THURBER ENGINEERING LTD.

celebrating 60 YEARS

2016 GROUNDWATER MONITORING VILLAGE OF BAWLF WASTEWATER SEWAGE LAGOON

Report

to

Village of Bawlf

PROFESSIONAL GEOLOGIST ALBERTA
MILAN BUTORAC

Milan Butorac, P. Geo.
Hydrogeologist

PERMIT TO PRACTICE
THURBER ENGINEERING LTD.
Signature
Date March 21/2017
PERMIT NUMBER: P 5186
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

PROFESSIONAL ENGINEER ALBERTA
NEAL H. FERNUIK

Date: March 21, 2017
File: 16080

Neal Fernuik, M. Sc., P. Eng.
Review Principal

TABLE OF CONTENTS

1. INTRODUCTION

At the request of the Village of Bawlf, Thurber Engineering Ltd. conducted a 2016 groundwater monitoring program at their wastewater lagoon located within NE ¼ 25-45-18 W4M ("Site") approximately one kilometer southwest of the Village of Bawlf, Alberta.

Authorization to conduct the 2016 groundwater monitoring program was provided by Ms. Tracy M Stewart, Finance Officer of the Village of Bawlf.

It is a condition of this report that Thurber's performance of its professional services is subject to the attached Statement of Limitations and Conditions.

2. SCOPE OF WORK

The scope of work, as outlined in Alberta Environment and Parks August 11, 2016, authorization No. 00000400-02-00 was as follows:

- Monitor depth to water in five groundwater wells in fall of 2016,
- Monitor depth to water in spring and fall of 2017 in five groundwater wells,
- Obtain groundwater samples for chemical analyses in fall of 2017,
- Submit 2016 report summarizing water levels and groundwater chemistry, and
- Submit 2017 report summarizing historical water levels and groundwater chemical analyses for 2016 and 2017.

This report summarizes the water level measurements and water chemistry data collected in 2016.

3. SITE DESCRIPTION

A site location map of the wastewater lagoon is shown on Drawing 16080-1 in Appendix A. The wastewater lagoon comprises of two anaerobic cells (cells 1 and 2), primary cell (cell 5) and a secondary cell (cell 6) as shown on Drawing 16080-2 in Appendix A. A deep and shallow pond are located just to the north of the wastewater lagoon. The depths of the cells from top of the berm to the bottom were approximately 4 m for Cells 1 and 2, 2.3 m for Cell 5 and 3 m for Cell 6. The berms slide slopes were inclined at approximately 3H:1V. Along the south berm of

the wastewater lagoon there is an unnamed creek were the treated water is discharged once a year.

4. FIELD INVESTIGATION

The results of water level measurements taken on January 14, 2016 and November 23, 2016 from monitoring wells TH15-1 through TH15-5 are presented in Table 1 in Appendix B. Monitoring well completion details are shown in Appendix C.

Water samples were collected from the monitoring wells using dedicated bailers. Each well was bailed until dry and then were sampled approximately three days after each well was purged. The water samples were analyzed by Exova for the following chemical analyses;

- Routine Potability Parameters,
- Dissolved Metals Parameters, and
- Microbiological Analysis.

5. REGULATORY GUIDELINES

The groundwater analytical data were compared to the Alberta Environment and Parks (AEP) 2016 *Alberta Tier 1 Soil and Groundwater Remediation Guidelines* Commercial and the Health Canada (2014) *Canadian Drinking Water Quality (CDWQ)* guidelines

6. ASSESSMENT

Depth to groundwater ranged from 0.83 m below ground surface (bgs) to 6.44 m bgs in 2016 as summarized in Table 1 in Appendix B. A groundwater table contour map of the November 23 2016 groundwater levels measurements is shown on Drawing 16080-2. The direction of groundwater flow is predominantly North-Northwest.

Table 2 in Appendix B summarizes the results the groundwater chemical analyses performed by Exova on the January 2016 groundwater samples. Details of the chemical analyses as provided by Exova are in Appendix D.

The presence of total coliforms (Table 2) in the monitoring wells completed in the lagoon berms (TH15-1, TH15-2 and TH15-3) indicates that water from lagoon has not been released as a preferred leakage pathway but as infiltration. Absence of total coliforms in the deepest monitoring well TH15-5 which is located in the middle of the lagoon indicates very slow vertical

advance of water infiltration from the lagoon towards the bedrock aquifer. Total coliforms were not present in well TH15-4 and this well had a higher hydraulic conductivity[1] than wells TH15-1 and TH15-2. Total coliforms analysis shows that waters collected in the lagoon cells are more than a million CFU/100ml[1] while water collected from monitoring wells shows total coliforms in range from 0 CFU/100ml to 7000 CFU/100ml. The Health Canada guideline for total coliforms is 0 CFU/100ml.

The analyses also show that lagoon water has significantly less total dissolved (TDS) content. Most of other chemical parameters are distinctively different for water in lagoon and groundwater in the monitoring wells.

7. CONCLUSION

Completed measurements at the Site are initial measurements. The measurements and tests indicate that water from the lagoon is infiltrating at a very slow rate in a lateral and downward direction from the lagoon but is not leaking via a preferential pathway

Thurber recommends a continuation of monitoring water levels twice a year and water chemistry annually.

[1] Thurber Engineering Ltd., March 4, 2016. *Hydrogeological Assessment Village of Bawlf Sewage Lagoon. File 19-6835-1*

THURBER

STATEMENT OF LIMITATIONS AND CONDITIONS

1. STANDARD OF CARE

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT THURBER'S WRITTEN CONSENT AND SUCH USE SHALL BE ON SUCH TERMS AND CONDITIONS AS THURBER MAY EXPRESSLY APPROVE. Ownership in and copyright for the contents of the Report belong to Thurber. Any use which a third party makes of the Report, is the sole responsibility of such third party. Thurber accepts no responsibility whatsoever for damages suffered by any third party resulting from use of the Report without Thurber's express written permission.

5. INTERPRETATION OF THE REPORT

a) Nature and Exactness of Soil and Contaminant Description: Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other persons making use of such documents or records with our express written consent should be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other persons. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.

c) Design Services: The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber should be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.

d) Construction Services: During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions in order to confirm and document that the site conditions do not materially differ from those interpreted conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

6. RELEASE OF POLLUTANTS OR HAZARDOUS SUBSTANCES

Geotechnical engineering and environmental consulting projects often have the potential to encounter pollutants or hazardous substances and the potential to cause the escape, release or dispersal of those substances. Thurber shall have no liability to the Client under any circumstances, for the escape, release or dispersal of pollutants or hazardous substances, unless such pollutants or hazardous substances have been specifically and accurately identified to Thurber by the Client prior to the commencement of Thurber's professional services.

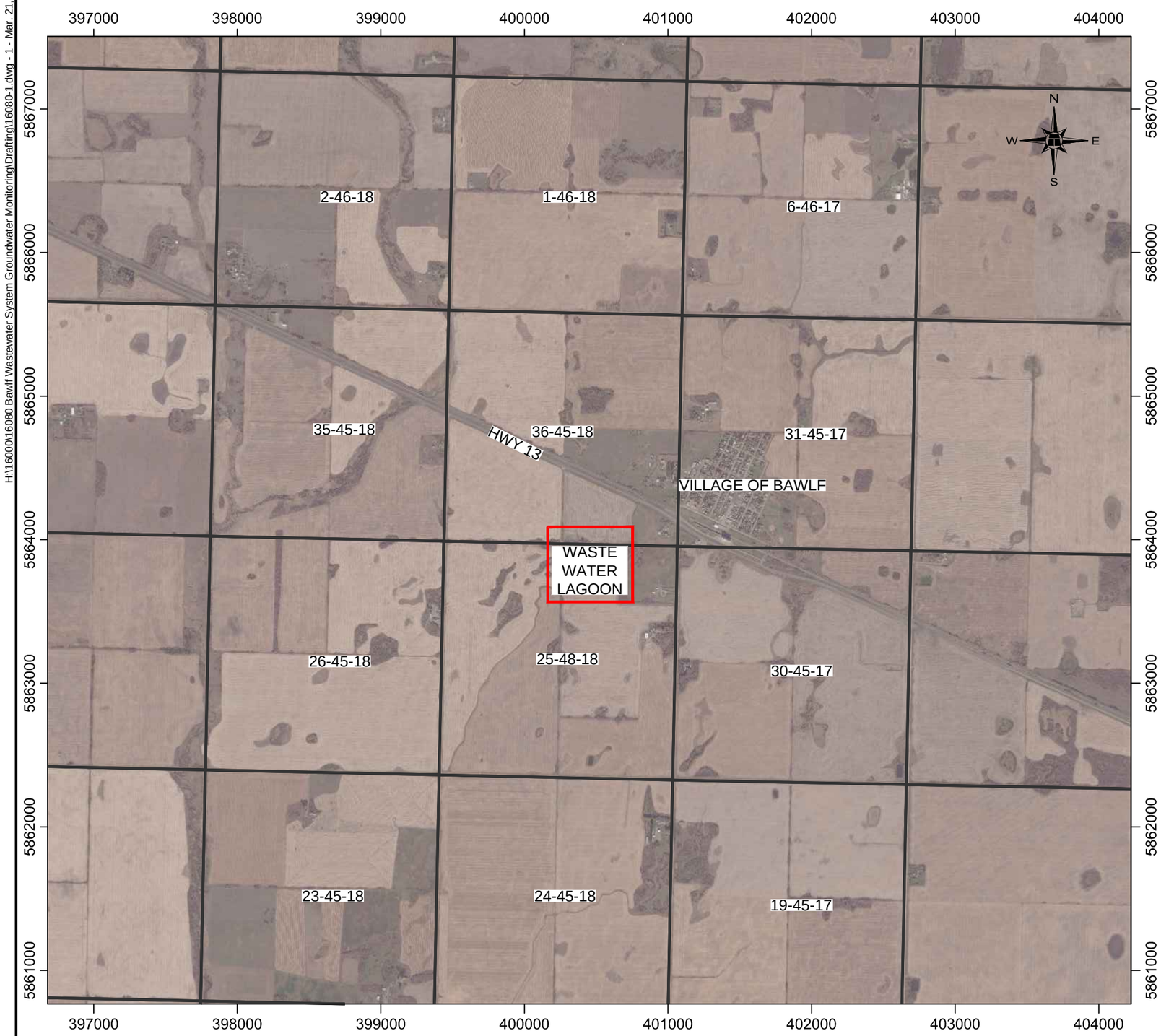
7. INDEPENDENT JUDGEMENTS OF CLIENT

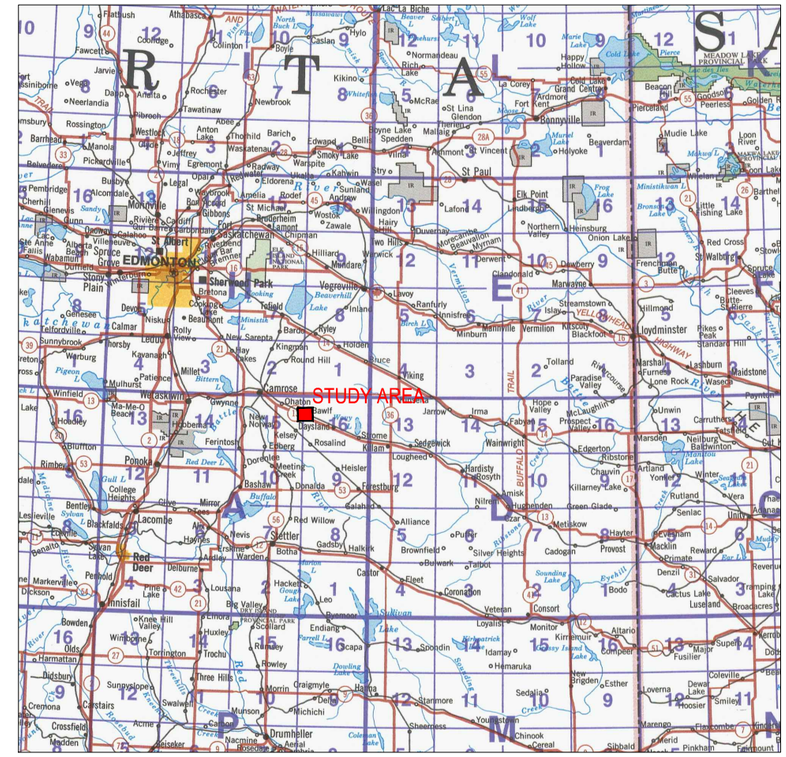
The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or others who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes but is not limited to decisions made to develop, purchase or sell land.

APPENDIX A

Drawings

H:\16000\16080 Bawlf Wastewater System Groundwater Monitoring\Drafting\16080-1.dwg - 1 - Mar. 21, 2017





0 250 500 750 1000 1500 2000 m

SCALE 1:30,000

GROUNDWATER MONITORING PROGRAM

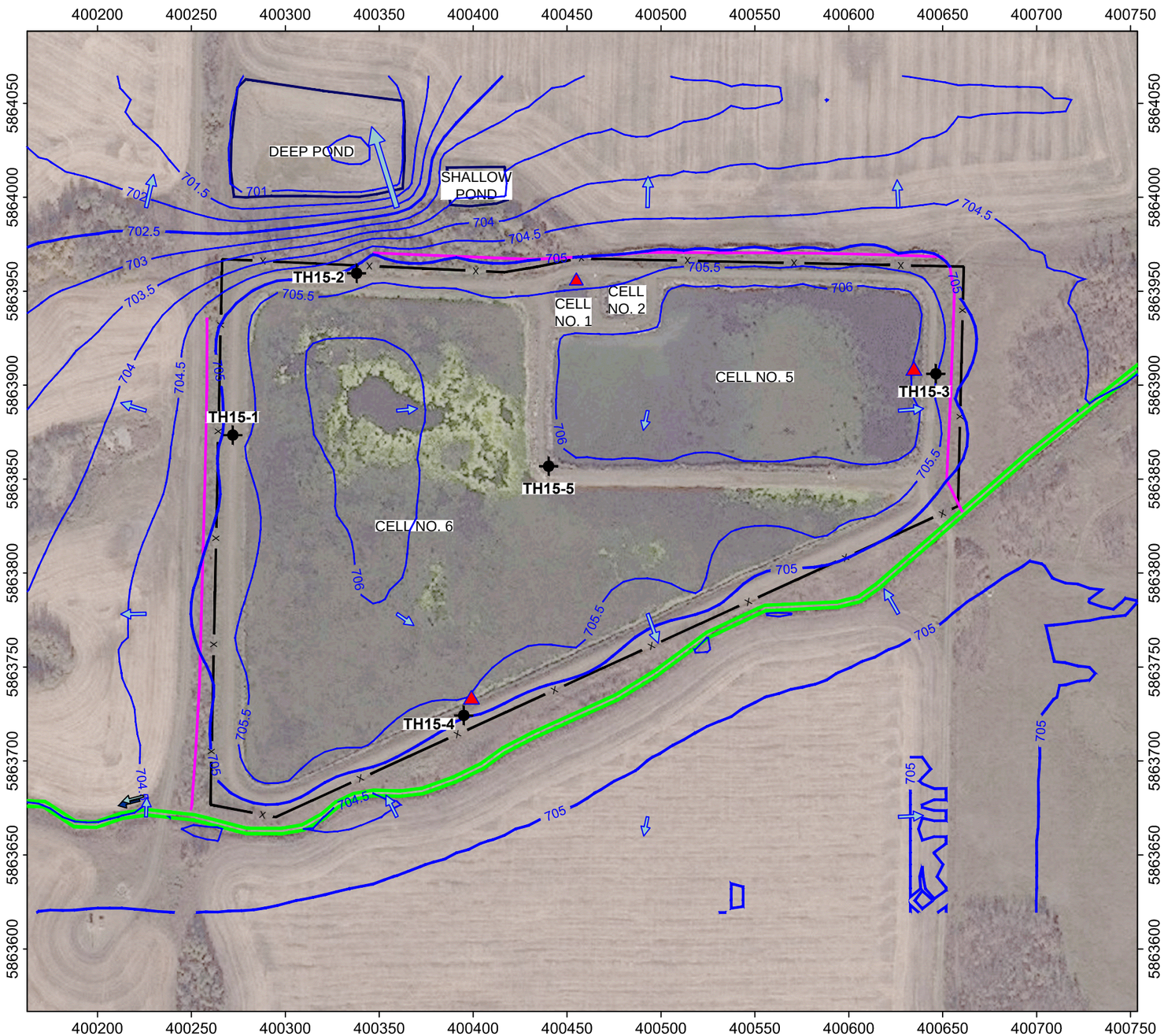
SITE LOCATION MAP

DWG No. 16080-1

DRAWN BY	ML
DESIGNED BY	MJB
APPROVED BY	NHF
SCALE	1:30 000
DATE	MARCH 2017
FILE No.	16080

THURBER ENGINEERING LTD.

H:\16000\16080 Bawlf Wastewater System Groundwater Monitoring\Drafting\16080-2.dwg - 2 - Mar. 21, 2017



N
W E
S

LEGEND

- CREEK
- TRENCH
- FENCE
- 2015 MONITORING WELLS
- SPOTS OF WATER SAMPLES COLLECTED FROM LAGOONS
- WATER TABLE CONTOUR (CONTOUR INTERVAL = 0.5m)
- WATER TABLE SLOPE DIRECTION

0 25 50 75 100 125 150m
SCALE 1:2500

VILLAGE OF BAWLF

GROUNDWATER MONITORING PROGRAM

LAGOON MAP

DWG No. 16080-2

DRAWN BY	ML
DESIGNED BY	MJB
APPROVED BY	NHF
SCALE	1:2500
DATE	MARCH 2017
FILE No.	16080

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APPENDIX B

Tables

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60 YEARS

TABLE 1 - GROUNDWATER MONITORING RESULTS: Water Levels

2016 GROUNDWATER MONITORING PROGRAM

VILLAGE OF BAWLF

		Well Construction		Monitoring Data			
Monitoring Location	Monitoring Date	Ground Surface Elevation	Casing Elevation	Depth to Water	Depth to Water	Calculated Groundwater Elevation	Comments
		(m asl)	(m asl)	(m btoc)	(m bgs)	(m asl)	
TH15-1	11-Jan-16	707.56	708.40	5.35	4.51	703.05	
TH15-1	23-Nov-16	707.56	708.40	3.29	2.45	705.11	
TH15-2	11-Jan-16	707.65	708.49	3.06	2.22	705.43	
TH15-2	23-Nov-16	707.65	708.49	3.34	2.50	705.15	
TH15-3	11-Jan-16	707.34	708.10	3.10	2.34	705.00	
TH15-3	23-Nov-16	707.34	708.10	2.56	1.80	705.54	
TH15-4	11-Jan-16	707.42	708.24	2.82	2.00	705.42	
TH15-4	23-Nov-16	707.42	708.24	3.21	2.39	705.03	
TH15-5	11-Jan-16	707.93	708.74	7.25	6.44	701.49	
TH15-5	23-Nov-16	707.93	708.74	1.64	0.83	707.10	

Notes:

---	Parameter not measured or not applicable.
m btoc	Depth measured in metres below top of casing (btoc).
m bgs	Depth measured in metres below ground surface (bgs).
m asl	Elevation in metres above mean sea level.

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60 YEARS

TABLE 2 - GROUNDWATER MONITORING RESULTS: SUMMARY
2016 GROUNDWATER MONITORING PROGRAM
VILLAGE OF BAWLF

Sample Information			Routine Potability Parameters																			Dissolved Metals Parameters																	Microbiological Analysis	
Sample Location		Sample Date	pH	Electrical Conductivity	Hydroxide	Bicarbonate	Carbonate	Chloride	Fluoride	Nitrate (as N)	Nitrite (as N)	Sulphate	Calcium	Iron	Magnesium	Manganese	Potassium	Sodium	Total Dissolved Solids	Total Alkalinity (as $CaCO_3$)	Total Hardness (as $CaCO_3$)	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Uranium	Zinc	Fecal Coliforms	Total Coliforms
			(dS/m)	(µS/cm)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	MPN/100ml	Membrane Filtration (CFU/100ml)
Alberta Tier 1 - Industrial Land Use[1]			**6.5-8.5**	**---**	**---**	**---**	**---**	**250**	**1.5**	**10**	**1.0**	**500**	**---**	**0.3**	**---**	**0.05**	**---**	**200**	**500**	**---**	**---**	**---**	**0.006**	**0.01**	**1**	**5**	**0.005**	**---**	**1**	**0.3**	**0.01**	**0.05**	**0.001**	**---**	**0.01**	**---**	**0.02**	**5**	**0[2]**	**0[2]**
Site Upper Unit	TH15-1	14-Jan-15	7.78	5,080	<5	387	<6	23	---	<0.05	<0.025	2920	446	<0.05	137	1.04	16	905	4,640	317	1,680	0.051	<0.001	0.0004	0.0004	0.19	0.19	<0.002	0.006	<0.05	<0.0005	1.04	0.000008	0.019	0.001	<0.00005	0.032	0.02	<1.8	**7000**
	TH15-2	14-Jan-15	7.39	3,630	<5	1010	<6	20	---	<0.05	<0.025	1620	499	<0.02	112	4.32	14	412	3,170	829	1,710	0.009	<0.0004	0.0004	0.0004	0.225	0.19	<0.001	0.002	<0.02	0.0004	4.32	<0.000005	0.0318	0.0005	<0.00002	0.0208	0.02	<1.8	**300**
	TH15-3	14-Jan-15	7.63	5,380	<5	1470	<6	122	---	<0.05	<0.025	2570	750	<0.05	225	1.95	13	654	5,050	1200	2,800	<0.01	<0.001	0.0004	0.0004	0.15	0.19	<0.002	<0.005	<0.05	<0.0005	1.95	<0.000005	0.036	<0.001	<0.00005	0.103	0.005	<1.8	**1300**
	TH15-4	14-Jan-15	7.75	3,230	<5	696	<6	12	---	<0.05	<0.025	1370	226	<0.02	74.2	1.7	17	543	2,580	571	869	<0.004	<0.0004	0.0004	0.0004	0.339	0.19	<0.001	<0.002	<0.02	<0.0002	1.7	<0.000005	0.0062	<0.0004	<0.00002	0.0033	0.007	<1.8	
	TH15-5	14-Jan-15	7.75	8,330	<5	649	<6	9	---	<0.05	<0.025	4790	440	2.28	136	0.26	18	1,940	7,660	532	1,660	<0.01	<0.001	0.0004	0.0004	0.524	0.19	<0.002	<0.005	2.28	<0.0005	0.26	<0.000005	0.003	<0.001	<0.00005	0.003	0.01	<1.8	
	TH15-5_Dupl	14-Jan-15	7.45	5,280	<5	1470	<6	121	---	<0.05	<0.025	2550	739	<0.05	222	1.92	13	648	5,010	1210	2,760	<0.01	<0.001	0.0004	0.0004	0.16	0.19	<0.002	<0.005	<0.05	<0.0005	1.92	<0.000005	0.037	<0.001	<0.00005	0.0974	0.006	<1.8	**900**

[1]Alberta Environment and Parks (AEP). Alberta Tier 1 Soil and Groundwater Remediation Guidelines for Industrial Land Use based on Fine-Grained Soils. 2016.

[2]Guideline; Health Canada GCDWQ. Guidelines for Canadian Drinking Water Quality. Health Canada. October 2014.

---	Parameter not analyzed or no guideline.
2920	Parameter concentration does not meet Industrial guidelines.
7000	Parameter concentration does not meet Health Canada guidelines.

APPENDIX C

Well Logs

CLIENT: VILLAGE OF BAWLF	PROJECT: Village of Bawlf Lagoon-Groundwater Assessment-Phase 1	BOREHOLE NO: **TH15-1**
DRILLING COMPANY: Mobile Augers & Research Ltd.	DATE DRILLED: December 1, 2015	PROJECT NO: 19-6835-1
DRILL/METHOD: Track / Solid Stem Augers	LOCATION: N5863873.46, E400272.04	ELEVATION: 707.56 (m)

SAMPLE TYPE

BACKFILL TYPE ■ BENTONITE ▒ SAND ▥ SLOUGH

DEPTH (m)	SAMPLE TYPE	REMARKS	SOIL DESCRIPTION	ELEVATION (m)
0			TOPSOIL, brown, silty clay, roots to 0.1m	
			CLAY (FILL) dark brown, silty, trace topsoil and silt lenses	707
1				706
2				705
3				704
			CLAY mottled grey - brown, silty, trace silt lenses and gravel	703
4				
5			-grey	702
		-Seepage		
6				701
7			END OF TEST HOLE AT 6.8m UPON COMPLETION: (Below ground surface) -Slough at 6.5m -No water Standpipe piezometer installed WATER LEVEL BELOW GROUND SURFACE: -December 1, 2015 = Dry -January 11, 2016 = 4.51m -November 23, 2016 = 2.45m	700
8				699
9				698
10				

THURBER ENGINEERING LTD.	FIELD LOGGED BY: JLM	COMPLETION DEPTH: 6.8 m
	PREPARED BY: MJB	COMPLETION DATE: 12/1/15
	REVIEWED BY:	Page 1 of 1

CLIENT: VILLAGE OF BAWLF	PROJECT: Village of Bawlf Lagoon-Groundwater Assessment-Phase 1	BOREHOLE NO: **TH15-2**
DRILLING COMPANY: Mobile Augers & Research Ltd.	DATE DRILLED: December 1, 2015	PROJECT NO: 19-6835-1
DRILL/METHOD: Track / Solid Stem Augers	LOCATION: N5863959.58, E400337.97	ELEVATION: 707.65 (m)
SAMPLE TYPE		
BACKFILL TYPE ■ BENTONITE ▒ SAND		

DEPTH (m)	SAMPLE TYPE	REMARKS	SOIL DESCRIPTION	ELEVATION (m)
0			TOPSOIL, brown, silty clay, roots to 0.2m	
			CLAY (FILL) brown, silty, trace silt lenses and topsoil, occasional gravel	707
1				706
2				705
3			CLAY mottled grey - brown, silty, trace oxides, coal, and gravel	704
4				703
5				702
6		-Seepage	-fine sand lenses	701
7			END OF TEST HOLE AT 6.8m UPON COMPLETION: (Below ground surface) -No slough -Water at 6.6m Standpipe piezometer installed WATER LEVEL BELOW GROUND SURFACE: -December 1, 2015 = 6.06m -January 11, 2016 = 2.22m -November 23, 2016 = 2.50m	700
8				699
9				698
10				

THURBER ENGINEERING LTD.	FIELD LOGGED BY: JLM	COMPLETION DEPTH: 6.8 m
	PREPARED BY: MJB	COMPLETION DATE: 12/1/15
	REVIEWED BY:	Page 1 of 1

CLIENT: VILLAGE OF BAWLF	PROJECT: Village of Bawlf Lagoon-Groundwater Assessment-Phase 1	BOREHOLE NO: **TH15-3**
DRILLING COMPANY: Mobile Augers & Research Ltd.	DATE DRILLED: December 1, 2015	PROJECT NO: 19-6835-1
DRILL/METHOD: Track / Solid Stem Augers	LOCATION: N5863906.07, E400646.36	ELEVATION: 707.34 (m)
SAMPLE TYPE		
BACKFILL TYPE ■ BENTONITE ▒ SAND ▥ SLOUGH		

DEPTH (m)	SAMPLE TYPE	REMARKS	SOIL DESCRIPTION	ELEVATION (m)
0			TOPSOIL, dark brown, silty clay	
			CLAY (FILL) dark brown, silty, roots, trace topsoil and gravel	707
1				706
2				705
3		-Seepage	CLAY mottled grey - brown, silty, trace gravel and silt lenses	704
4				703
5			-brown, sandy	
			END OF TEST HOLE AT 5.3m UPON COMPLETION: (Below ground surface) -Slough at 3.8m -Water at 4.4m Standpipe piezometer installed WATER LEVEL BELOW GROUND SURFACE: -December 1, 2015 = 2.79m -January 11, 2016 = 2.34m -November 23, 2016 = 1.80m	702
6				701
7				700
8				699
9				698
10				

THURBER ENGINEERING LTD.	FIELD LOGGED BY: JLM	COMPLETION DEPTH: 5.3 m
	PREPARED BY: MJB	COMPLETION DATE: 12/1/15
	REVIEWED BY:	Page 1 of 1

CLIENT: VILLAGE OF BAWLF	PROJECT: Village of Bawlf Lagoon-Groundwater Assessment-Phase 1	BOREHOLE NO: **TH15-4**
DRILLING COMPANY: Mobile Augers & Research Ltd.	DATE DRILLED: December 1, 2015	PROJECT NO: 19-6835-1
DRILL/METHOD: Track / Solid Stem Augers	LOCATION: N5863724.27, E400395.03	ELEVATION: 707.42 (m)

SAMPLE TYPE

BACKFILL TYPE ■ BENTONITE ▒ SAND ▥ SLOUGH

DEPTH (m)	SAMPLE TYPE	REMARKS	SOIL DESCRIPTION	ELEVATION (m)
0			TOPSOIL, brown, silty clay	
			CLAY (FILL) dark brown, silty, trace topsoil and gravel	707
1				706
2				705
3			CLAY mottled grey - brown, silty, trace gravel, silt lenses, oxides, and gypsum	704
4				703
5			-silt lenses	702
6			-grey	701
7			END OF TEST HOLE AT 6.8m UPON COMPLETION: (Below ground surface) -Slough at 6.5m -No water Standpipe piezometer installed WATER LEVEL BELOW GROUND SURFACE: -December 1, 2015 = 3.26m -January 11, 2016 = 2.00m -November 23, 2016 = 2.39m	700
8				699
9				698
10				

THURBER ENGINEERING LTD.

FIELD LOGGED BY: JLM	COMPLETION DEPTH: 6.8 m
PREPARED BY: MJB	COMPLETION DATE: 12/1/15
REVIEWED BY:	Page 1 of 1

CLIENT: VILLAGE OF BAWLF	PROJECT: Village of Bawlf Lagoon-Groundwater Assessment-Phase 1	BOREHOLE NO: **TH15-5**
DRILLING COMPANY: Mobile Augers & Research Ltd.	DATE DRILLED: December 1, 2015	PROJECT NO: 19-6835-1
DRILL/METHOD: Track / Solid Stem Augers	LOCATION: N5863856.88, E400440.19	ELEVATION: 707.93 (m)
SAMPLE TYPE		
BACKFILL TYPE ■ BENTONITE ▒ SAND ▥ SLOUGH		

DEPTH (m)	SAMPLE TYPE	REMARKS	SOIL DESCRIPTION	ELEVATION (m)
0			TOPSOIL, brown, silty clay, roots to 0.2m, occasional gravel	
			CLAY (FILL) mottled light brown - dark brown, silty, occasional gravel and silt lenses	707
1				
2				706
			TOPSOIL AND CLAY (FILL), black, occasional gravel	
			CLAY (FILL) mottled light brown - dark brown, silty, occasional gravel and silt lenses	705
3				
			-dark brown	704
4				
5				703
		-Seepage	-grey, occasional dark brown, trace gravel and silt lenses	
6				702
7				701
8				700
			-grey	
			CLAY grey, sandy, trace gravel	699
9				
10				698

THURBER ENGINEERING LTD.	FIELD LOGGED BY: JLM	COMPLETION DEPTH: 10.7 m
	PREPARED BY: MJB	COMPLETION DATE: 12/1/15
	REVIEWED BY:	Page 1 of 2

CLIENT: VILLAGE OF BAWLF	PROJECT: Village of Bawlf Lagoon-Groundwater Assessment-Phase 1	BOREHOLE NO: **TH15-5**
DRILLING COMPANY: Mobile Augers & Research Ltd.	DATE DRILLED: December 1, 2015	PROJECT NO: 19-6835-1
DRILL/METHOD: Track / Solid Stem Augers	LOCATION: N5863856.88, E400440.19	ELEVATION: 707.93 (m)

SAMPLE TYPE

BACKFILL TYPE ■ BENTONITE ▒ SAND ▥ SLOUGH

DEPTH (m)	SAMPLE TYPE	REMARKS	SLOTTED PIEZOMETER	SOIL DESCRIPTION	ELEVATION (m)
10				CLAY - CONTINUED	
				END OF TEST HOLE AT 10.7m UPON COMPLETION: (Below ground surface) -Slough at 9.7m Standpipe piezometer installed WATER LEVEL BELOW GROUND SURFACE: -December 1, 2015 = 9.20m -January 11, 2016 = 6.44m -November 23, 2016 = 0.83m	
11					697
12					696
13					695
14					694
15					693
16					692
17					691
18					690
19					689
20					688

THURBER ENGINEERING LTD.

FIELD LOGGED BY: JLM	COMPLETION DEPTH: 10.7 m
PREPARED BY: MJB	COMPLETION DATE: 12/1/15
REVIEWED BY:	Page 2 of 2

APPENDIX D

Laboratory Analytical Report

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Report Transmission Cover Page

Bill To:	Thurber Engineering Ltd.	Project:	
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1
	4127 Roper Road	Name:	Bawlf Lagoon
	Edmonton, AB, Canada	Location:	Bawlf
	T6B 3S5	LSD:	
Attn:	Milan Butorac	P.O.:	
Sampled By:	JLM	Acct code:	
Company:	TEL		

Lot ID:	**1116288**
Control Number:	C0078186
Date Received:	Jan 14, 2016
Date Reported:	Jan 20, 2016
Report Number:	2074893

Contact & Affiliation	Address	Delivery Commitments
Sharon Bunn Thurber Engineering Ltd.	4127 Roper Road Edmonton, Alberta T6B 3S5 Phone: (780) 438-1460 Fax: (780) 437-7125 Email: Sbunn@thurber.ca	On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report
Milan Butorac Thurber Engineering Ltd.	4127 Roper Road Edmonton, Alberta T6B 3S5 Phone: (780) 438-1460 Fax: (780) 437-7125 Email: mbutorac@thurber.ca	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Single Report

Notes To Clients:

- Analysis for Total coliforms and Fecal coliforms was performed by both a membrane filtration method and a multi tube fermentation method as the samples contained sediment that affected volume of sample able to be filtered.

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Analytical Report

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-1
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-1 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Aggregate Organic Constituents						
Chemical Oxygen Demand		mg/L	193	5		
Inorganic Nonmetallic Parameters						
Kjeldahl Nitrogen	Total	mg/L	2.97	0.07		
Metals Dissolved						
Silicon	Dissolved	mg/L	5.32	0.05		
Sulfur	Dissolved	mg/L	975	0.3		
Mercury	Dissolved	mg/L	0.000008	0.000005	0.001	Below MAC
Aluminum	Dissolved	mg/L	0.051	0.002	0.1	Below OG
Antimony	Dissolved	mg/L	<0.001	0.0002	0.006	Below MAC
Arsenic	Dissolved	mg/L	0.002	0.0002	0.01	Below MAC
Barium	Dissolved	mg/L	0.04	0.001	1	Below MAC
Beryllium	Dissolved	mg/L	<0.0005	0.0001		
Bismuth	Dissolved	mg/L	<0.002	0.0005		
Boron	Dissolved	mg/L	0.19	0.002	5	Below MAC
Cadmium	Dissolved	mg/L	0.00010	0.00001	0.005	Below MAC
Chromium	Dissolved	mg/L	<0.002	0.0005	0.05	Below MAC
Cobalt	Dissolved	mg/L	0.004	0.0001		
Copper	Dissolved	mg/L	0.006	0.001	1	Below AO
Lead	Dissolved	mg/L	<0.0005	0.0001	0.01	Below MAC
Lithium	Dissolved	mg/L	0.49	0.001		
Molybdenum	Dissolved	mg/L	<0.005	0.001		
Nickel	Dissolved	mg/L	0.019	0.0005		
Selenium	Dissolved	mg/L	0.001	0.0002	0.05	Below MAC
Silver	Dissolved	mg/L	<0.00005	0.00001		
Strontium	Dissolved	mg/L	3.99	0.001		
Thallium	Dissolved	mg/L	<0.0003	0.00005		
Tin	Dissolved	mg/L	<0.005	0.001		
Titanium	Dissolved	mg/L	<0.002	0.0005		
Uranium	Dissolved	mg/L	0.032	0.0005	0.02	Above MAC
Vanadium	Dissolved	mg/L	<0.0005	0.0001		
Zinc	Dissolved	mg/L	0.02	0.001	5	Below AO
Subsample	Field Filtered		Lab Filtered			
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	7000	1	0	Above MAC
Fecal Coliforms	MPN	MPN/100 mL	<1.8	1.8		

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	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-1
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-1 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water						
pH			7.78		6.5 - 8.5	Within AO
Temperature of observed pH		°C	18.8			
Electrical Conductivity	at 25 °C	uS/cm	5080	1		
Calcium	Dissolved	mg/L	446	0.2		
Magnesium	Dissolved	mg/L	137	0.2		
Sodium	Dissolved	mg/L	905	0.4	200	Above AO
Potassium	Dissolved	mg/L	16	0.4		
Iron	Dissolved	mg/L	<0.05	0.01	0.3	Below AO
Manganese	Dissolved	mg/L	1.04	0.005	0.05	Above AO
Chloride	Dissolved	mg/L	23.2	0.4	250	Below AO
Nitrate - N		mg/L	<0.05	0.01	10	Below MAC
Nitrite - N		mg/L	<0.025	0.005	1	Below MAC
Nitrate and Nitrite - N		mg/L	<0.07	0.01	10	Below MAC
Sulfate (SO4)	Dissolved	mg/L	2920	0.9	500	Above AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	<6	6		
Bicarbonate		mg/L	387	5		
P-Alkalinity	as CaCO3	mg/L	<5	5		
T-Alkalinity	as CaCO3	mg/L	317	5		
Total Dissolved Solids	Calculated	mg/L	4640	1	500	Above AO
Hardness	Dissolved as CaCO3	mg/L	1680			
Ionic Balance	Dissolved	%	108			

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	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-2
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-2 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Aggregate Organic Constituents						
Chemical Oxygen Demand		mg/L	308	5		
Inorganic Nonmetallic Parameters						
Kjeldahl Nitrogen	Total	mg/L	2.74	0.07		
Metals Dissolved						
Silicon	Dissolved	mg/L	11.1	0.05		
Sulfur	Dissolved	mg/L	539	0.3		
Mercury	Dissolved	mg/L	<0.000005	0.000005	0.001	Below MAC
Aluminum	Dissolved	mg/L	0.009	0.002	0.1	Below OG
Antimony	Dissolved	mg/L	<0.0004	0.0002	0.006	Below MAC
Arsenic	Dissolved	mg/L	0.0007	0.0002	0.01	Below MAC
Barium	Dissolved	mg/L	0.066	0.001	1	Below MAC
Beryllium	Dissolved	mg/L	<0.0002	0.0001		
Bismuth	Dissolved	mg/L	<0.001	0.0005		
Boron	Dissolved	mg/L	0.225	0.002	5	Below MAC
Cadmium	Dissolved	mg/L	0.00020	0.00001	0.005	Below MAC
Chromium	Dissolved	mg/L	<0.001	0.0005	0.05	Below MAC
Cobalt	Dissolved	mg/L	0.0060	0.0001		
Copper	Dissolved	mg/L	0.002	0.001	1	Below AO
Lead	Dissolved	mg/L	0.0004	0.0001	0.01	Below MAC
Lithium	Dissolved	mg/L	0.319	0.001		
Molybdenum	Dissolved	mg/L	<0.002	0.001		
Nickel	Dissolved	mg/L	0.0318	0.0005		
Selenium	Dissolved	mg/L	0.0005	0.0002	0.05	Below MAC
Silver	Dissolved	mg/L	<0.00002	0.00001		
Strontium	Dissolved	mg/L	2.90	0.001		
Thallium	Dissolved	mg/L	0.0001	0.00005		
Tin	Dissolved	mg/L	<0.002	0.001		
Titanium	Dissolved	mg/L	<0.001	0.0005		
Uranium	Dissolved	mg/L	0.0208	0.0005	0.02	Above MAC
Vanadium	Dissolved	mg/L	0.0003	0.0001		
Zinc	Dissolved	mg/L	0.02	0.001	5	Below AO
Subsample	Field Filtered		Lab Filtered			
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	300	1	0	Above MAC
Fecal Coliforms	MPN	MPN/100 mL	<1.8	1.8		

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	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-2
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-2 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water						
pH			7.39		6.5 - 8.5	Within AO
Temperature of observed pH		°C	18.5			
Electrical Conductivity	at 25 °C	uS/cm	3630	1		
Calcium	Dissolved	mg/L	499	0.2		
Magnesium	Dissolved	mg/L	112	0.2		
Sodium	Dissolved	mg/L	412	0.4	200	Above AO
Potassium	Dissolved	mg/L	14	0.4		
Iron	Dissolved	mg/L	<0.02	0.01	0.3	Below AO
Manganese	Dissolved	mg/L	4.32	0.005	0.05	Above AO
Chloride	Dissolved	mg/L	19.9	0.4	250	Below AO
Nitrate - N		mg/L	<0.05	0.01	10	Below MAC
Nitrite - N		mg/L	<0.025	0.005	1	Below MAC
Nitrate and Nitrite - N		mg/L	<0.07	0.01	10	Below MAC
Sulfate (SO4)	Dissolved	mg/L	1620	0.9	500	Above AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	<6	6		
Bicarbonate		mg/L	1010	5		
P-Alkalinity	as CaCO3	mg/L	<5	5		
T-Alkalinity	as CaCO3	mg/L	829	5		
Total Dissolved Solids	Calculated	mg/L	3170	1	500	Above AO
Hardness	Dissolved as CaCO3	mg/L	1710			
Ionic Balance	Dissolved	%	103			

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	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-3
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-3 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Aggregate Organic Constituents						
Chemical Oxygen Demand		mg/L	96	5		
Inorganic Nonmetallic Parameters						
Kjeldahl Nitrogen	Total	mg/L	2.16	0.07		
Metals Dissolved						
Silicon	Dissolved	mg/L	15.0	0.05		
Sulfur	Dissolved	mg/L	856	0.3		
Mercury	Dissolved	mg/L	<0.000005	0.000005	0.001	Below MAC
Aluminum	Dissolved	mg/L	<0.01	0.002	0.1	Below OG
Antimony	Dissolved	mg/L	<0.001	0.0002	0.006	Below MAC
Arsenic	Dissolved	mg/L	<0.001	0.0002	0.01	Below MAC
Barium	Dissolved	mg/L	0.02	0.001	1	Below MAC
Beryllium	Dissolved	mg/L	<0.0005	0.0001		
Bismuth	Dissolved	mg/L	<0.002	0.0005		
Boron	Dissolved	mg/L	0.15	0.002	5	Below MAC
Cadmium	Dissolved	mg/L	0.00026	0.00001	0.005	Below MAC
Chromium	Dissolved	mg/L	<0.002	0.0005	0.05	Below MAC
Cobalt	Dissolved	mg/L	0.0070	0.0001		
Copper	Dissolved	mg/L	<0.005	0.001	1	Below AO
Lead	Dissolved	mg/L	<0.0005	0.0001	0.01	Below MAC
Lithium	Dissolved	mg/L	0.48	0.001		
Molybdenum	Dissolved	mg/L	<0.005	0.001		
Nickel	Dissolved	mg/L	0.036	0.0005		
Selenium	Dissolved	mg/L	<0.001	0.0002	0.05	Below MAC
Silver	Dissolved	mg/L	<0.00005	0.00001		
Strontium	Dissolved	mg/L	5.47	0.001		
Thallium	Dissolved	mg/L	<0.0003	0.00005		
Tin	Dissolved	mg/L	<0.005	0.001		
Titanium	Dissolved	mg/L	<0.002	0.0005		
Uranium	Dissolved	mg/L	0.103	0.0005	0.02	Above MAC
Vanadium	Dissolved	mg/L	<0.0005	0.0001		
Zinc	Dissolved	mg/L	0.005	0.001	5	Below AO
Subsample	Field Filtered		Lab Filtered			
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	1300	1	0	Above MAC
Fecal Coliforms	MPN	MPN/100 mL	<1.8	1.8		

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Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-3
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-3 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water						
pH			7.63		6.5 - 8.5	Within AO
Temperature of observed pH		°C	18.7			
Electrical Conductivity	at 25 °C	uS/cm	5380	1		
Calcium	Dissolved	mg/L	750	0.2		
Magnesium	Dissolved	mg/L	225	0.2		
Sodium	Dissolved	mg/L	654	0.4	200	Above AO
Potassium	Dissolved	mg/L	13	0.4		
Iron	Dissolved	mg/L	<0.05	0.01	0.3	Below AO
Manganese	Dissolved	mg/L	1.95	0.005	0.05	Above AO
Chloride	Dissolved	mg/L	122	0.4	250	Below AO
Nitrate - N		mg/L	<0.05	0.01	10	Below MAC
Nitrite - N		mg/L	<0.025	0.005	1	Below MAC
Nitrate and Nitrite - N		mg/L	<0.07	0.01	10	Below MAC
Sulfate (SO4)	Dissolved	mg/L	2570	0.9	500	Above AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	<6	6		
Bicarbonate		mg/L	1470	5		
P-Alkalinity	as CaCO3	mg/L	<5	5		
T-Alkalinity	as CaCO3	mg/L	1200	5		
Total Dissolved Solids	Calculated	mg/L	5050	1	500	Above AO
Hardness	Dissolved as CaCO3	mg/L	2800			
Ionic Balance	Dissolved	%	105			

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	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-4
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-4 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Aggregate Organic Constituents						
Chemical Oxygen Demand		mg/L	35	5		
Inorganic Nonmetallic Parameters						
Kjeldahl Nitrogen	Total	mg/L	1.56	0.07		
Metals Dissolved						
Silicon	Dissolved	mg/L	10.4	0.05		
Sulfur	Dissolved	mg/L	456	0.3		
Mercury	Dissolved	mg/L	<0.000005	0.000005	0.001	Below MAC
Aluminum	Dissolved	mg/L	<0.004	0.002	0.1	Below OG
Antimony	Dissolved	mg/L	<0.0004	0.0002	0.006	Below MAC
Arsenic	Dissolved	mg/L	0.002	0.0002	0.01	Below MAC
Barium	Dissolved	mg/L	0.050	0.001	1	Below MAC
Beryllium	Dissolved	mg/L	<0.0002	0.0001		
Bismuth	Dissolved	mg/L	<0.001	0.0005		
Boron	Dissolved	mg/L	0.339	0.002	5	Below MAC
Cadmium	Dissolved	mg/L	<0.00002	0.00001	0.005	Below MAC
Chromium	Dissolved	mg/L	<0.001	0.0005	0.05	Below MAC
Cobalt	Dissolved	mg/L	0.0069	0.0001		
Copper	Dissolved	mg/L	<0.002	0.001	1	Below AO
Lead	Dissolved	mg/L	<0.0002	0.0001	0.01	Below MAC
Lithium	Dissolved	mg/L	0.294	0.001		
Molybdenum	Dissolved	mg/L	<0.002	0.001		
Nickel	Dissolved	mg/L	0.0062	0.0005		
Selenium	Dissolved	mg/L	<0.0004	0.0002	0.05	Below MAC
Silver	Dissolved	mg/L	<0.00002	0.00001		
Strontium	Dissolved	mg/L	2.62	0.001		
Thallium	Dissolved	mg/L	<0.0001	0.00005		
Tin	Dissolved	mg/L	<0.002	0.001		
Titanium	Dissolved	mg/L	<0.001	0.0005		
Uranium	Dissolved	mg/L	0.0033	0.0005	0.02	Below MAC
Vanadium	Dissolved	mg/L	<0.0002	0.0001		
Zinc	Dissolved	mg/L	0.007	0.001	5	Below AO
Subsample	Field Filtered		Lab Filtered			
Microbiological Analysis						
Total Coliforms	MPN	MPN/100 mL	79	1.8		
Fecal Coliforms	MPN	MPN/100 mL	<1.8	1.8		

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	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-4
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-4 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water						
pH			7.75		6.5 - 8.5	Within AO
Temperature of observed pH		°C	19.6			
Electrical Conductivity	at 25 °C	uS/cm	3230	1		
Calcium	Dissolved	mg/L	226	0.2		
Magnesium	Dissolved	mg/L	74.2	0.2		
Sodium	Dissolved	mg/L	543	0.4	200	Above AO
Potassium	Dissolved	mg/L	17	0.4		
Iron	Dissolved	mg/L	<0.02	0.01	0.3	Below AO
Manganese	Dissolved	mg/L	1.70	0.005	0.05	Above AO
Chloride	Dissolved	mg/L	11.5	0.4	250	Below AO
Nitrate - N		mg/L	<0.05	0.01	10	Below MAC
Nitrite - N		mg/L	<0.025	0.005	1	Below MAC
Nitrate and Nitrite - N		mg/L	<0.07	0.01	10	Below MAC
Sulfate (SO4)	Dissolved	mg/L	1370	0.9	500	Above AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	<6	6		
Bicarbonate		mg/L	696	5		
P-Alkalinity	as CaCO3	mg/L	<5	5		
T-Alkalinity	as CaCO3	mg/L	571	5		
Total Dissolved Solids	Calculated	mg/L	2580	1	500	Above AO
Hardness	Dissolved as CaCO3	mg/L	869			
Ionic Balance	Dissolved	%	103			

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Analytical Report

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-5
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-5 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Aggregate Organic Constituents						
Chemical Oxygen Demand		mg/L	59	5		
Inorganic Nonmetallic Parameters						
Kjeldahl Nitrogen	Total	mg/L	3.89	0.07		
Metals Dissolved						
Silicon	Dissolved	mg/L	9.65	0.05		
Sulfur	Dissolved	mg/L	1600	0.3		
Mercury	Dissolved	mg/L	<0.000005	0.000005	0.001	Below MAC
Aluminum	Dissolved	mg/L	<0.01	0.002	0.1	Below OG
Antimony	Dissolved	mg/L	<0.001	0.0002	0.006	Below MAC
Arsenic	Dissolved	mg/L	0.0079	0.0002	0.01	Below MAC
Barium	Dissolved	mg/L	<0.005	0.001	1	Below MAC
Beryllium	Dissolved	mg/L	<0.0005	0.0001		
Bismuth	Dissolved	mg/L	<0.002	0.0005		
Boron	Dissolved	mg/L	0.524	0.002	5	Below MAC
Cadmium	Dissolved	mg/L	<0.00005	0.00001	0.005	Below MAC
Chromium	Dissolved	mg/L	<0.002	0.0005	0.05	Below MAC
Cobalt	Dissolved	mg/L	<0.0005	0.0001		
Copper	Dissolved	mg/L	<0.005	0.001	1	Below AO
Lead	Dissolved	mg/L	<0.0005	0.0001	0.01	Below MAC
Lithium	Dissolved	mg/L	0.589	0.001		
Molybdenum	Dissolved	mg/L	<0.005	0.001		
Nickel	Dissolved	mg/L	0.003	0.0005		
Selenium	Dissolved	mg/L	<0.001	0.0002	0.05	Below MAC
Silver	Dissolved	mg/L	<0.00005	0.00001		
Strontium	Dissolved	mg/L	6.82	0.001		
Thallium	Dissolved	mg/L	<0.0003	0.00005		
Tin	Dissolved	mg/L	<0.005	0.001		
Titanium	Dissolved	mg/L	<0.002	0.0005		
Uranium	Dissolved	mg/L	0.003	0.0005	0.02	Below MAC
Vanadium	Dissolved	mg/L	<0.0005	0.0001		
Zinc	Dissolved	mg/L	0.01	0.001	5	Below AO
Subsample	Field Filtered		Lab Filtered			
Microbiological Analysis						
Total Coliforms	MPN	MPN/100 mL	22	1.8		
Fecal Coliforms	MPN	MPN/100 mL	<1.8	1.8		

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Analytical Report

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-5
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	TH15-5 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water						
pH			7.75		6.5 - 8.5	Within AO
Temperature of observed pH		°C	19.1			
Electrical Conductivity	at 25 °C	uS/cm	8330	1		
Calcium	Dissolved	mg/L	440	0.2		
Magnesium	Dissolved	mg/L	136	0.2		
Sodium	Dissolved	mg/L	1940	0.4	200	Above AO
Potassium	Dissolved	mg/L	18	0.4		
Iron	Dissolved	mg/L	2.28	0.01	0.3	Above AO
Manganese	Dissolved	mg/L	0.26	0.005	0.05	Above AO
Chloride	Dissolved	mg/L	9.0	0.4	250	Below AO
Nitrate - N		mg/L	<0.05	0.01	10	Below MAC
Nitrite - N		mg/L	<0.025	0.005	1	Below MAC
Nitrate and Nitrite - N		mg/L	<0.07	0.01	10	Below MAC
Sulfate (SO4)	Dissolved	mg/L	4790	0.9	500	Above AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	<6	6		
Bicarbonate		mg/L	649	5		
P-Alkalinity	as CaCO3	mg/L	<5	5		
T-Alkalinity	as CaCO3	mg/L	532	5		
Total Dissolved Solids	Calculated	mg/L	7660	1	500	Above AO
Hardness	Dissolved as CaCO3	mg/L	1660			
Ionic Balance	Dissolved	%	107			

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Analytical Report

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-6
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	SW15-2 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Aggregate Organic Constituents						
Chemical Oxygen Demand		mg/L	656	5		
Inorganic Nonmetallic Parameters						
Kjeldahl Nitrogen	Total	mg/L	62.5	0.07		
Metals Dissolved						
Silicon	Dissolved	mg/L	8.31	0.05		
Sulfur	Dissolved	mg/L	53.0	0.3		
Mercury	Dissolved	mg/L	<0.000005	0.000005	0.001	Below MAC
Aluminum	Dissolved	mg/L	0.01	0.002	0.1	Below OG
Antimony	Dissolved	mg/L	<0.0004	0.0002	0.006	Below MAC
Arsenic	Dissolved	mg/L	0.0036	0.0002	0.01	Below MAC
Barium	Dissolved	mg/L	0.049	0.001	1	Below MAC
Beryllium	Dissolved	mg/L	<0.0002	0.0001		
Bismuth	Dissolved	mg/L	<0.001	0.0005		
Boron	Dissolved	mg/L	0.405	0.002	5	Below MAC
Cadmium	Dissolved	mg/L	<0.00002	0.00001	0.005	Below MAC
Chromium	Dissolved	mg/L	<0.001	0.0005	0.05	Below MAC
Cobalt	Dissolved	mg/L	0.0004	0.0001		
Copper	Dissolved	mg/L	0.006	0.001	1	Below AO
Lead	Dissolved	mg/L	<0.0002	0.0001	0.01	Below MAC
Lithium	Dissolved	mg/L	0.093	0.001		
Molybdenum	Dissolved	mg/L	<0.002	0.001		
Nickel	Dissolved	mg/L	0.0023	0.0005		
Selenium	Dissolved	mg/L	0.0005	0.0002	0.05	Below MAC
Silver	Dissolved	mg/L	<0.00002	0.00001		
Strontium	Dissolved	mg/L	0.561	0.001		
Thallium	Dissolved	mg/L	<0.0001	0.00005		
Tin	Dissolved	mg/L	<0.002	0.001		
Titanium	Dissolved	mg/L	<0.001	0.0005		
Uranium	Dissolved	mg/L	0.0054	0.0005	0.02	Below MAC
Vanadium	Dissolved	mg/L	0.0004	0.0001		
Zinc	Dissolved	mg/L	0.008	0.001	5	Below AO
Subsample	Field Filtered		Lab Filtered			
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	1100000	1	0	Above MAC
Fecal Coliforms	Membrane Filtration	CFU/100 mL	200000	1		

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Analytical Report

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-6
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	SW15-2 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water						
pH			8.15		6.5 - 8.5	Within AO
Temperature of observed pH		°C	18.5			
Electrical Conductivity	at 25 °C	uS/cm	2190	1		
Calcium	Dissolved	mg/L	61.2	0.2		
Magnesium	Dissolved	mg/L	24.5	0.2		
Sodium	Dissolved	mg/L	411	0.4	200	Above AO
Potassium	Dissolved	mg/L	20.4	0.4		
Iron	Dissolved	mg/L	0.03	0.01	0.3	Below AO
Manganese	Dissolved	mg/L	0.404	0.005	0.05	Above AO
Chloride	Dissolved	mg/L	89.8	0.4	250	Below AO
Nitrate - N		mg/L	<0.05	0.01	10	Below MAC
Nitrite - N		mg/L	0.027	0.005	1	Below MAC
Nitrate and Nitrite - N		mg/L	0.03	0.01	10	Below MAC
Sulfate (SO4)	Dissolved	mg/L	159	0.9	500	Below AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	<6	6		
Bicarbonate		mg/L	1230	5		
P-Alkalinity	as CaCO3	mg/L	<5	5		
T-Alkalinity	as CaCO3	mg/L	1010	5		
Total Dissolved Solids	Calculated	mg/L	1370	1	500	Above AO
Hardness	Dissolved as CaCO3	mg/L	254			
Ionic Balance	Dissolved	%	91			

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	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-7
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	SW15-3 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Aggregate Organic Constituents						
Chemical Oxygen Demand		mg/L	17100	5		
Inorganic Nonmetallic Parameters						
Kjeldahl Nitrogen	Total	mg/L	320	0.07		
Metals Dissolved						
Silicon	Dissolved	mg/L	7.73	0.05		
Sulfur	Dissolved	mg/L	28.4	0.3		
Mercury	Dissolved	mg/L	<0.000005	0.000005	0.001	Below MAC
Aluminum	Dissolved	mg/L	0.021	0.002	0.1	Below OG
Antimony	Dissolved	mg/L	<0.0004	0.0002	0.006	Below MAC
Arsenic	Dissolved	mg/L	0.0024	0.0002	0.01	Below MAC
Barium	Dissolved	mg/L	0.059	0.001	1	Below MAC
Beryllium	Dissolved	mg/L	<0.0002	0.0001		
Bismuth	Dissolved	mg/L	0.001	0.0005		
Boron	Dissolved	mg/L	0.331	0.002	5	Below MAC
Cadmium	Dissolved	mg/L	0.00003	0.00001	0.005	Below MAC
Chromium	Dissolved	mg/L	<0.001	0.0005	0.05	Below MAC
Cobalt	Dissolved	mg/L	0.0009	0.0001		
Copper	Dissolved	mg/L	0.003	0.001	1	Below AO
Lead	Dissolved	mg/L	<0.0002	0.0001	0.01	Below MAC
Lithium	Dissolved	mg/L	0.078	0.001		
Molybdenum	Dissolved	mg/L	<0.002	0.001		
Nickel	Dissolved	mg/L	0.0031	0.0005		
Selenium	Dissolved	mg/L	0.0005	0.0002	0.05	Below MAC
Silver	Dissolved	mg/L	<0.00002	0.00001		
Strontium	Dissolved	mg/L	0.500	0.001		
Thallium	Dissolved	mg/L	<0.0001	0.00005		
Tin	Dissolved	mg/L	<0.002	0.001		
Titanium	Dissolved	mg/L	<0.001	0.0005		
Uranium	Dissolved	mg/L	0.0048	0.0005	0.02	Below MAC
Vanadium	Dissolved	mg/L	<0.0002	0.0001		
Zinc	Dissolved	mg/L	0.009	0.001	5	Below AO
Subsample	Field Filtered		Lab Filtered			
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	1600000	1	0	Above MAC
Fecal Coliforms	Membrane Filtration	CFU/100 mL	1600000	1		

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Analytical Report

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-7
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	SW15-3 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water						
pH			7.89		6.5 - 8.5	Within AO
Temperature of observed pH		°C	21.3			
Electrical Conductivity	at 25 °C	uS/cm	2130	1		
Calcium	Dissolved	mg/L	65.0	0.2		
Magnesium	Dissolved	mg/L	20	0.2		
Sodium	Dissolved	mg/L	346	0.4	200	Above AO
Potassium	Dissolved	mg/L	19	0.4		
Iron	Dissolved	mg/L	0.08	0.01	0.3	Below AO
Manganese	Dissolved	mg/L	0.428	0.005	0.05	Above AO
Chloride	Dissolved	mg/L	60.6	0.4	250	Below AO
Nitrate - N		mg/L	<0.05	0.01	10	Below MAC
Nitrite - N		mg/L	0.073	0.005	1	Below MAC
Nitrate and Nitrite - N		mg/L	0.07	0.01	10	Below MAC
Sulfate (SO4)	Dissolved	mg/L	85.0	0.9	500	Below AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	<6	6		
Bicarbonate		mg/L	1170	5		
P-Alkalinity	as CaCO3	mg/L	<5	5		
T-Alkalinity	as CaCO3	mg/L	957	5		
Total Dissolved Solids	Calculated	mg/L	1170	1	500	Above AO
Hardness	Dissolved as CaCO3	mg/L	245			
Ionic Balance	Dissolved	%	90			

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Analytical Report

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Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-8
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	SW15-6 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Aggregate Organic Constituents						
Chemical Oxygen Demand		mg/L	2710	5		
Inorganic Nonmetallic Parameters						
Kjeldahl Nitrogen	Total	mg/L	30.4	0.07		
Metals Dissolved						
Silicon	Dissolved	mg/L	7.38	0.05		
Sulfur	Dissolved	mg/L	239	0.3		
Mercury	Dissolved	mg/L	0.000019	0.000005	0.001	Below MAC
Aluminum	Dissolved	mg/L	<0.01	0.002	0.1	Below OG
Antimony	Dissolved	mg/L	0.002	0.0002	0.006	Below MAC
Arsenic	Dissolved	mg/L	0.0756	0.0002	0.01	Above MAC
Barium	Dissolved	mg/L	0.12	0.001	1	Below MAC
Beryllium	Dissolved	mg/L	<0.0005	0.0001		
Bismuth	Dissolved	mg/L	<0.002	0.0005		
Boron	Dissolved	mg/L	1.01	0.002	5	Below MAC
Cadmium	Dissolved	mg/L	<0.00005	0.00001	0.005	Below MAC
Chromium	Dissolved	mg/L	<0.002	0.0005	0.05	Below MAC
Cobalt	Dissolved	mg/L	0.0008	0.0001		
Copper	Dissolved	mg/L	<0.005	0.001	1	Below AO
Lead	Dissolved	mg/L	<0.0005	0.0001	0.01	Below MAC
Lithium	Dissolved	mg/L	0.30	0.001		
Molybdenum	Dissolved	mg/L	<0.005	0.001		
Nickel	Dissolved	mg/L	0.013	0.0005		
Selenium	Dissolved	mg/L	<0.001	0.0002	0.05	Below MAC
Silver	Dissolved	mg/L	<0.00005	0.00001		
Strontium	Dissolved	mg/L	1.01	0.001		
Thallium	Dissolved	mg/L	<0.0003	0.00005		
Tin	Dissolved	mg/L	<0.005	0.001		
Titanium	Dissolved	mg/L	0.003	0.0005		
Uranium	Dissolved	mg/L	0.0051	0.0005	0.02	Below MAC
Vanadium	Dissolved	mg/L	0.0069	0.0001		
Zinc	Dissolved	mg/L	0.006	0.001	5	Below AO
Subsample	Field Filtered		Lab Filtered			
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	100	1	0	Above MAC
Fecal Coliforms	Membrane Filtration	CFU/100 mL	100	1		

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Analytical Report

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-8
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	SW15-6 / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water						
pH			8.63		6.5 - 8.5	Above AO
Temperature of observed pH		°C	18.7			
Electrical Conductivity	at 25 °C	uS/cm	4670	1		
Calcium	Dissolved	mg/L	45	0.2		
Magnesium	Dissolved	mg/L	97.9	0.2		
Sodium	Dissolved	mg/L	1120	0.4	200	Above AO
Potassium	Dissolved	mg/L	47	0.4		
Iron	Dissolved	mg/L	0.05	0.01	0.3	Below AO
Manganese	Dissolved	mg/L	0.27	0.005	0.05	Above AO
Chloride	Dissolved	mg/L	265	0.4	250	Above AO
Nitrate - N		mg/L	<0.05	0.01	10	Below MAC
Nitrite - N		mg/L	<0.025	0.005	1	Below MAC
Nitrate and Nitrite - N		mg/L	<0.07	0.01	10	Below MAC
Sulfate (SO4)	Dissolved	mg/L	718	0.9	500	Above AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	119	6		
Bicarbonate		mg/L	2210	5		
P-Alkalinity	as CaCO3	mg/L	99	5		
T-Alkalinity	as CaCO3	mg/L	2010	5		
Total Dissolved Solids	Calculated	mg/L	3500	1	500	Above AO
Hardness	Dissolved as CaCO3	mg/L	520			
Ionic Balance	Dissolved	%	96			

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Analytical Report

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-9
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	Dup A / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Aggregate Organic Constituents						
Chemical Oxygen Demand		mg/L	100	5		
Inorganic Nonmetallic Parameters						
Kjeldahl Nitrogen	Total	mg/L	2.67	0.07		
Metals Dissolved						
Silicon	Dissolved	mg/L	14.8	0.05		
Sulfur	Dissolved	mg/L	849	0.3		
Mercury	Dissolved	mg/L	<0.000005	0.000005	0.001	Below MAC
Aluminum	Dissolved	mg/L	<0.01	0.002	0.1	Below OG
Antimony	Dissolved	mg/L	<0.001	0.0002	0.006	Below MAC
Arsenic	Dissolved	mg/L	<0.001	0.0002	0.01	Below MAC
Barium	Dissolved	mg/L	0.02	0.001	1	Below MAC
Beryllium	Dissolved	mg/L	<0.0005	0.0001		
Bismuth	Dissolved	mg/L	<0.002	0.0005		
Boron	Dissolved	mg/L	0.16	0.002	5	Below MAC
Cadmium	Dissolved	mg/L	0.00023	0.00001	0.005	Below MAC
Chromium	Dissolved	mg/L	<0.002	0.0005	0.05	Below MAC
Cobalt	Dissolved	mg/L	0.0069	0.0001		
Copper	Dissolved	mg/L	<0.005	0.001	1	Below AO
Lead	Dissolved	mg/L	<0.0005	0.0001	0.01	Below MAC
Lithium	Dissolved	mg/L	0.47	0.001		
Molybdenum	Dissolved	mg/L	<0.005	0.001		
Nickel	Dissolved	mg/L	0.037	0.0005		
Selenium	Dissolved	mg/L	<0.001	0.0002	0.05	Below MAC
Silver	Dissolved	mg/L	<0.00005	0.00001		
Strontium	Dissolved	mg/L	5.57	0.001		
Thallium	Dissolved	mg/L	<0.0003	0.00005		
Tin	Dissolved	mg/L	<0.005	0.001		
Titanium	Dissolved	mg/L	<0.002	0.0005		
Uranium	Dissolved	mg/L	0.0974	0.0005	0.02	Above MAC
Vanadium	Dissolved	mg/L	<0.0005	0.0001		
Zinc	Dissolved	mg/L	0.006	0.001	5	Below AO
Subsample	Field Filtered		Lab Filtered			
Microbiological Analysis						
Total Coliforms	Membrane Filtration	CFU/100 mL	900	1	0	Above MAC
Fecal Coliforms	MPN	MPN/100 mL	<1.8	1.8		

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	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Reference Number	1116288-9
Sample Date	January 14, 2016
Sample Time	NA
Sample Location	
Sample Description	Dup A / 4.1°C
Sample Matrix	Water

Analyte		Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water						
pH			7.45		6.5 - 8.5	Within AO
Temperature of observed pH		°C	18.6			
Electrical Conductivity	at 25 °C	uS/cm	5280	1		
Calcium	Dissolved	mg/L	739	0.2		
Magnesium	Dissolved	mg/L	222	0.2		
Sodium	Dissolved	mg/L	648	0.4	200	Above AO
Potassium	Dissolved	mg/L	13	0.4		
Iron	Dissolved	mg/L	<0.05	0.01	0.3	Below AO
Manganese	Dissolved	mg/L	1.92	0.005	0.05	Above AO
Chloride	Dissolved	mg/L	121	0.4	250	Below AO
Nitrate - N		mg/L	<0.05	0.01	10	Below MAC
Nitrite - N		mg/L	<0.025	0.005	1	Below MAC
Nitrate and Nitrite - N		mg/L	<0.07	0.01	10	Below MAC
Sulfate (SO4)	Dissolved	mg/L	2550	0.9	500	Above AO
Hydroxide		mg/L	<5	5		
Carbonate		mg/L	<6	6		
Bicarbonate		mg/L	1470	5		
P-Alkalinity	as CaCO3	mg/L	<5	5		
T-Alkalinity	as CaCO3	mg/L	1210	5		
Total Dissolved Solids	Calculated	mg/L	5010	1	500	Above AO
Hardness	Dissolved as CaCO3	mg/L	2760			
Ionic Balance	Dissolved	%	104			

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Quality Control

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Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Aggregate Organic Constituents

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
Chemical Oxygen Demand	mg/L	-1.88	-7	8		yes
Date Acquired: January 15, 2016						
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
Chemical Oxygen Demand	mg/L	2140	2170	10	2	yes
Date Acquired: January 15, 2016						
Control Sample	**Units**	**Measured**	**Lower Limit**	**Upper Limit**		**Passed QC**
Chemical Oxygen Demand	mg/L	293	286	316		yes
Date Acquired: January 15, 2016						
Chemical Oxygen Demand	mg/L	74	67	85		yes
Date Acquired: January 15, 2016						
Chemical Oxygen Demand	mg/L	19	16	25		yes
Date Acquired: January 15, 2016						

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
Nitrogen	mg/L	0	-0.04	0.08		yes
Date Acquired: January 15, 2016						
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
Nitrogen	mg/L	3.78	3.79	10	0.06	yes
Date Acquired: January 15, 2016						
Control Sample	**Units**	**Measured**	**Lower Limit**	**Upper Limit**		**Passed QC**
Nitrogen	mg/L	116	103.74	137.28		yes
Date Acquired: January 15, 2016						
Nitrogen	mg/L	14.3	13.27	16.93		yes
Date Acquired: January 15, 2016						
Nitrogen	mg/L	1.07	0.89	1.25		yes
Date Acquired: January 15, 2016						

Metals Dissolved

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Silicon	mg/L	-0.0176	-0.04	0.05	yes
Sulfur	mg/L	-0.024	-0.3	0.2	yes
Mercury	ug/L	0.0021	-0.038000	0.064000	yes
Aluminum	ug/L	0.244988	-2	2	yes
Antimony	ug/L	0.00974946	-0.2	0.2	yes
Arsenic	ug/L	0.00130268	-0.2	0.2	yes
Barium	ug/L	-0.0529903	-1	1	yes
Beryllium	ug/L	0.00341401	-0.0	0.1	yes
Bismuth	ug/L	0.00134404	-1.5	1.5	yes
Boron	ug/L	0.563677	-2	2	yes

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Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Metals Dissolved - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Cadmium	ug/L	0.000925456	-0.01	0.01	yes
Chromium	ug/L	-0.000381963	-0.3	0.3	yes
Cobalt	ug/L	-5.5275e-005	-0.1	0.1	yes
Copper	ug/L	0.0185757	-1	1	yes
Lead	ug/L	0.00605492	-0.1	0.1	yes
Lithium	ug/L	0.0340441	-1	1	yes
Molybdenum	ug/L	0.0121069	-1	1	yes
Nickel	ug/L	0.0192031	-0.5	0.5	yes
Selenium	ug/L	-0.0223813	-0.2	0.2	yes
Silver	ug/L	0.000824007	-0.10	0.10	yes
Strontium	ug/L	0.0305279	-1	1	yes
Thallium	ug/L	9.17899e-005	-0.05	0.05	yes
Tin	ug/L	-0.00370881	-1	1	yes
Titanium	ug/L	0.0261145	-0.5	0.5	yes
Uranium	ug/L	0.000690339	-0.5	0.5	yes
Vanadium	ug/L	-0.00221815	-0.1	0.1	yes
Zinc	ug/L	0.189486	-0	2	yes
Date Acquired:	January 15, 2016				

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	mg/L	<0.000005	<0.000005	10	0.000300	yes
Aluminum	ug/L	<4	<4	10	11	yes
Antimony	ug/L	<0.4	<0.4	10	0.4	yes
Arsenic	ug/L	0.7	0.6	10	0.4	yes
Barium	ug/L	24	24	10	2	yes
Boron	ug/L	341	338	10	4	yes
Cadmium	ug/L	0.33	0.33	10	0.02	yes
Chromium	ug/L	<1	<1	10	1.1	yes
Copper	ug/L	4	4	10	2	yes
Lead	ug/L	<0.2	<0.2	10	0.2	yes
Nickel	ug/L	45.7	45.7	10	1.1	yes
Selenium	ug/L	0.6	0.5	10	0.4	yes
Silver	ug/L	0.02	<0.02	10	0.22	yes
Uranium	ug/L	63.9	64.8	10	1.1	yes
Zinc	ug/L	10	10	10	2	yes
Date Acquired:	January 15, 2016					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	mg/L	0.000757	0.000600	0.000960	yes
Date Acquired:	January 15, 2016				
Mercury	mg/L	0.00288	0.002610	0.003210	yes
Aluminum	ug/L	1020	938	1092	yes
Antimony	ug/L	37.8	35.2	43.0	yes

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	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Metals Dissolved - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Arsenic	ug/L	39.0	36.7	43.3	yes
Barium	ug/L	207	191	214	yes
Beryllium	ug/L	19.5	17.3	22.1	yes
Bismuth	ug/L	105	98.5	113.5	yes
Boron	ug/L	390	344	434	yes
Cadmium	ug/L	2.05	1.86	2.26	yes
Chromium	ug/L	99.4	92.2	110.2	yes
Cobalt	ug/L	19.3	18.0	21.2	yes
Copper	ug/L	196	184	208	yes
Lead	ug/L	20.4	18.4	22.0	yes
Lithium	ug/L	200	175	223	yes
Molybdenum	ug/L	200	187	226	yes
Nickel	ug/L	98.6	93.3	105.5	yes
Selenium	ug/L	39.6	35.8	43.0	yes
Silver	ug/L	20.2	18.40	22.00	yes
Strontium	ug/L	198	180	216	yes
Thallium	ug/L	10.1	9.40	11.20	yes
Tin	ug/L	206	180	220	yes
Titanium	ug/L	101	88.9	108.7	yes
Uranium	ug/L	99.1	92.7	107.5	yes
Vanadium	ug/L	19.9	18.0	22.0	yes
Zinc	ug/L	199	183	219	yes
Date Acquired:	January 15, 2016				
Mercury	mg/L	0.000784	0.000715	0.000865	yes
Date Acquired:	January 15, 2016				
Mercury	mg/L	0.000080	0.000065	0.000089	yes
Aluminum	ug/L	53	45	55	yes
Antimony	ug/L	2.0	1.8	2.3	yes
Arsenic	ug/L	2.0	1.8	2.2	yes
Barium	ug/L	10	9	11	yes
Beryllium	ug/L	1	0.9	1.1	yes
Bismuth	ug/L	4.3	4.1	5.5	yes
Boron	ug/L	20	18	22	yes
Cadmium	ug/L	0.10	0.09	0.11	yes
Chromium	ug/L	4.9	4.5	5.5	yes
Cobalt	ug/L	1	0.9	1.1	yes
Copper	ug/L	10	9	11	yes
Lead	ug/L	1.0	0.9	1.1	yes
Lithium	ug/L	10	9	11	yes
Molybdenum	ug/L	10	9	10	yes
Nickel	ug/L	4.9	4.4	5.5	yes
Selenium	ug/L	2.0	1.7	2.2	yes

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Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Metals Dissolved - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Silver	ug/L	1.06	0.84	1.08	yes
Strontium	ug/L	10	9	11	yes
Thallium	ug/L	0.51	0.47	0.56	yes
Tin	ug/L	10	9	11	yes
Titanium	ug/L	5.0	4.5	5.5	yes
Uranium	ug/L	5.2	4.5	5.5	yes
Vanadium	ug/L	1	0.9	1.1	yes
Zinc	ug/L	10	9	11	yes
Date Acquired:	January 15, 2016				
Silicon	mg/L	9.77	8.98	10.78	yes
Sulfur	mg/L	143	138.5	155.3	yes
Date Acquired:	January 15, 2016				
Silicon	mg/L	2.02	1.80	2.20	yes
Sulfur	mg/L	9.5	9.2	11.0	yes
Date Acquired:	January 15, 2016				
Silicon	mg/L	0.19	0.18	0.22	yes
Sulfur	mg/L	3.1	2.7	3.2	yes
Date Acquired:	January 15, 2016				

Routine Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	-0.0543	-0.2	0.2	yes
Magnesium	mg/L	0.0463	-0.1	0.1	yes
Sodium	mg/L	0.0503	-0.4	0.4	yes
Potassium	mg/L	-0.0023	-0.4	0.4	yes
Iron	mg/L	-0.0057	-0.01	0.01	yes
Manganese	mg/L	-0.0006	-0.004	0.004	yes
Chloride	mg/L	0.19	-0.4	0.4	yes
Nitrate - N	mg/L	0	-0.01	0.01	yes
Nitrite - N	mg/L	0.00106322	-0.005	0.005	yes
Date Acquired:	January 15, 2016				

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
pH		8.63	8.63	10	0.10	yes
Electrical Conductivity	dS/m	4.67	4.65	10	0.002	yes
Calcium	mg/L	13	12	10	0.6	yes
Magnesium	mg/L	3	3	10	0.7	yes
Sodium	mg/L	1590	1550	10	1.2	yes
Potassium	mg/L	5.2	5	10	1.2	yes
Iron	mg/L	0.11	0.08	10	0.05	yes
Chloride	mg/L	1150	1130	10	0.5	yes
Nitrate - N	mg/L	0.15	0.15	10	0.01	yes

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Quality Control

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Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Routine Water - Continued

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Nitrite - N	mg/L	0.061	0.061	10	0.010	yes
Hydroxide	mg/L	<5	<5	10		yes
Carbonate	mg/L	119	119	10	6	yes
Bicarbonate	mg/L	2210	2220	10	6	yes
P-Alkalinity	mg/L	99	99	10	5	yes
T-Alkalinity	mg/L	2010	2020	10	5	yes
Date Acquired: January 15, 2016						

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Chloride	mg/L	2060	1856.0	2126.0	yes
Date Acquired: January 15, 2016					
pH		9.13	9.05	9.25	yes
Electrical Conductivity	dS/m	2.67	2.600	2.858	yes
Calcium	mg/L	244	228.0	258.0	yes
Magnesium	mg/L	95.2	92.3	102.0	yes
Sodium	mg/L	245	233.3	257.3	yes
Potassium	mg/L	246	233.0	263.0	yes
Iron	mg/L	9.47	8.91	10.20	yes
Manganese	mg/L	2.36	2.240	2.540	yes
Nitrate - N	mg/L	10.0	9.58	10.58	yes
Nitrite - N	mg/L	10.0	9.460	10.600	yes
Nitrate and Nitrite - N	mg/L	20.1	19.27	20.97	yes
P-Alkalinity	mg/L	434	423	549	yes
T-Alkalinity	mg/L	1010	956	1056	yes
Date Acquired: January 15, 2016					
pH		6.86	6.78	6.96	yes
Electrical Conductivity	dS/m	0.080	0.070	0.083	yes
Calcium	mg/L	51.5	44.9	56.9	yes
Magnesium	mg/L	19.8	18.0	22.0	yes
Sodium	mg/L	51.4	47.7	55.5	yes
Potassium	mg/L	51.9	45.0	55.0	yes
Iron	mg/L	1.92	1.89	2.25	yes
Manganese	mg/L	0.493	0.488	0.572	yes
Chloride	mg/L	82.4	74.9	86.9	yes
Nitrate - N	mg/L	4.87	4.48	5.24	yes
Nitrite - N	mg/L	5.02	4.488	5.292	yes
Nitrate and Nitrite - N	mg/L	9.89	9.06	10.42	yes
P-Alkalinity	mg/L	27	22	67	yes
T-Alkalinity	mg/L	128	113	137	yes
Date Acquired: January 15, 2016					
Calcium	mg/L	5.2	4.6	5.7	yes
Magnesium	mg/L	2.0	1.8	2.2	yes

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Sampled By:	JLM	Acct code:			
Company:	TEL				

Routine Water - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Sodium	mg/L	5.2	4.7	5.7	yes
Potassium	mg/L	5.2	4.5	5.5	yes
Iron	mg/L	0.23	0.19	0.24	yes
Manganese	mg/L	0.052	0.046	0.056	yes
Chloride	mg/L	13.7	13.3	16.5	yes
Nitrate - N	mg/L	0.51	0.44	0.58	yes
Nitrite - N	mg/L	0.501	0.453	0.567	yes
Nitrate and Nitrite - N	mg/L	1.01	0.93	1.11	yes

Date Acquired: January 15, 2016

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W: www.exova.com

Methodology and Notes

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	Alkalinity - Titration Method, 2320 B	15-Jan-16	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	Conductivity, 2510 B	15-Jan-16	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	15-Jan-16	Exova Edmonton
Anions (Routine) by Ion Chromatography	APHA	*	Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	15-Jan-16	Exova Edmonton
Approval-Edmonton	APHA		Checking Correctness of Analyses, 1030 E	15-Jan-16	Exova Edmonton
Chemical Oxygen Demand in water	APHA	*	Closed Reflux, Colorimetric Method, 5220 D	15-Jan-16	Exova Edmonton
Chloride in Water	APHA	*	Automated Ferricyanide Method, 4500-Cl- E	15-Jan-16	Exova Edmonton
Coliforms - Membrane Filtration	APHA		Fecal Coliform Membrane Filter Procedure, 9222 D	15-Jan-16	Exova Calgary
Coliforms - Membrane Filtration	APHA		Standard Total Coliform Membrane Filter Procedure, 9222 B	15-Jan-16	Exova Calgary
Coliforms- MPN (Enviro)	APHA		Fecal Coliform Procedure, 9221 E	16-Jan-16	Exova Calgary
Coliforms- MPN (Enviro)	APHA		Standard Total Coliform Fermentation Technique, 9221 B	16-Jan-16	Exova Calgary
Mercury (Dissolved) in water	APHA	*	Cold Vapour Atomic Absorption Spectrometric Method, 3112 B	15-Jan-16	Exova Edmonton
Metals ICP-MS (Dissolved) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	15-Jan-16	Exova Edmonton
Metals Trace (Dissolved) in water	APHA		Hardness by Calculation, 2340 B	15-Jan-16	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	15-Jan-16	Exova Edmonton
Total and Kjeldahl Nitrogen (Total) in Water	ISO	*	Water Quality - Determination of nitrogen, ISO/TR 11905-2	15-Jan-16	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

Guidelines

Guideline Description	Health Canada GCDWQ
Guideline Source	Guidelines for Canadian Drinking Water Quality, Health Canada, October 2014
Guideline Comments	MAC = Maximum Acceptable Concentration AO = Aesthetic Objective OG = Operational Guideline for Water Treatment Plants Refer to Health Canada GCDWQ for complete guidelines and additional drinking water information at www.hc-sc.gc.ca

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Methodology and Notes

Bill To:	Thurber Engineering Ltd.	Project:		Lot ID:	**1116288**
Report To:	Thurber Engineering Ltd.	ID:	19-6835-1	Control Number:	C0078186
	4127 Roper Road	Name:	Bawlf Lagoon	Date Received:	Jan 14, 2016
	Edmonton, AB, Canada	Location:	Bawlf	Date Reported:	Jan 20, 2016
	T6B 3S5	LSD:		Report Number:	2074893
Attn:	Milan Butorac	P.O.:			
Sampled By:	JLM	Acct code:			
Company:	TEL				

Comments:

- Analysis for Total coliforms and Fecal coliforms was performed by both a membrane filtration method and a multi tube fermentation method as the samples contained sediment that affected volume of sample able to be filtered.

Exova Testing, calibrating, advising

www.exova.com ED 120-02

Invoice to:		Report To:	
Company:	Thurber Engineering	Company:	Same
Address:	4127 Roper Rd NW Edm AB T6B 3S5	Address:	
Attention:	Milan Butorac	Attention:	
Phone:	780-438-1460	Phone:	
Cell:	587-337-1318	Cell:	
Fax:	780-437-7125	Fax:	
E-mail:	mbutorac@thurber.ca	E-mail 1:	
Agreement ID:	–	E-mail 2:	
Copy of report:	YES	Copy of invoice:	Demand

Report Results		Regulatory Requirement	
E-Mail	✓	HCDWQG	
Mail		Ab Tier 1	
Online		SPIGEC	
Fax		BCCSR	
PDF	✓	Other (list below)	
Excel	✓		
QA/QC	✓		

Project Information

Project ID:	19-6835-1
Project Name:	BAWLF LAGOON
Project Location:	BAWLF
Legal Location:	–
PO/AFE#:	–
Proj. Acct. Code:	–
Quote #	–

Sample Custody (please print)

Sampled by: JLM

Company: TEL

RUSH Priority

- [ ] Emergency (contact lab for turnaround and pricing)
- [ ] Priority 1-2 working days (100% surcharge)
- [ ] Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required: _____ Signature: _____

Special Instructions/Comments (please include contact information including ph. # if different from above).

N = NITROGEN CONTACT MILAN W/ ANY QUESTIONS

This section for Lab use only

Date/Time stamp: JAN 14 PM 3:05

Number of Containers ↓

Enter tests above (√ relevant samples below)

	Site I.D.	Sample Description	Depth start in	Depth start cm	Depth end m	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Routine Potability	Dissolved Metals	Total Kjeldahl N*	Chemical Oxygen Demand	Total Coliforms	Fecal Coliforms					
1		TH15-1			–	JAN 14/16	WTR	BLR	5	X	X	X	X	X	X					
2		TH15-2			↓	↓	↓	↓	↓	X	X	X	X	X	X					
3		TH15-3			↓	↓	↓	↓	↓	X	X	X	X	X	X					
4		TH15-4			↓	↓	↓	↓	↓	X	X	X	X	X	X					
5		TH15-5			↓	↓	↓	↓	↓	X	X	X	X	X	X					
6		SW15-2			↓	↓	↓	↓	↓	X	X	X	X	X	X					
7		SW15-3			↓	↓	↓	↓	↓	X	X	X	X	X	X					
8		SW15-6			↓	↓	↓	↓	↓	X	X	X	X	X	X					
9		DUP A			↓	↓	↓	↓	↓	X	X	X	X	X	X					
10																				
11																				
12																				
13																				
14																				
15																				

*NOT FILTERED, NOT PRESERVED

Indicate in the space allotted any deficiencies by the corresponding number.

1. Indicate any samples that were not packaged well
2. Indicate any samples not received in Exova supplies
3. Indicate any samples that were not clearly labeled
4. Indicate any samples not received within the required hold time or temp.
5. Indicate any missing or extra samples
6. Indicate any samples that were received broken
7. Indicate any samples where sufficient volume was not received
8. Indicate any samples received in an inappropriate container

Submission of this form acknowledges acceptance of Exova's Standard Terms and Conditions (http://www.exova.com/about/terms-and-conditions/)

Please indicate any potentially hazardous samples

Page 1 of 1 Control # C 0078186

Lot: 1116288 COC

Shipping: COD Y/ N

and size of coolers

Temp. received: 4.1

Delivery Method: HAND

Waybill:

Received by: J NUNEZ

ED 120-02