ENG-TECH
CONSULTING LIMITED

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October 11, 2016

File No. 16-167-01

Edie Construction Ltd.
Box 674, RR1
Dugald, Manitoba
R0E 0K0

ATTENTION: Calvin Edie

RE: Hydraulic Conductivity Test Results, Lorette Lagoon

ENG-TECH Consulting Limited (ENG-TECH) received the seven (7) Shelby tube samples from the above site and the tubes were extracted on September 23, 2016, and three (3) samples were selected for hydraulic conductivity testing by MB Sustainable Development.

ENG-TECH prepared the samples labelled ST4 (Bottom) and ST7 (Top) for testing in accordance with ASTM D5084-03, *Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials using a Flexible Wall Permeameter*. The final hydraulic conductivity values (k_{20}) of 1.9 x 10^{-8} cm/sec and 1.6 x 10^{-8} cm/sec were obtained for the samples identified as ST4 (Bottom) and ST7 (Top), respectively. The hydraulic conductivity test data is outlined in Table 1, while the graphical representations of the hydraulic conductivity versus elapsed time are shown in Figures 1 and 2.

The Shelby tube labelled ST6 (Bottom) is being tested and the results will be forwarded to you upon completion.

ENG-TECH trusts the above is all the information you require. If you have any questions, please contact the undersigned.

Sincerely,
ENG-TECH Consulting Limited

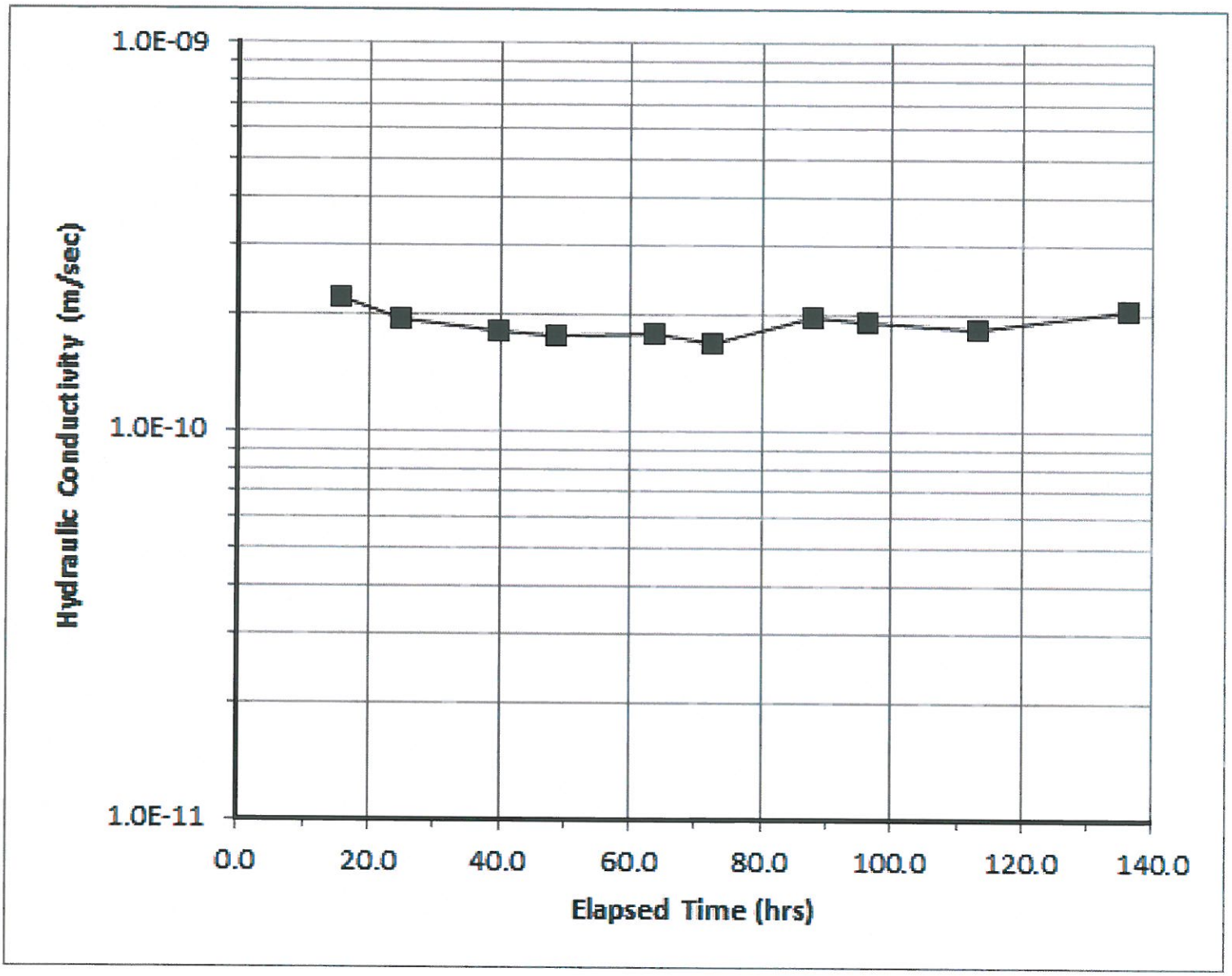
Clark Hryhoruk, M.Sc., P.Eng.
President, Geotechnical Engineer

CDH/

Attachments: Table 1 – Hydraulic Conductivity Test Data
Figure 1 – Hydraulic Conductivity Versus Elapsed Time (ST4 Bottom)
Figure 2 – Hydraulic Conductivity Versus Elapsed Time (ST7 Top)

TABLE 1
HYDRAULIC CONDUCTIVITY TEST DATA
LORETTE LAGOON

SAMPLE IDENTIFICATION	ST4 (Bottom)	ST7 (Top)
INITIAL VALUES		
ENG-TECH Reference No.	16-167-1-26	16-167-1-27
Length of Sample in Tube cm)	> 20 cm	> 20 cm
Length (cm)	7.40	7.30
Diameter (cm)	7.08	7.08
Area (cm^2)	39.3	39.3
Volume (cm^3)	291.2	287.2
Water Content (%)	27.1	49.4
Bulk Dry Density (kg/m^3)	1968	1727
Specific Gravity (G_s) (assumed)	2.68	2.68
Void Ratio	0.73	1.32
Degree of Saturation (%)	99.5	Approx. 100
FINAL VALUES		
Length (cm)	7.74	7.49
Diameter (cm)	7.28	7.18
Area (cm^2)	41.6	40.5
Volume (cm^3)	322.0	303.1
Water Content (%)	33.6	55.5
Bulk Dry Density (kg/m^3)	1863	1677
Specific Gravity (G_s) (assumed)	2.68	2.68
Void Ratio	0.92	1.49
Degree of Saturation (%)	97.7	100
CONSOLIDATION PHASE		
Confining Pressure (kPa)	103.4	103.4
Pore Water Pressure (kPa)	82.7	82.7
Effective Stress (kPa)	20.7	20.7
PERMEATION PHASE		
Confining Pressure (kPa)	103.4	103.4
Pore Water Pressure (kPa)	82.7	82.7
Effective Stress (kPa)	20.7	20.7
Hydraulic Gradient	14.5	15.0
Permeant Fluid	Distilled Water	Distilled Water
HYDRAULIC CONDUCTIVITY at TEST TEMPERATURE OF 21 °C (cm/sec)	1.9×10^{-8}	1.6×10^{-8}
HYDRAULIC CONDUCTIVITY at TEMPERATURE OF 20 °C (K_{20}) (cm/sec)	1.9×10^{-8}	1.6×10^{-8}



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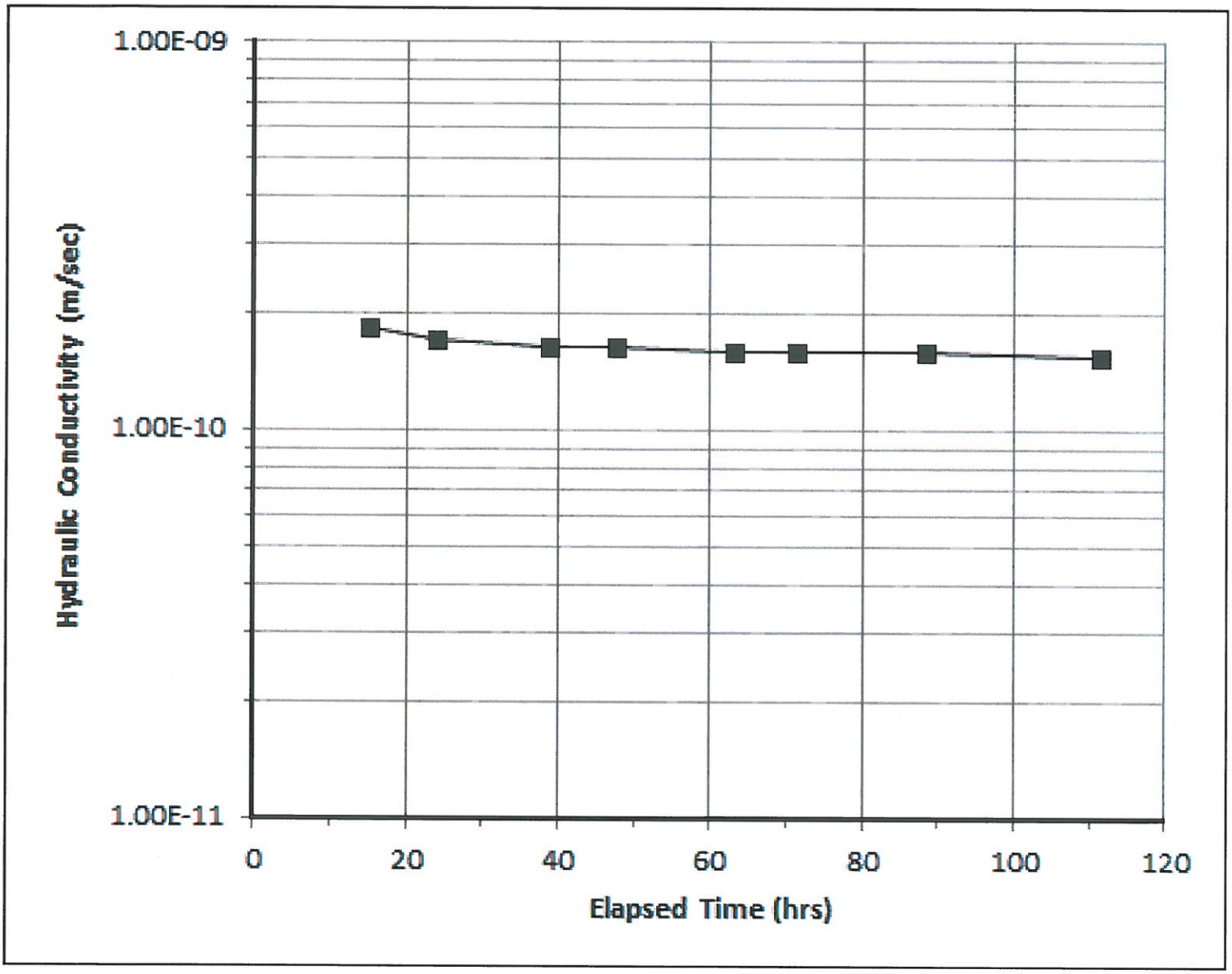
Certificate of Authorization
ENG-TECH Consulting Limited
No. 2475 Expiry: April 30, 2017

CLIENT: EDIE CONSTRUCTION LTD.			PROJECT: LORETTE LAGOON
DATE: OCTOBER 2016			FILE No.: 16-167-01
DRAWN BY: PFPC	FIGURE No.: 1	REV.:	SCALE: N/A

HYDRAULIC CONDUCTIVITY VERSUS ELAPSED TIME (ST4 - Bottom)



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CLIENT: EDIE CONSTRUCTION LTD.			PROJECT: LORETTE LAGOON	
DATE: OCTOBER 2016			FILE No.: 16-167-01	HYDRAULIC CONDUCTIVITY VERSUS ELAPSED TIME (ST7 - Top)
DRAWN BY: PFPC	FIGURE No.: 2	REV.:	SCALE: N/A	