umhos/cm)	200	526
Color (Co/Pt units)	25	20
Turbidity (NTU)	13	14
Total Dissolved Solids	141	364
Hardness (as $CaCO_3$)	82.9	256
Alkalinity (as $CaCO_3$)	79.7	248
Chloride	<.5	<.5
Fluoride	0.5	0.5
Nitrogen, NO_2 + NO_3 (as N)	0.114	0.037
Nitrogen, Nitrate (as N)	0.114	0.037
Nitrogen, Nitrite (as N)	<.003	<.003
Sulfate (as SO_4)	22	56
Cyanide (S.A.D.)	<.005	<.005
Total Coliform (CFU/100ml)	<1*	<1
Fecal Coliform (CFU/100ml)	<1	<1

Results expressed as mg/l unless otherwise indicated
** many non-coliform colonies present*

KALA GROUNDWATER
Project Name: Whispering Pines

20-Dec-95

RESULTS OF ANALYSIS - Water
Samples Dated: Nov. 28 & 29, 1995

Et. No. # 1873

PARAMETERS	*Whispering Pines*	
	#4	***#5***
Aluminum	<.05	0.06
Antimony	<.04	<.04
Arsenic	<.001	<.001
Barium	<.08	<.08
Beryllium	<.001	<.001
Bismuth	<.05	<.05
Boron	<.01	<.01
Cadmium	<.0005	<.0005
Calcium	23.3	71.3
Chromium	<.004	<.004
Cobalt	<.003	<.003
Copper	<.005	<.005
Iron	0.04	<.01
Lanthanum	<.001	<.001
Lead	<.001	<.001
Magnesium	6.0	17.6
Manganese	0.089	0.707
Mercury (ppb)	<.05	<.05
Molybdenum	<.005	0.010
Nickel	<.01	<.01
Phosphorus	<.08	<.08
Potassium	2.1	3.1
Silicon	10.4	11.5
Sodium	4.0	10.6
Silver	<.01	<.01
Strontium	0.22	0.52
Tin	<.06	<.06
Titanium	<.04	<.04
Uranium	<.01	<.01
Vanadium	<.03	<.03
Yttrium	<.005	<.005
Zinc	0.010	0.006

Results expressed as mg/l unless otherwise indicated

End of Report

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CHEMICAL ANALYSIS REPORT

Date: 17-Apr-96

Et. File No. E358

Report On: Water Analysis

Report To: KALA GROUNDWATER
207-220-4th Avenue
KAMLOOPS, BC
V2C 3N6

Attention: Paul Blackett

Project Name: *Whispering Pines*

Received: 22-Mar-96
Sample Date: None indicated

ECO-TECH LABORATORIES LTD.
per:

K. Mathieu
Kathy Mathieu
Environmental Lab Manager

KM/df
Fax @: 372-9398

KALA GROUNDWATER
Project Name: Whispering Pines

17-Apr-96
Et. No. E358

RESULTS OF ANALYSIS - Water

	Whispering Pines			
	Well TW 95-04			
PARAMETERS	*18-Mar*	*19-Mar*	*20-Mar*	*Well #3*
pH (units)	7.47	7.17	6.95	7.24
Conductivity (umhos/cm)	238	231	238	554
Color (Co/Pt units)	5	5	<5	<5
Turbidity (NTU)	16	21	8	35
Total Dissolved Solids	156	146	147	350
Hardness (as $CaCO_3$)	107	101	106	271
Total Iron	0.04	0.05	0.05	3.52
Total Manganese	0.094	0.089	0.088	0.124
Total Coliform (CFU/100ml)	-	-	<1	<1
Fecal Coliform (CFU/100ml)	-	-	<1	<1

Results expressed as mg/l unless otherwise indicated

KALA GROUNDWATER
Project Name: Whispering Pines

17-Apr-96
Et. No. E358

QUALITY CONTROL DATA

Methods used are based upon those found in "Standard Methods for the Examination of Water and Wastewater" 19th Edition, published by the American Public Health Association, or on US EPA methods from "Test Methods for Evaluating Solids Waste, Physical/Chemical Methods" (SW846) third Edition. Any other procedures are based on methods accepted by the B.C. Ministry of Environment.

1. QC SOLUTION RUNS:

Parameter	*Method*	*Expected (mg/L)*	*Observed (mg/L)*	*%Deviation*

2. DUPLICATE RUNS:

Parameter	*Method*	*Sample ID*	*Run 1 (mg/L)*	*Run 2 (mg/L)*	*Deviation*
TDS	Gravimetric	358-1	156	156	0
TDS	Gravimetric	390-1	350	359	9

3. Blank Runs:

All blanks for each parameter were found to be less than its detection limit.

NOTE:

The control criteria for reagent blank are that the observed value for each analyte to be determined is less than its detection limit. If this in not achieved during analysis, the process will be terminated and will not be continued until the problem is solved.

End of Report

Appendix D
Wastewater Quality Test Results

No wastewater information was seen