Quality Engineering | Valued Relationships

September 18, 2023 Our File No. 1000-186-01

Ken Allard
Smook Contractors Ltd
101 Hayes Road
Thompson MB
R8N 1M3

RE: Laboratory Test Results – Paint Lake Expansion – L23-419

Please see the attached Hydraulic Conductivity report. Three Shelby tube samples were brought to TREK and were extracted on September 1, 2023. This report contains the hydraulic conductivity test results for TH23-05 and TH23-06 using a flexible wall permeameter following ASTM D5080-16.

The test report for the samples are attached showing the calculated hydraulic conductivity values corrected to 20°C are as follows:

Sample TH23-05 3.45E-11 m/s (3.45×10^{-9} cm/s)

Sample TH23-06 1.18E-10 m/s (1.18×10^{-8} cm/s)

The services undertaken by TREK on this assignment constitutes testing services only and engineering evaluation or interpretation has not been undertaken but is available upon request.

If you have any questions or require additional information or clarifications, please contact Angela at 204.792.8458

Kind Regards,

TREK Geotechnical

Review Control:

Prepared By: AFK	*Reviewed By:* AFK	*Checked By:* NJF

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Hydraulic Conductivity Determination (Flexible Wall)

ASTM D5084-16

Project No.	1000-186-01	**Test Pit**	TH23-05
Client	Smook Contractors	**Sample #**	SW Corner
Project	Paint Lake	**Depth (m)**	1.54 to 2.16
		Sample Date	29-Aug-23
		Test Date	01-Sep-23
		Technician	BMH

Specimen Details

Visual Classification Clay - silty, brown, v. stiff, moist

Comments The specific gravity of the soil was assumed to be 2.80.

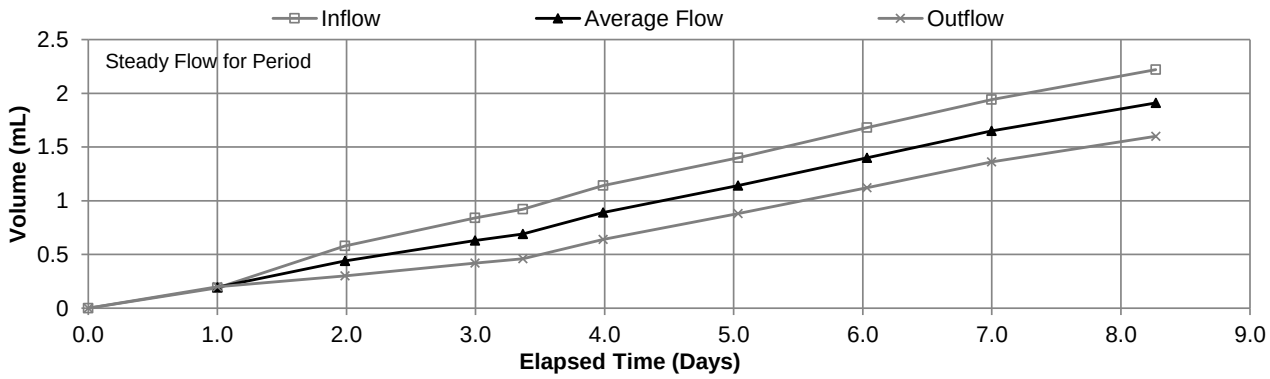
Index Testing

Liquid Limit	not requested
Plastic Limit	not requested
Plasticity Index	not requested
Clay Content (%)	not requested

Test Details

Permeant	Distilled, de-aired water
Method	Constant Rate
Cell Pressure	127.8 kPa
Influent Pressure	97.7 kPa
Effluent Pressure	82.4 kPa
Gradient	16.56

Permeation Graph



Steady Flow Permeation Data

Time Increment (Days)	Elapsed Time (Days)	Flow (Q)		Inflow / Outflow Ratio	Average Flow (mL)	Temperature Correction	Corrected Hydraulic Conductivity, k_{20} (m/s)
		Influent (mL)	Effluent (mL)				
1.05	5.03	1.40	0.88	1.08	0.25	1.00	3.44E-11
1.00	6.03	1.68	1.12	1.17	0.26	1.00	3.74E-11
0.97	7.00	1.94	1.36	1.08	0.25	0.99	3.70E-11
1.27	8.27	2.22	1.60	1.17	0.26	1.00	2.90E-11

Average Temperature Corrected Hydraulic Conductivity, k_{20} (m/s) **3.45E-11** **(3.45×10^{-9} cm/s)**

Consolidation Data

	Average Height (m)	Average Diameter (m)	Moisture Content (%)	Dry Density (kN/m^3)	Degree of Saturation (%)	Cell Pressure	Back Pressure
Initial	0.1005	0.0718	30.0	14.8	97.8	120.0	84.8
Final	0.1013	0.0717	31.4	14.7	101.3	120.7	83.6

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Hydraulic Conductivity Determination (Flexible Wall)

ASTM D5084-16

Project No.	1000-186-01	**Test Pit**	TH23-06
Client	Smook Contractors	**Sample #**	SE Corner of Floor
Project	Paint Lake	**Depth (m)**	0.93 to 1.54
		Sample Date	29-Aug-23
		Test Date	31-Aug-23
		Technician	BMH

Specimen Details

Visual Classification Clay - silty, brown,trace oxidation, stiff, moist

Comments The specific gravity of the soil was assumed to be 2.75.

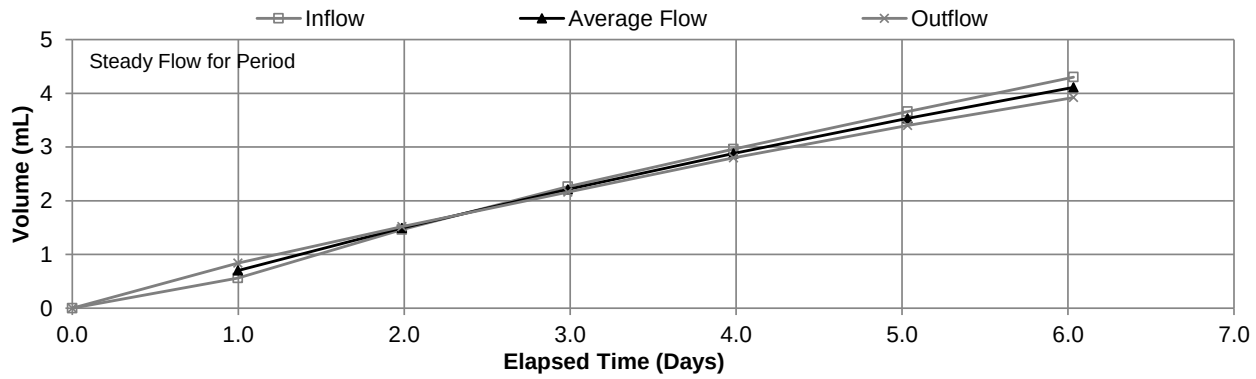
Index Testing

Liquid Limit	not requested
Plastic Limit	not requested
Plasticity Index	not requested
Clay Content (%)	not requested

Test Details

Permeant	Distilled, de-aired water
Method	Constant Rate
Cell Pressure	124.4 kPa
Influent Pressure	91.6 kPa
Effluent Pressure	82.8 kPa
Gradient	9.32

Permeation Graph



Steady Flow Permeation Data

Time Increment (Days)	Elapsed Time (Days)	Flow (Q)		Inflow / Outflow Ratio	Average Flow (mL)	Temperature Correction	Corrected Hydraulic Conductivity, k_{20} (m/s)
		Influent (mL)	Effluent (mL)				
1.00	2.99	2.26	2.16	1.25	0.72	1.00	1.99E-10
1.00	3.98	2.96	2.80	1.09	0.67	1.00	1.93E-10
1.05	5.03	3.66	3.40	1.17	0.65	1.00	1.71E-10
1.00	6.03	4.30	3.92	1.23	0.58	1.00	1.62E-10

Average Temperature Corrected Hydraulic Conductivity, k_{20} (m/s) **1.81E-10** **(1.81×10^{-8} cm/s)**

Consolidation Data

	Average Height (m)	Average Diameter (m)	Moisture Content (%)	Dry Density (kN/m^3)	Degree of Saturation (%)	Cell Pressure	Back Pressure
Initial	0.1025	0.0721	32.2	14.2	98.0	119.8	84.9
Final	0.1025	0.0724	34.1	13.9	99.4	119.1	83.9