APPENDIX D
SUMMARY OF PACKER TESTING, 2020 FS-LEVEL GEOTECHNICAL PIT DESIGN PROGRAM

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Attention: Mr. James Powell, M.Eng. P.Eng.
Vice President, Regulatory and Government Affairs

Re: Summary of Packer Testing, 2020 FS-Level Geotechnical Pit Design Program, Marathon Valentine Gold Project, Central Newfoundland

This letter report was prepared by GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) and summarizes the packer testing program completed as part of the 2020 Feasibility Study (FS)-Level Geotechnical Pit Design Program completed for the Marathon Valentine Gold Project Site, as documented in Terrane (2021). This letter report provides a detailed description of the field testing and data analysis methods used for the packer testing program, and presents the estimates of hydraulic conductivity determined through packer testing for the various lithologies and structural features (e.g. faults, fractures, shear zones) identified in the proposed Marathon and Leprechaun pit areas.

2020 PACKER TESTING PROGRAM

Packer Testing Methods

Packer testing was carried out concurrently with the 2020 geotechnical drilling program in the proposed Marathon and Leprechaun pit areas. Nine of the 13 geotechnical drill holes completed as part of the 2020 field program were packer tested. The locations of these are shown on the drill hole plans for each proposed pit (attached), and included:

- Five drill holes at Marathon (MA-GT-20-01, MA-GT-20-02, MA-GT-20-03, MA-GT-20-04, and MA-GT-20-06); and,
- Four drill holes at Leprechaun (VL-GT-20-01, VL-GT-20-02, VL-GT-20-04, VL-GT-20-05).

Of these, three drill holes from each area were packer tested with continuous intervals covering the full drilled depths (MA-GT-20-01, MA-GT-20-03, MA-GT-20-04 at Marathon, and VL-GT-20-01, VL-GT-20-02, and VL-GT-20-05 at Leprechaun). Packer testing in the remaining drill holes was carried out on discrete intervals to characterize specific zones of interest. The packer tests were conducted using a Standard Wireline Packer System (SWiPS) manufactured by Inflatable

Packers International (IPI) and were performed using a constant head (Lugeon) packer injection test method.

Several approaches were used to isolate the desired packer testing interval:

1. Single packer testing to isolate a discrete interval as the hole was advanced with the bottom of the test interval bounded by the bottom of the drill hole;
2. Cumulative single packer testing performed from the bottom up following completion of the total or a portion of the drilled hole, with the bottom of the test interval bounded by the bottom of the drilled portion of the hole, and with overlapping and increased test interval lengths as the single packer was progressively advanced up the hole; and,
3. Double packer testing to isolate a discrete interval in the hole following completion of drilling.

A detailed description of the methods used for packer testing is attached. The packer test results for the Marathon pit area and Leprechaun pit area are provided in Tables 1 and 2 (attached), respectively, along with individual analysis reports for each packer test.

A total of 94 packer tests were completed for this program. Of these, 89 packer tests (95%) were successfully completed and were used for hydraulic conductivity characterization. Five packer tests were not considered reliable and were rejected from the analysis. These tests were rejected either due to:

1. Testing issues (i.e., difficulty maintaining constant test pressures; for example, test MA-GT-20-03 PT4); or,
2. During cumulative single packer testing, where a relatively higher hydraulic conductivity interval situated below masked the hydraulic conductivity for the desired test interval, returning unrealistic negative hydraulic conductivity values (for example, tests MA-GT-20-03 PT2, VL-GT-220-02 PT11 and PT18, and VL-GT-20-05 PT15).

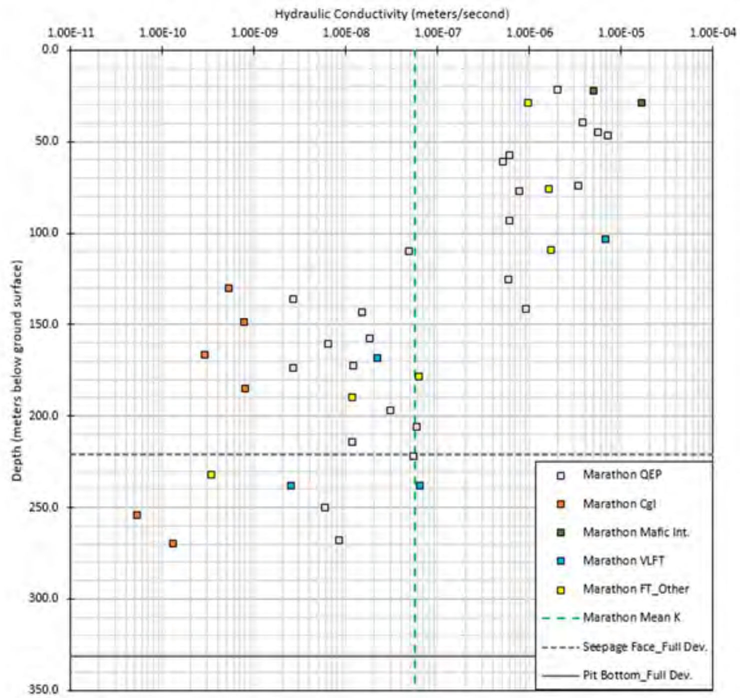
Packer Testing Results

The hydraulic conductivity for each test interval was determined based on the analysis of the packer test data using the software AquiferTest® Version 10 (Waterloo Hydrogeologic, Waterloo, ON). Hydraulic conductivity values were derived directly from analysis of the discrete single and double packer test data. Since the cumulative single packer tests involved advancing the packer upwards over a progressively expanding test interval, the determined hydraulic conductivity result required mathematical processing to remove the influence of the over-lapping previously tested portion of the drill hole and to determine a unique hydraulic conductivity value for the discrete test interval. A description of the mathematical method used to process the cumulative single packer test data is attached.

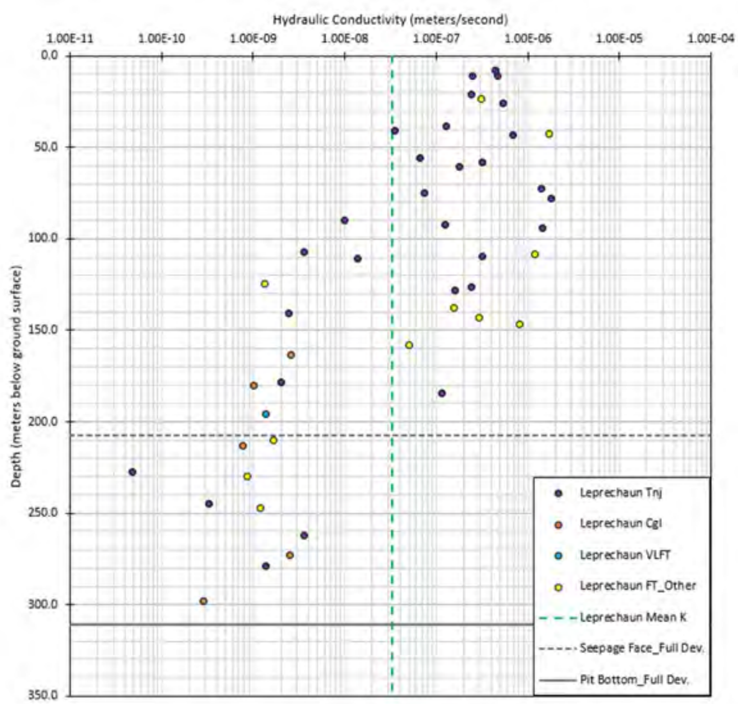
A summary of the calculated hydraulic conductivity values for Marathon and Leprechaun are provided in Table 3 below, and plots of hydraulic conductivity versus depth separated by rock type for each deposit is presented in Figure 1.

Table 3 - Summary of Calculated Hydraulic Conductivity Values for Major Rock Types and Structures in the proposed Marathon and Leprechaun Pit Areas

Deposit	Rock/ Structure Type	Number of Packer Tests	Hydraulic Conductivity (m/s)		
			Minimum	Maximum	Geometric Mean
Marathon	Quartz-Eye Porphyry	24	5.80E-09	3.76E-06	1.15E-07
	Conglomerate	6	5.20E-11	7.85E-10	2.92E-10
	Mafic Intrusive	2	5.00E-06	1.67E-05	9.13E-06
	Valentine Lake Thrust Fault	5	2.53E-09	6.71E-06	6.96E-08
	Modelled Faults/Other	6	3.42E-10	1.69E-06	9.25E-08
	All Rock/Structure Types	**43**	**5.20E-11**	**1.67E-05**	**5.57E-08**
Leprechaun	Trondhjemite	29	4.79E-11	1.80E-06	5.69E-08
	Conglomerate	5	2.84E-10	2.60E-09	1.10E-09
	Valentine Lake Thrust Fault	1			1.37E-09
	Modelled Faults / Other	11	8.60E-10	1.69E-06	4.75E-08
	All Rock/Structure Types	**46**	**4.79E-11**	**1.80E-06**	**3.26E-08**



(a)



(b)

Figure 1 Hydraulic conductivity vs Depth by Rock Type and Structural Feature for (a) Marathon, and (b) Leprechaun deposit.

For the Marathon deposit, a broad range in hydraulic conductivity values were calculated spanning six orders of magnitude from 5.20E-11 m/s to 1.67E-05 m/s, with a geometric mean value for all the packer tests of 5.57E-08 m/s.

The hydraulic conductivity of specific rock types at the Marathon deposit is summarized below:

- The quartz eye porphyry, which is the dominant rock type within the Marathon open pit and represents approximately 55% of all the packer tested intervals, had a geometric mean hydraulic conductivity of 1.17E-07 m/s;
- The conglomerate, which makes up a smaller, but main rock type in the Marathon deposit area had a geometric mean hydraulic conductivity of 2.92E-10 m/s. The conglomerate had the lowest hydraulic conductivity, and was approximately three orders of magnitude less than that determined for the quartz eye porphyry;
- The mafic intrusive, a minor rock type in the Marathon deposit area had the highest hydraulic conductivity with a calculated mean value of 9.13E-06 m/s;
- Tests within the quartz-eye porphyry, were conducted over a wide range of depths (from near surface to full depth) and the resulting range of hydraulic conductivity values spanned three to five orders of magnitude.
- In contrast, the hydraulic conductivity values for both the mafic intrusive and conglomerate are based on a relatively low number of tests over a limited range in depths (i.e., two tests at shallow depths < 50 mbgs for the mafic intrusive, and six tests at deep depths >100 mbgs for the conglomerate). Given the few tests and limited range of testing depth, the hydraulic conductivities determined for these rock types may not be fully representative of their bulk values over the full depth of the proposed open pit. This interpretation is supported by the much higher hydraulic conductivity value for conglomerate (1.93E-06 m/s) for shallow test intervals from 30 – 50 m during previous investigations, which suggests that the full range of conglomerate hydraulic conductivity values from near surface to full pit depth may span five orders of magnitude; and,
- The hydraulic conductivity for the Valentine Lake thrust fault ranged from 2.53E-09 m/s to 6.71E-06 m/s, with a geometric mean of 6.96E-08 m/s. Similar results were also obtained for the other Marathon deposit faults, which had a combined geometric mean of 9.25E-08 m/s. Overall, the hydraulic conductivities determined for the Marathon deposit faults (including the Valentine Lake thrust fault) were within the range of values for the various rock types, and were not found to be hydraulically distinct from the surrounding rock mass. This means the faults in the proposed open pit are not expected to be substantial preferred pathways for groundwater flow, or constitute problem areas for seepage control.

For the Leprechaun deposit, a broad range in hydraulic conductivity values were determined and spanned five orders of magnitude from 4.79E-11 m/s to 1.80E-06 m/s. The geometric mean for all the packer tests was 3.26E-08 m/s.

The hydraulic conductivity of specific rock types at the Leprechaun deposit is summarized below:

- Trondhjemite is the dominant rock type within the Leprechaun deposit open pit and represents approximately 63% of the packer tested intervals and had a geometric mean hydraulic conductivity of 5.69E-08 m/s;
- The conglomerate, which makes up a smaller, but main rock type in the Leprechaun deposit area, had a geometric mean hydraulic conductivity of 1.10E-09 m/s. This value is approximately one order of magnitude higher than that determined for the conglomerate at Marathon but, like Marathon, represents the lowest hydraulic conductivity rock type around the Leprechaun deposit area, and was approximately three orders of magnitude less than that determined for the trondhjemite;
- A similar depth bias exists for the conglomerate hydraulic conductivity dataset at the Leprechaun deposit as for the Marathon deposit, with the mean hydraulic conductivity for this rock type based on only five packer tests all completed below 150 m depth;
- Only one packer test was completed for the Valentine Lake thrust fault, with a hydraulic conductivity value of 1.37E-09 m/s. This value is approximately one order of magnitude lower than that determined for the Valentine Lake thrust fault at the Marathon deposit. The combined mean for the other Leprechaun deposit faults was higher than that determined for the Valentine Fault by an approximate factor of four, with a geometric mean of 4.75E-08 m/s; and,
- Similar to the Marathon deposit, the hydraulic conductivities determined for the Leprechaun deposit faults (including the Valentine Lake thrust fault) were within the range of values for the various rock types, and were not found to be hydraulically distinct from the surrounding rock mass. Similarly, this means the faults in the proposed open pit are not expected to be substantial preferred pathways for groundwater flow, or constitute problem areas for seepage control.

In general, the 2020 hydraulic conductivity values determined for the Marathon and Leprechaun deposits were in good agreement with previous hydrogeological investigations at the site, and are within the typical range of values for similar intact and fractured rock types. Overall, the results for both deposits indicate a generally low permeability rock mass, with no significantly distinct increase in permeability associated with the tested faults and fault zones.

A similar general trend in the hydraulic conductivity distributions for both the Marathon and Leprechaun deposits is visible from Figure 1 (a and b), with hydraulic conductivities generally decreasing with depth for all rock types, as well as tested faults. The highest hydraulic conductivities were measured in shallow bedrock close to surface, and generally, hydraulic conductivity results 10^{-7} m/s and higher were measured above 150 mbgs. This observed decrease in hydraulic conductivity is attributed to closure of fracture apertures with depth due to lithostatic stress.

CONCLUSIONS

This summary letter report was prepared by Carolyn Anstey-Moore, M.Sc., M.A.Sc., P.Geo. We trust that this report meets your present requirements. If you have any questions or require additional information, please contact our office at your convenience.

Respectfully submitted,

GEMTEC Consulting Engineers and Scientist Limited

Carolyn Anstey-Moore, M.Sc., M.A.Sc., P.Geo.

REFERENCES

Beale, G. and Read, J. 2013. Guidelines for Evaluating Water in Pit Slope Stability, CSIRO Publishing, Melbourne, Australia. 600p.

Terrane Geoscience Inc. 2021. Feasibility Geotechnical Investigation: Marathon and Leprechaun Deposits. Final Report, March 23, 2021. 414p

ATTACHMENTS

2020 Geotechnical Drill Hole Plans – Marathon and Leprechaun
Packer Testing Methods & Data Analysis
Table 1 Summary of Packer Testing – Marathon Pit
Table 2 Summary of Packer Testing – Leprechaun Pit
Packer Test Analysis Reports

(Figure taken directly from Terrane, 2021)

MARATHON GOLD

VALENTINE GOLD PROJECT
FEASIBILITY
GEOTECHNICAL INVESTIGATION

FIGURE 6 - Terrane 2019 -2020 Geotechnical Drillhole Location Map - Marathon Deposit

Scale: 1:10,000	Date: Jan. 07, 2021
Drawn: ACH	Checked: AG
Approved: TLG	Figure 6

LEGEND

- Terrane 2020 Geotechnical Drillhole
- Terrane 2019 Geotechnical Drillhole
- 10 m Topographic Contours
- Proposed Pit Contours
- Marathon Pit Outline

0 175 350 Meters

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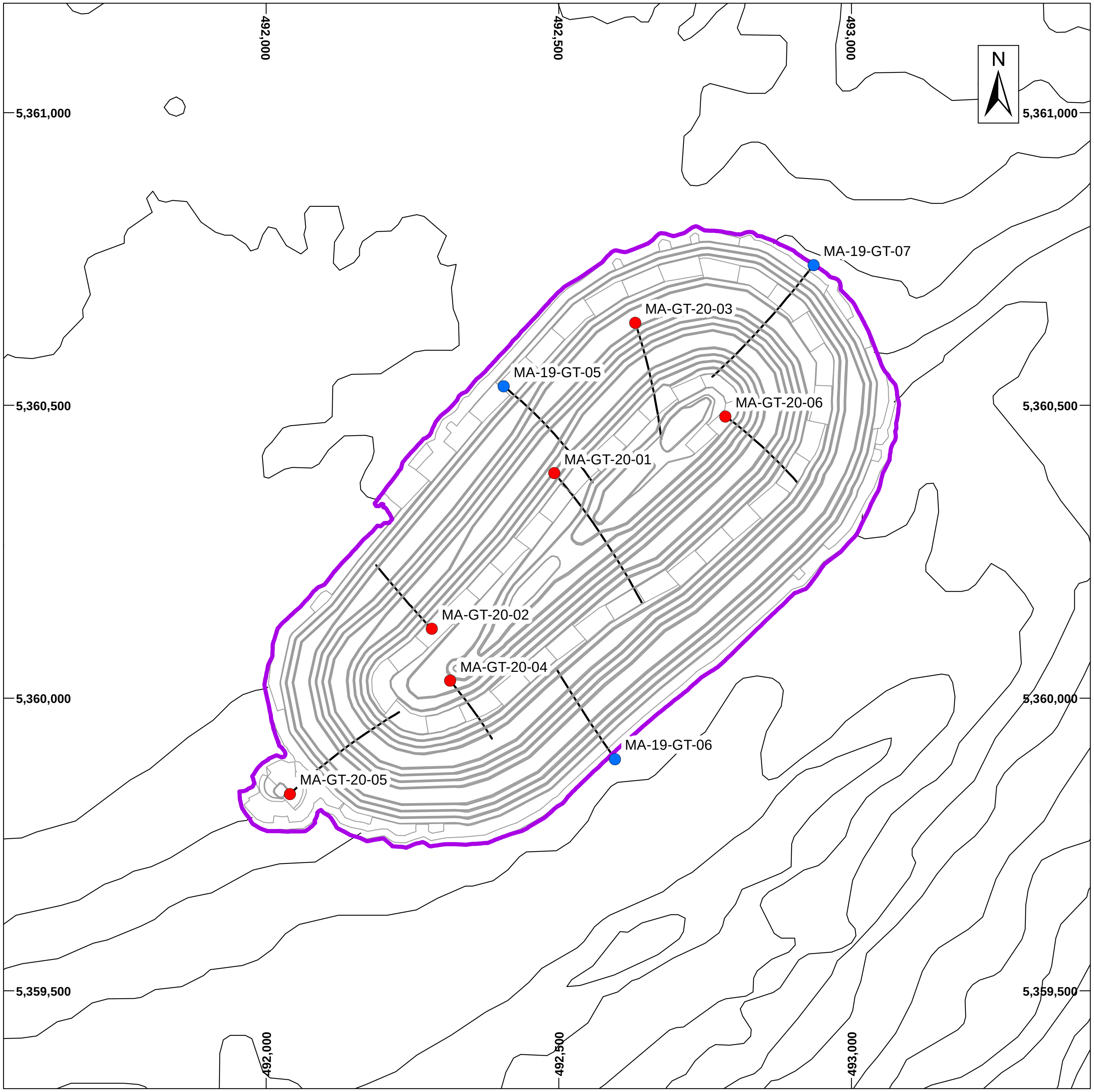
Notes
1) Marathon feasability open pit shape provided by Marathon (Dec. 2020)
2) NAD83 UTM Z21N



(Figure taken directly from Terrane, 2021)

MARATHON GOLD

VALENTINE GOLD PROJECT
FEASIBILITY
GEOTECHNICAL INVESTIGATION

FIGURE 7 - Terrane 2019 -2020 Geotechnical Drillhole Location Map - Leprechaun Deposit

Scale: 1:7,500	Date: Jan. 07, 2021
Drawn: ACH	Checked: AG
Approved: TLG	Figure 7

LEGEND

- Terrane 2020 Geotechnical Drillhole
- Terrane 2019 Geotechnical Drillhole
- 10 m Topographic Contours
- Leprechaun Pit Contours
- Leprechaun Pit Outline

0 125 250 Meters

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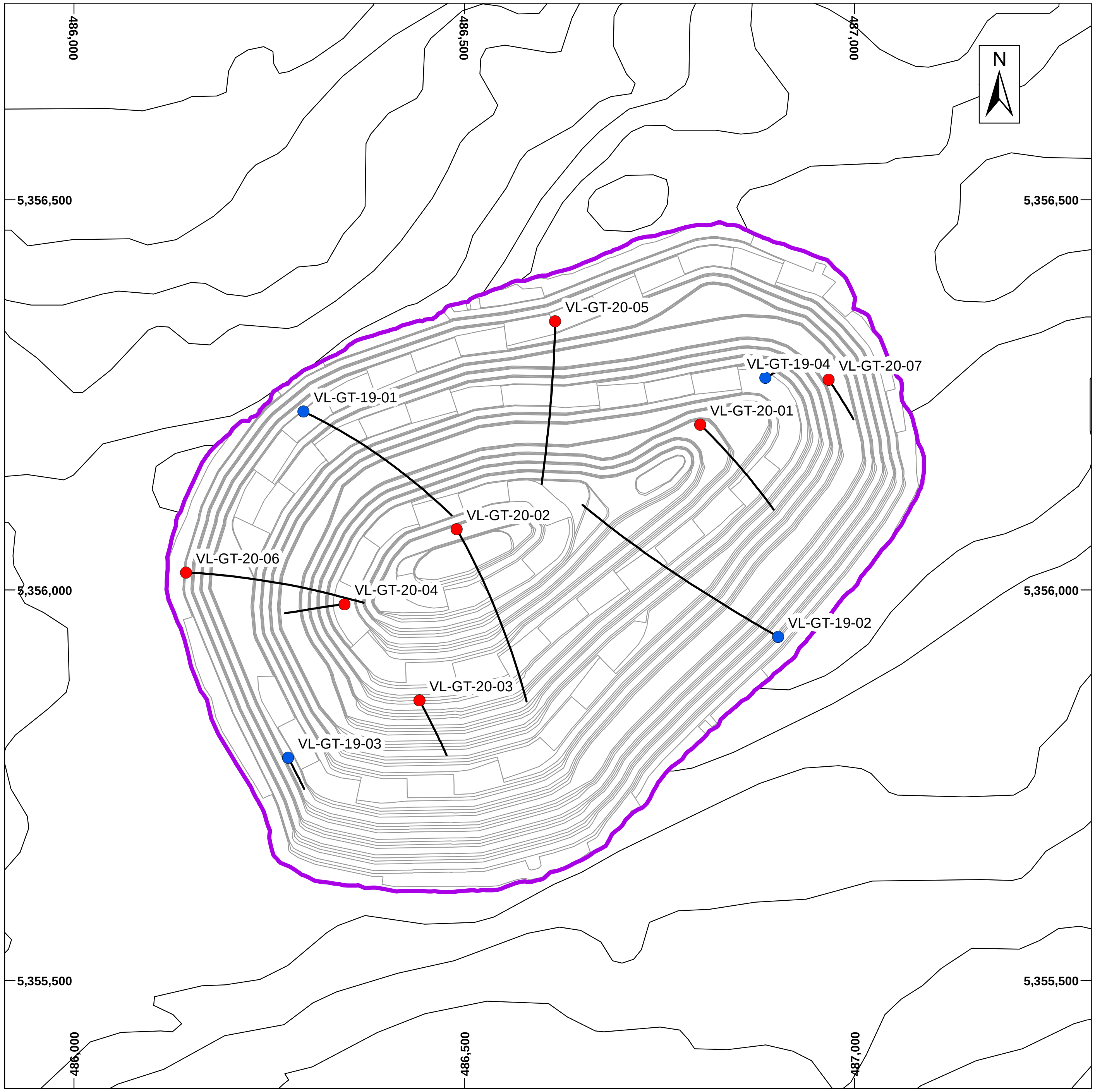
Notes
1) Leprechaun feasability open pit shape provided by Marathon (Dec. 2020)
2) NAD83 UTM Z21N



PACKER TESTING METHODS & ANALYSIS

PACKER TESTING METHODS

A total of 94 packer tests were completed for this program. Of these, 89 packer tests (95%) were successfully completed and were used here for hydraulic conductivity characterization. Several approaches were used to isolate the desired packer test intervals, including:

1. Single packer testing to isolate a discrete interval as the hole was advanced with the bottom of the test interval bounded by the bottom of the hole;
2. Cumulative single packer testing performed from the bottom up following completion of the total or a portion of the drilled hole, with the bottom of the test interval bounded by the bottom of the drilled section of the hole, and with overlapping and increased test interval lengths as the single packer was progressively advanced up the hole; and,
3. Double packer testing to isolate a discrete interval in the hole following completion of drilling.

The packer tests were conducted using a Standard Wireline Packer System (SWiPS) manufactured by Inflatable Packers International (IPI), and were performed using a constant head (Lugeon) packer injection test method.

Single packer tests were conducted as follows:

- A borehole was advanced to the bottom of a chosen test interval and the hole was flushed with clean water through the drill rod until the return water was clear. The water source used for packer testing was obtained from nearby surface water sources, and was pumped into an on-site water tank so use during testing.
- The drill rods were then withdrawn to the desired test depth, and a single-element packer assembly was lowered inside the drill rods to the top of the test interval with the wireline. The packer bladder was then inflated (using pressurized water) to isolate the test interval; the bottom of which was bounded by the bottom of the drilled section of the borehole. Test intervals were generally 21 m (along hole (AH) in length), corresponding to an approximately 16 m vertical length for the Leprechaun drill holes and an 18 m vertical length for the slightly steeper drill holes at Marathon. For cumulative single packer tests at Marathon and Leprechaun, the test interval was generally expanded by moving the single packer progressively up the hole by these test interval lengths for each sequential test.
- Once a successful seal was established, water was pumped into the isolated test interval through the injection pipe until a constant differential head and inflow rate were established. A total of three ascending and two descending water pressure steps were applied for each interval with regulated constant head achieved by controlling the injection flow rate using a bypass valve.
- For each test step, the water injection rate was observed until it had stabilized (generally up to 10 minutes). During this observation period, the pressure and injected quantity of water was recorded at one-minute intervals. The stabilized flow rate was used to calculate the bulk hydraulic conductivity of the rock mass over the tested interval. Pressure was measured using

a 10 psi or 100 psi gauge, depending on the required test pressures, and the water injection rate was measured using a flow meter totalizer and stopwatch.

Double packer tests were conducted as follows. The test interval was sealed at either end with a hydraulically inflated packer bladder, and water was injected through a section of perforated pipe located between the two packers. The same constant head injection test procedures were applied to the double packer test section as that described above for single packer testing. Double packer test interval lengths varied from 1 m to 24 m vertical length, depending on the length of the zone of interest.

2. PACKER TESTING DATA ANALYSIS

The hydraulic conductivity for each test interval was determined based on the analysis of the packer test data using the software AquiferTest® Version 10 (Waterloo Hydrogeologic, Waterloo, ON). Hydraulic conductivity values for single- and double-packer tests were calculated directly from the packer test data. In contrast, since the cumulative single packer tests involved raising the packer assembly upwards over a progressively longer test interval, the calculated hydraulic conductivity result for the test interval required mathematical processing to remove the influence of the over-lapping previously tested portion of the drill hole in order to determine a specific hydraulic conductivity value for the uppermost, incremental part of the overall test interval.

The hydraulic conductivity of the discrete test intervals for the cumulative single packer tests were determined by applying the basic theory of parallel groundwater flow through a layered bedrock system (e.g., Beale and Read, 2013). The total effective hydraulic conductivity (K_x) of a layered bedrock system is equal to the summation of the hydraulic conductivities of the individual layers, weighted based on layer thickness, as given by:

$$K_x = \frac{\sum_{i=1}^{n} K_i\, b_i}{\sum_{i}^{n} b_i} = \frac{K_1\, b_1 + K_2\, b_2 + K_3\, b_3 + \cdots + K_n\, b_n}{b_1 + b_2 + b_3 + \cdots + b_n}$$

where

- K_x = total effective hydraulic conductivity of the layered bedrock system (m/s)
- K_i = hydraulic conductivity of layer (m/s)
- b_i = thickness of layer *i* (m)
- i = number of layer
- n = total number of layers

Applying the layered bedrock system analog to the cumulative single packer tests, each discrete test interval in the cumulative tested section was assumed to be equivalent to a bedrock layer in the above equation with its own unique hydraulic conductivity and thickness (i.e., test length AH).

PACKER TESTING METHODS & ANALYSIS

The figure below illustrates the overlapping sequencing of the cumulative single packer testing carried out as part of the current program and how hydraulic conductively values were derived using the above equation for a layered bedrock system.

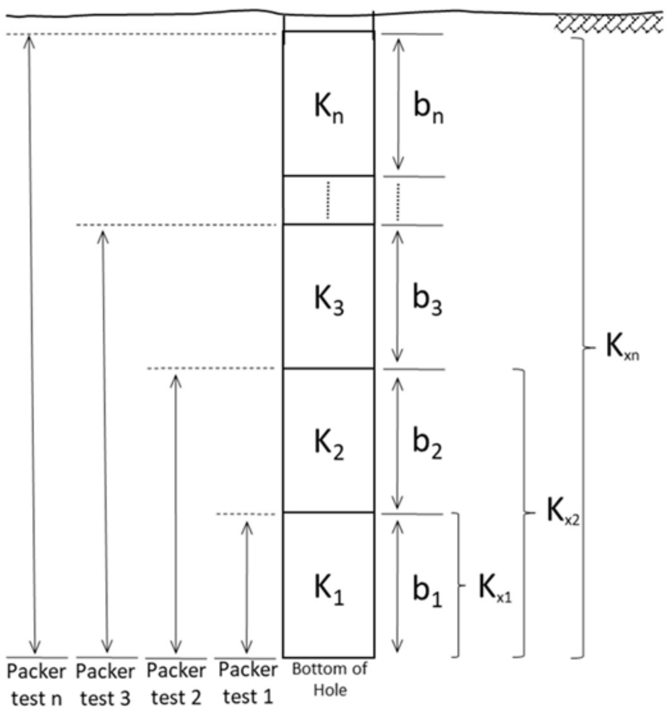


Illustration of cumulative single packer testing using parallel groundwater flow through a layered bedrock system analog.

As illustrated above, each cumulative packer test interval was incrementally longer than for the previous test, and encompassed a new upper interval for which a specific hydraulic conductivity value was to be determined. The packer test completed on the lowermost interval (Packer test 1) directly provided the specific hydraulic conductivity value for this first test interval. For the next sequential packer test (Packer test 2), the hydraulic conductivity value for the upper discrete interval (K_2) was determined by simplifying and rearranging the general layered system hydraulic conductivity equation as follows:

$$K_2 = \frac{K_{x2}(b_1 + b_2) - K_1\ b_1}{b_2}$$

In this equation the "$K_{x2}(b_1 + b_2)$" term represents the hydraulic conductivity packer test result and test length for the entire test interval (i.e., Packer test 2), and the "$K_1\ b_1$" term represents the results for the previous test interval (i.e., Packer test 1). Carrying on with this approach, the hydraulic conductivity value for each subsequent discrete test interval was determined by subtracting the product of the K value and test interval length for the current and previous packer tests and dividing by the length of the uppermost discrete test interval.

Table 1 Summary of Packer Testing - Marathon Pit

Borehole ID	Packer Test ID	Packer Test Type	Test Interval (m ID)				Discrete Test Interval							
			From	To	Test Length	Hydraulic Conductivity (m/sec)	From (m ID)	To (m ID)	From (m VD)	To (m VD)	Average Depth (m VD)	Test Length (m)	Hydraulic Conductivity (m/sec)	Lithology/Structure
MA-GT-20-01	PT17	SPT	27.33	362.00	334.67	7.39E-07	27.33	48.33	20.94	37.02	28.98	16.09	9.48E-07	QEP/MD. Modelled_Fault 6 @ 35 m ID; ~0.07 m zone. Also a number of other narrow (<0.1 m thick) rubble zones in test interval.
MA-GT-20-01	PT16	CSPT	48.33	362.00	313.67	7.25E-07	48.33	69.33	37.02	53.11	45.07	16.09	5.56E-06	QEP/MD
MA-GT-20-01	PT15	CSPT	69.33	362.00	292.67	3.78E-07	69.33	90.33	53.11	69.20	61.15	16.09	5.07E-07	QEP/MD
MA-GT-20-01	PT14	CSPT	90.33	362.00	271.67	3.68E-07	90.33	111.33	69.20	85.28	77.24	16.09	7.62E-07	QEP/MD. Modelled_Fault 12 @ 107 m ID (very subtle in core)
MA-GT-20-01	PT13	CSPT	111.33	362.00	250.67	3.35E-07	111.33	132.33	85.28	101.37	93.33	16.09	5.97E-07	QEP/MD
MA-GT-20-01	PT12	CSPT	132.33	362.00	229.67	3.11E-07	132.33	153.33	101.37	117.46	109.41	16.09	1.69E-06	QEP/MD. Modelled_Fault 3 @ 145 m ID; 10 cm rubble zone.
MA-GT-20-01	PT11	CSPT	153.33	362.00	208.67	1.72E-07	153.33	174.33	117.46	133.54	125.50	16.09	5.92E-07	QEP/MD. A number of 0.1 - 0.2 m thick rubble zones in test interval.
MA-GT-20-01	PT10	CSPT	174.33	362.00	187.67	1.25E-07	174.33	195.33	133.54	149.63	141.59	16.09	9.08E-07	QEP/MD. Modelled_Fault 13 @ 183 m ID (very subtle in core)
MA-GT-20-01	PT9	CSPT	195.33	362.00	166.67	2.64E-08	195.33	216.33	149.63	165.72	157.67	16.09	1.78E-08	QEP/MD
MA-GT-20-01	PT8	CSPT	216.33	362.00	145.67	2.76E-08	216.33	237.33	165.72	181.81	173.76	16.09	2.67E-09	QEP/MD
MA-GT-20-01	PT7	CSPT	237.33	362.00	124.67	3.18E-08	237.33	258.33	181.81	197.89	189.85	16.09	1.16E-08	QEP/MD. Modelled_Fault 4 @ 245 m ID (very subtle in core)
MA-GT-20-01	PT6	CSPT	258.33	362.00	103.67	3.59E-08	258.33	279.33	197.89	213.98	205.94	16.09	5.87E-08	QEP/MD
MA-GT-20-01	PT5	CSPT	279.33	362.00	82.67	3.01E-08	279.33	300.33	213.98	230.07	222.02	16.09	5.45E-08	QEP/MD
MA-GT-20-01	PT4	CSPT	300.33	362.00	61.67	2.18E-08	300.33	321.33	230.07	246.15	238.11	16.09	6.38E-08	Cgl/Phyl. Modelled_Fault 1 (VLFT) @ 308 - 314 m ID.
MA-GT-20-01	PT3	DPT	308.33	312.81	4.48	2.53E-09	308.33	312.81	236.19	239.63	237.91	3.43	2.53E-09	Modelled_Fault 1 (VLFT) @ 308 - 314 m ID; observed in core as multiple rubble and gouge zones.
MA-GT-20-01	PT2	CSPT	321.33	362.00	40.67	9.00E-11	321.33	342.18	246.15	262.13	254.14	15.97	5.20E-11	Cgl
MA-GT-20-01	PT1	CSPT	342.18	362.00	19.82	1.30E-10	342.18	362.00	262.13	277.31	269.72	15.18	1.30E-10	Cgl/MD
MA-GT-20-02	PT1	DPT	186.33	215	28.67	2.17E-08	186.33	215.00	156.27	180.31	168.29	24.04	2.17E-08	MD/QEP. Modelled_Fault 1 (VLFT) with multiple fault/rubble zones with gouge infill (up to 0.8 m thick).
MA-GT-20-03	PT7	CSPT	24.33	170.00	145.67	4.32E-06	24.33	44.00	20.63	37.31	28.97	16.68	1.67E-05	Gab. Modelled Fault_2 @ 48 m; subtle in core. Several narrow (up to 0.05 m) rubble zones within test interval.
MA-GT-20-03	PT6	CSPT	44.00	170.00	126.00	2.39E-06	44.00	66.33	37.31	56.25	46.78	18.94	7.08E-06	Gab/QEP. A number of narrow (<0.15 m) fault and rubble zones within test interval.
MA-GT-20-03	PT5	CSPT	66.33	170.00	103.67	1.38E-06	66.33	108.33	56.25	91.87	74.06	35.62	3.36E-06	QEP/MD. Fault from 66.06 - 66.49 m (0.43 m thick); and a number of narrow rubble zones (up to 0.05 m thick) over 18 m from 75.22 to 93.35 m.
MA-GT-20-03	PT4	CSPT	87.33	170.00	82.67	ND	87.33	108.33	74.06	91.87	82.96	17.81	ND	QEP/MD
MA-GT-20-03	PT3	CSPT	108.33	170.00	61.67	3.41E-08	108.33	150.33	91.87	127.49	109.68	35.62	4.88E-08	QEP/MD
MA-GT-20-03	PT2	CSPT	129.33	170.00	40.67	3.26E-10	129.33	150.33	109.68	127.49	118.58	17.81	-	QEP/MD
MA-GT-20-03	PT1	SPT	150.33	170.00	19.67	2.65E-09	150.33	170.00	127.49	144.17	135.83	16.68	2.65E-09	QEP/MD
MA-GT-20-03	PT15	CSPT	158.33	326.00	167.67	1.78E-08	158.33	179.33	134.27	152.08	143.18	17.81	1.47E-08	QEP/MD
MA-GT-20-03	PT14	CSPT	179.33	326.00	146.67	1.82E-08	179.33	199.33	152.08	169.04	160.56	16.96	6.32E-09	QEP. Narrow fault (0.02 m) with gouge infill @ 197.3 m ID.

Table 1 Summary of Packer Testing - Marathon Pit - cont.

Borehole ID	Packer Test ID	Packer Test Type	Test Interval (m ID)				Discrete Test Interval							
			From	To	Test Length	Hydraulic Conductivity (m/sec)	From (m ID)	To (m ID)	From (m VD)	To (m VD)	Average Depth (m VD)	Test Length (m)	Hydraulic Conductivity (m/sec)	Lithology/Structure
MA-GT-20-03	PT13	CSPT	199.33	326.00	126.67	2.01E-08	199.33	221.33	169.04	187.70	178.37	18.66	6.18E-08	QEP. Modelled Fault_12 @ 216 m. A number of narrow (<0.13 m) rubble zones over test interval.
MA-GT-20-03	PT12	CSPT	221.33	326.00	104.67	1.13E-08	221.33	242.33	187.70	205.51	196.60	17.81	3.04E-08	QEP/MD. Several narrow fault zones (up to 0.09 m thick) with gouge infill within test interval.
MA-GT-20-03	PT11	CSPT	242.33	326.00	83.67	6.51E-09	242.33	263.33	205.51	223.32	214.41	17.81	1.16E-08	QEP. A 0.03 m rubble zone encountered at 256.9 m ID.
MA-GT-20-03	PT10	CSPT	263.33	326.00	62.67	4.82E-09	263.33	284.33	223.32	241.13	232.22	17.81	3.42E-10	QEP/MD. Modelled Fault_3 @ 266.4 m (0.14 m rubble zone).
MA-GT-20-03	PT9	CSPT	284.33	326.00	41.67	7.08E-09	284.33	305.33	241.13	258.93	250.03	17.81	5.80E-09	QEP/MD. Narrow (0.07 m) fault zone at 289.47m, gouge/broken rock filled.
MA-GT-20-03	PT8	SPT	305.33	326.00	20.67	8.37E-09	305.33	326.00	258.93	276.46	267.70	17.53	8.37E-09	QEP
MA-GT-20-04	PT1	SPT	15.33	35.00	19.67	2.01E-06	15.33	35.00	13.28	30.31	21.79	17.03	2.01E-06	QEP
MA-GT-20-04	PT2	SPT	35.00	56.00	21.00	3.76E-06	35.00	56.00	30.31	48.50	39.40	18.19	3.76E-06	QEP/MD. A ~0.3 m fault zone at 54.65 m ID with iron-stained gouge and rubble.
MA-GT-20-04	PT3	SPT	56.00	77.00	21.00	6.09E-07	56.00	77.00	48.50	66.68	57.59	18.19	6.09E-07	QEP/MD. A number of narrow (<0.11 m thick) rubble zones within test interval.
MA-GT-20-04	PT4	SPT	77.00	98.00	21.00	1.60E-06	77.00	98.00	66.68	84.87	75.78	18.19	1.60E-06	QEP/MD. Modeled_Fault_3 @ 79 m ID; associated with a number of rubble zones (<0.1 m thick) from 80 - 96 m.
MA-GT-20-04	PT5*	SPT	98.00	119.00	21.00	1.33E-05	98.00	140.00	84.87	121.24	103.06	36.37	6.71E-06	QEP/Phyl-Cgl (contact). Modelled Fault_1 (VLFT) from 118 to 125.7 m ID with numerous zones of rubble and gouge infill. Also a number of narrow (<0.06 m thick) rubble zones within test interval. PT5/6 K values combined to represent VLFT K.
MA-GT-20-04	PT6*	SPT	119.00	140.00	21.00	1.44E-07								
MA-GT-20-04	PT7	SPT	140.00	161.00	21.00	5.32E-10	140.00	161.00	121.24	139.43	130.34	18.19	5.32E-10	Cgl
MA-GT-20-04	PT8	SPT	161.00	182.00	21.00	7.63E-10	161.00	182.00	139.43	157.62	148.52	18.19	7.63E-10	Cgl
MA-GT-20-04	PT9	SPT	182.00	203.00	21.00	2.87E-10	182.00	203.00	157.62	175.80	166.71	18.19	2.87E-10	Cgl
MA-GT-20-04	PT10	SPT	203.00	224.00	21.00	7.85E-10	203.00	224.00	175.80	193.99	184.90	18.19	7.85E-10	Cgl. Narrow (0.005 m) fault zone at 219.34 m.
MA-GT-20-06	PT2	DPT	23.85	25.10	1.25	5.00E-06	23.85	25.10	21.62	22.75	22.18	1.13	5.00E-06	MD
MA-GT-20-06	PT1	DPT	183.30	197.00	13.70	1.18E-08	183.30	197.00	166.13	178.54	172.33	12.42	1.18E-08	QEP

Notes:

CSPT	Cumulative Single Packer Test	Cgl	Conglomerate
DPT	Double Packer Test	Phyl	Phyllite
SPT	Single Packer Test	VLFT	Valentine Lake Fault
ID	Inclined Depth	Gab	Gabbro
VD	Vertical Depth	ND	Not determined; test results not reliable
QEP	Quartz Eye Porphyry	"-"	Test results returned a negative K value for discrete interval
MD	Mafic Dyke	*	MA-GT-20-04: PT5 and PT6 spanned the VLFT at the QEP/Phyl-Cgl contact. Hydraulic conductivity (K) values combined to derive represented K for the VLFT.

Table 2 Summary of Packer Testing - Leprechaun Pit

Borehole ID	Packer Test ID	Packer Test Type	Test Interval (m ID)				Discrete Test Interval							
			From	To	Test Length	Hydraulic Conductivity (m/sec)	From (m ID)	To (m ID)	From (m VD)	To (m VD)	Average Depth (m VD)	Test Length (m)	Hydraulic Conductivity (m/sec)	Lithology/Structure
VL-GT-20-01	PT6	CSPT	5.33	125.00	119.67	8.31E-07	5.33	21.33	4.37	17.47	10.92	13.11	2.46E-07	Tnj/MD
VL-GT-20-01	PT5	CSPT	21.33	125.00	103.67	9.21E-07	21.33	42.33	17.47	34.67	26.07	17.20	5.33E-07	Tnj/MD; a number of contact discontinuities
VL-GT-20-01	PT4	CSPT	42.33	125.00	82.67	1.02E-06	42.33	63.33	34.67	51.88	43.28	17.20	6.97E-07	Tnj. A number of rubble zones up to 0.3 m thick within test interval.
VL-GT-20-01	PT3	CSPT	63.33	125.00	61.67	1.13E-06	63.33	84.33	51.88	69.08	60.48	17.20	1.81E-07	Tnj. Two narrow (<0.05 m thick) fault zones (gouge filled) within test interval.
VL-GT-20-01	PT2	CSPT	84.33	125.00	40.67	1.62E-06	84.33	105.33	69.08	86.28	77.68	17.20	1.80E-06	Tnj
VL-GT-20-01	PT1	SPT	105.33	125.00	19.67	1.43E-06	105.33	125.00	86.28	102.39	94.34	16.11	1.43E-06	Tnj
VL-GT-20-01	PT11	CSPT	125.33	230.00	104.67	2.00E-07	125.33	145.33	102.66	119.05	110.86	16.38	1.37E-08	Tnj. Modelled_Fault_2 (very suble in core)
VL-GT-20-01	PT10	CSPT	145.33	230.00	84.67	2.44E-07	145.33	168.33	119.05	137.89	128.47	18.84	1.58E-07	Tnj
VL-GT-20-01	PT9	CSPT	168.33	230.00	61.67	2.76E-07	168.33	189.33	137.89	155.09	146.49	17.20	8.07E-07	Cgl. Modelled_Fault 6 is present within test interval; encountered narrow (0.005 m) fault with clay infill @ 156 m, and 0.02 m brittle shear zone at 181 m.
VL-GT-20-01	PT8	CSPT	189.33	230.00	40.67	1.83E-09	189.33	210.33	155.09	172.29	163.69	17.20	2.60E-09	Cgl
VL-GT-20-01	PT7	SPT	210.33	230.00	19.67	1.01E-09	210.33	230.00	172.29	188.40	180.35	16.11	1.01E-09	Cgl
VL-GT-20-02	PT9	CSPT	8	185.00	177.00	2.31E-07	8	18.33	6.55	15.02	10.78	8.46	4.73E-07	Tnj/MD
VL-GT-20-02	PT8	CSPT	18.33	185.00	166.67	2.16E-07	18.33	39.33	15.02	32.22	23.62	17.20	3.13E-07	Tnj/MD. Modelled_Fault 6 @ 26.8 m ID (0.36 m thick withrubble and gouge infill). Also a number of narrow rubble zones (<0.4 m thick) in test interval.
VL-GT-20-02	PT7	CSPT	39.33	185.00	145.67	2.02E-07	39.33	60.33	32.22	49.42	40.82	17.20	3.58E-08	Tnj/MD. A narrow (0.06 m thick) rubble zone at 52.4 m.
VL-GT-20-02	PT6	CSPT	60.33	185.00	124.67	2.30E-07	60.33	81.33	49.42	66.62	58.02	17.20	3.19E-07	Tnj/MD
VL-GT-20-02	PT5	CSPT	81.33	185.00	103.67	2.12E-07	81.33	102.33	66.62	83.82	75.22	17.20	7.42E-08	Tnj/MD
VL-GT-20-02	PT4	CSPT	102.33	185.00	82.67	2.47E-07	102.33	123.33	83.82	101.03	92.42	17.20	1.27E-07	Tnj
VL-GT-20-02	PT3	CSPT	123.33	185.00	61.67	2.88E-07	123.33	144.33	101.03	118.23	109.63	17.20	3.23E-07	Tnj
VL-GT-20-02	PT2	CSPT	144.33	185.00	40.67	2.70E-07	144.33	164.00	118.23	134.34	126.28	16.11	2.45E-07	Tnj. Narrow fault zone (0.005 m thick) with gouge infill @ 154.3 m ID.
VL-GT-20-02	PT1	SPT	164.00	185.00	21.00	2.93E-07	164.00	185.00	134.34	151.54	142.94	17.20	2.93E-07	Tnj. Modelled_Fault 4 @ 176.2 m ID (0.4 m thick with gouge infill).
VL-GT-20-02	PT18	CSPT	185.00	374.00	189.00	1.03E-09	185.00	207.33	151.54	169.83	160.69	18.29	-	Tnj/MD
VL-GT-20-02	PT17	CSPT	207.33	374.00	166.67	1.45E-09	207.33	228.33	169.83	187.04	178.44	17.20	2.00E-09	Tnj/MD

Table 2 Summary of Packer Testing - Leprechaun Pit - cont.

Borehole ID	Packer Test ID	Packer Test Type	Test Interval (m ID)				Discrete Test Interval							
			From	To	Test Length	Hydraulic Conductivity (m/sec)	From (m ID)	To (m ID)	From (m VD)	To (m VD)	Average Depth (m VD)	Test Length (m)	Hydraulic Conductivity (m/sec)	Lithology/Structure
VL-GT-20-02	PT16	CSPT	228.33	374.00	145.67	1.37E-09	228.33	249.33	187.04	204.24	195.64	17.20	1.37E-09	Tnj/Cgl. Modelled_Fault 1 (VLFT). Very subtle in core.
VL-GT-20-02	PT15	CSPT	249.33	374.00	124.67	1.37E-09	249.33	270.33	204.24	221.44	212.84	17.20	7.78E-10	Cgl
VL-GT-20-02	PT14	CSPT	270.33	374.00	103.67	1.49E-09	270.33	291.33	221.44	238.64	230.04	17.20	8.60E-10	Cgl. Modelled_Fault 9 @ 274.4 m ID (0.03 m zone with gouge infill). Also narrow rubble zone (0.05 m thick) within test interval.
VL-GT-20-02	PT13	CSPT	291.33	374.00	82.67	1.65E-09	291.33	312.33	238.64	255.85	247.24	17.20	1.21E-09	Cgl. Modelled_Fault 10 @ 307.6 m ID (0.11 cm thick with gouge infill). Several other narrow (<0.0005 m thick) fault zones within test interval.
VL-GT-20-02	PT12	CSPT	312.33	374.00	61.67	1.80E-09	312.33	354.33	255.85	290.25	273.05	34.40	2.51E-09	Cgl/MD. A number of narrow (<0.05 m thick) fault/rubble zones with some gouge infill from 321.8 to 326.6 m ID.
VL-GT-20-02	PT11	CSPT	333.33	374.00	40.67	-	333.33	354.33	273.05	290.25	281.65	17.20	-	Cgl/MD
VL-GT-20-02	PT10	SPT	354.33	374.00	19.67	2.84E-10	354.33	374.00	290.25	306.36	298.31	16.11	2.84E-10	Cgl
VL-GT-20-04	PT1	DPT	38.33	53.00	14.67	1.69E-06	38.33	53	36.02	49.80	42.91	13.79	1.69E-06	Tnj. Modelled_Fault 5 @ 49. 2 m ID (0.32 m zone with rubble and gouge). Also, 0.15 m rubble zone @ 39.6 m ID with iron-staining
VL-GT-20-04	PT2	DPT	105.33	125	19.67	1.21E-06	105.33	125	98.98	117.46	108.22	18.48	1.21E-06	Tnj. Modelled_Fault 4 from 106.5 m to 118 m ID (with a number of discrete narrow fault zones up to 0.12 m thick with rubble and gouge infill).
VL-GT-20-04	PT3	DPT	145.33	147.82	2.49	1.55E-07	145.33	147.82	136.57	138.91	137.74	2.34	1.55E-07	Tnj. Narrow (0.08 m thick) fault at 146.8 m ID with iron-stained gouge infill.
VL-GT-20-05	PT9	CSPT	4.33	182.00	177.67	2.50E-07	4.33	15.33	3.55	12.56	8.05	9.01	4.47E-07	Tnj
VL-GT-20-05	PT8	CSPT	15.33	182.00	166.67	2.37E-07	15.33	36.33	12.56	29.76	21.16	17.20	2.44E-07	Tnj/MD
VL-GT-20-05	PT7	CSPT	36.33	182.00	145.67	2.36E-07	36.33	57.33	29.76	46.96	38.36	17.20	1.29E-07	Tnj/MD
VL-GT-20-05	PT6	CSPT	57.33	182.00	124.67	2.54E-07	57.33	78.33	46.96	64.16	55.56	17.20	6.64E-08	Tnj
VL-GT-20-05	PT5	CSPT	78.33	182.00	103.67	2.92E-07	78.33	99.33	64.16	81.37	72.77	17.20	1.42E-06	Tnj. Several narrow fault/rubble zones (up to 0.11 m thick with some gouge infill) from 82.4 m to 94.8 m ID.
VL-GT-20-05	PT4	CSPT	99.33	182.00	82.67	4.36E-09	99.33	120.33	81.37	98.57	89.97	17.20	9.94E-09	Tnj/MD
VL-GT-20-05	PT3	CSPT	120.33	182.00	61.67	2.46E-09	120.33	141.33	98.57	115.77	107.17	17.20	3.60E-09	Tnj/MD
VL-GT-20-05	PT2	CSPT	141.33	182.00	40.67	1.87E-09	141.33	162.33	115.77	132.97	124.37	17.20	1.34E-09	Tnj. Modelled_Fault 2 @ 151.2 m ID (0.09 m zone with 0.2 m brittle sheared section above). Narrow (0.08 m) rubble zone @ 161 m ID.
VL-GT-20-05	PT1	SPT	162.33	182.00	19.67	2.44E-09	162.33	182.00	132.97	149.09	141.03	16.11	2.44E-09	Tnj
VL-GT-20-05	PT17	CSPT	182.00	350.00	168.00	3.66E-08	182.00	204.33	149.09	167.38	158.23	18.29	5.03E-08	Tnj. Modelled_Fault 7 (joint zone from 191 - 197 m ID).

Table 2 Summary of Packer Testing - Leprechaun Pit - cont.

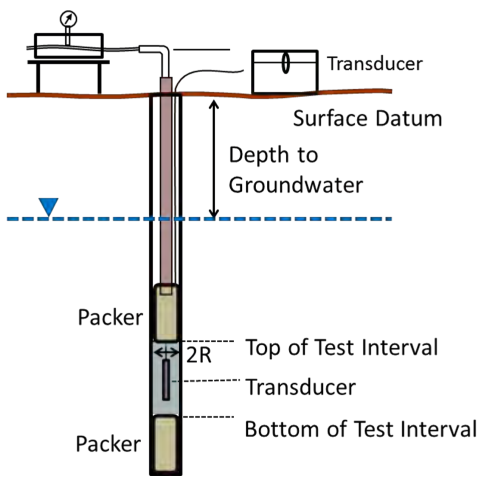
Borehole ID	Packer Test ID	Packer Test Type	Test Interval (m ID)				Discrete Test Interval							
			From	To	Test Length	Hydraulic Conductivity (m/sec)	From (m ID)	To (m ID)	From (m VD)	To (m VD)	Average Depth (m VD)	Test Length (m)	Hydraulic Conductivity (m/sec)	Lithology/Structure
VL-GT-20-05	PT16	CSPT	204.33	350.00	145.67	3.45E-08	204.33	246.33	167.38	201.78	184.58	34.40	1.16E-07	Tnj/MD
VL-GT-20-05	PT15	CSPT	225.33	350.00	124.67	-	225.33	246.33	184.58	201.78	193.18	17.20	-	Tnj
VL-GT-20-05	PT14	CSPT	246.33	350.00	103.67	1.41E-09	246.33	267.33	201.78	218.98	210.38	17.20	1.69E-09	Tnj. Modelled_Fault 6 @ 256.8 m ID (0.01 m zone with gouge infill).
VL-GT-20-05	PT13	CSPT	267.33	350.00	82.67	1.34E-09	267.33	288.33	218.98	236.19	227.59	17.20	4.79E-11	Tnj
VL-GT-20-05	PT12	CSPT	288.33	350.00	61.67	1.78E-09	288.33	309.33	236.19	253.39	244.79	17.20	3.28E-10	Tnj
VL-GT-20-05	PT11	CSPT	309.33	350.00	40.67	2.53E-09	309.33	330.33	253.39	270.59	261.99	17.20	3.63E-09	Tnj/MD. Narrow (0.003 m thick) fault zone at 324.8 m ID with clay infill.
VL-GT-20-05	PT10	SPT	330.33	350.00	19.67	1.36E-09	330.33	350.00	270.59	286.70	278.65	16.11	1.36E-09	Tnj/MD

Notes:

CSPT	Cumulative Single Packer Test
DPT	Double Packer Test
SPT	Single Packer Test
ID	Inclined Depth
VD	Vertical Depth
Tnj	Trondhjemite
MD	Mafic Dyke
Cgl	Conglomerate
Phyl	Phyllite
VLFT	Valentine Lake Fault
ND	Not determined; test results not reliable
"-"	Test results not reliable

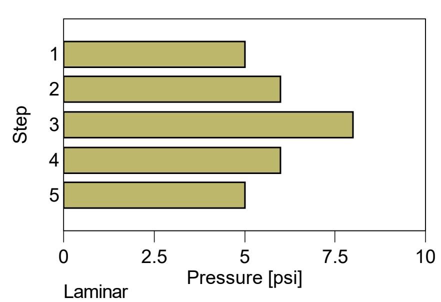
	Lugeon Test Analysis Report
GEMTEC Consulting Engineers and Scientists	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

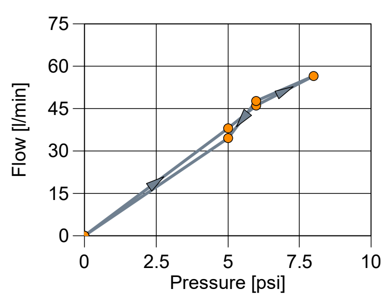
Location: Valentine Lake, NL	Lugeon Test: PT17	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/7/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

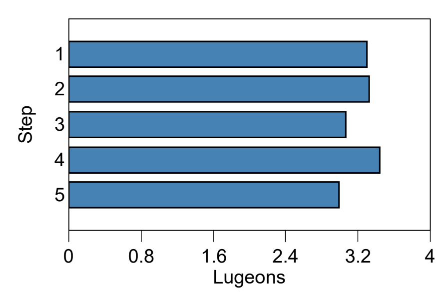


Top of Test Interval: 27.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 334.67 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 20.94 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	5	400.00	438.50	476.50	514.50	552.50	590.50					38.10	7.57×10^{-7}	6.54×10^{-2}	3.3
2	6	614.00	660.00	706.50	752.50	798.00	844.50	890.00	936.00	981.50	1028.00	46.00	7.61×10^{-7}	6.58×10^{-2}	3.3
3	8	124.00	181.00	237.50	294.00	350.50						56.63	7.03×10^{-7}	6.07×10^{-2}	3.1
4	6	389.00	437.00	484.50	532.00	579.50	627.00					47.60	7.88×10^{-7}	6.81×10^{-2}	3.4
5	5	686.20	720.60	755.00	789.60	824.00	858.40	892.90	927.50	961.70	996.30	34.46	6.84×10^{-7}	5.91×10^{-2}	3.0
												Average	7.39×10^{-7}	6.38×10^{-2}	3.2







Laminar
Lugeon: 3.2
Hydraulic Conductivity: 7.39E-7 m/s
Hydraulic Conductivity: 6.38E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

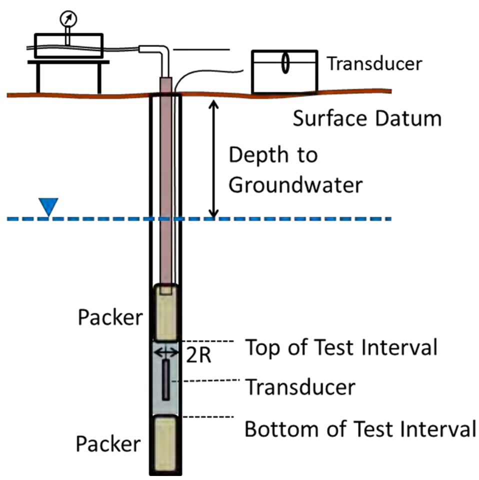
No leaks were noticed during packer inflation or testing. Test pressures based on transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

Lugeon Test Analysis Report

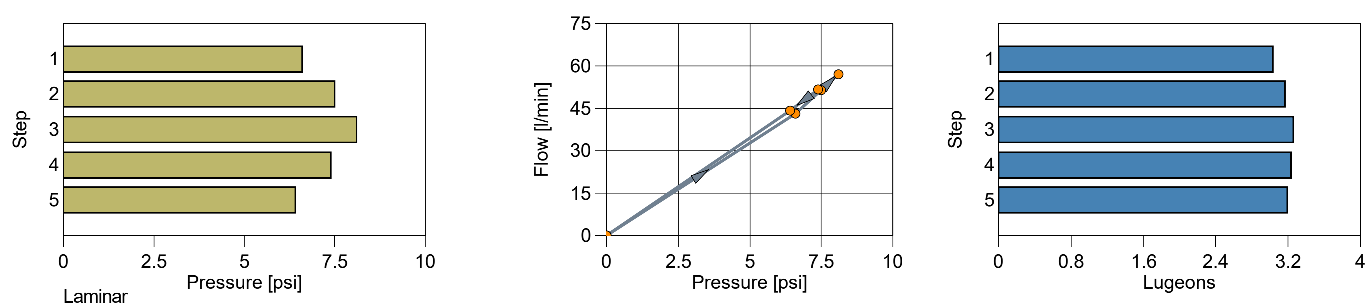
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

Location: Valentine Lake, NL	Lugeon Test: PT16	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/7/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		



Top of Test Interval: 48.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 313.67 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 37.02 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	7	374.00	417.00	460.00	503.00	546.50	590.00	633.50				43.25	6.92×10^{-7}	5.98×10^{-2}	3.0
2	8	673.00	724.50	775.50	827.00	878.00	929.50	981.00	1032.00	1083.50	1135.00	51.33	7.23×10^{-7}	6.25×10^{-2}	3.2
3	8	166.00	223.50	280.00	337.00	394.00	451.00					57.00	7.44×10^{-7}	6.42×10^{-2}	3.3
4	7	486.00	538.00	589.50	641.50	693.00	745.00	796.50	848.00	899.50		51.69	7.38×10^{-7}	6.38×10^{-2}	3.2
5	6	930.00	974.50	1018.50	1062.50	1107.00	1151.00	1195.50	1239.50	1283.50	1327.50	44.17	7.29×10^{-7}	6.30×10^{-2}	3.2
												Average	7.25×10^{-7}	6.27×10^{-2}	3.2



Laminar
Lugeon: 3.2
Hydraulic Conductivity: 7.25E-7 m/s
Hydraulic Conductivity: 6.27E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.11 L/min system losses at 35 psi (during packer inflation); considered negligible in comparison to test flows. At pump maximum output only 20 psi attainable pressure (due to large test interval). Test pressures based on transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

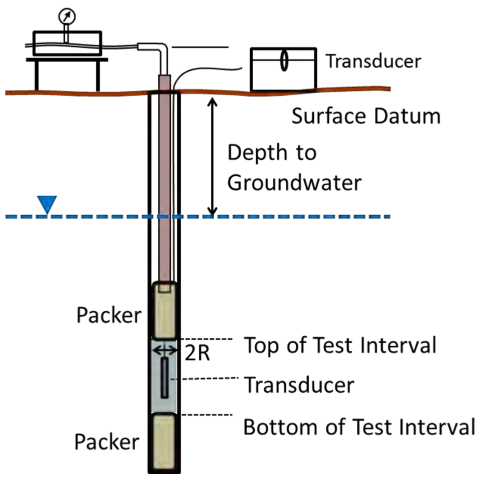
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

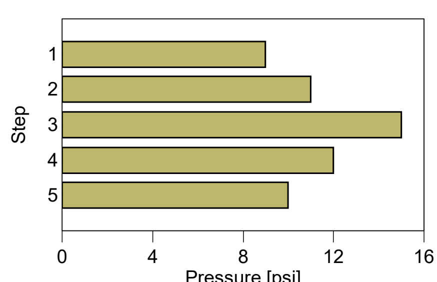
Client: Terrane Geoscience Inc.

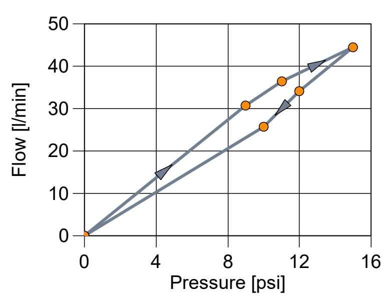
Location: Valentine Lake, NL	Lugeon Test: PT15	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/7/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

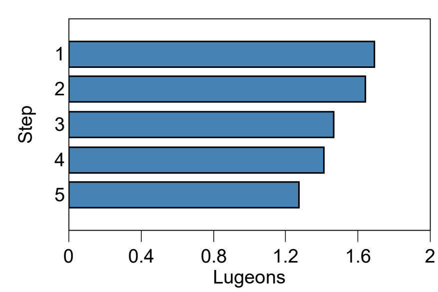


Top of Test Interval: 69.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 292.67 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 53.11 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	9	489.00	520.50	551.00	581.50	612.50	643.00	674.00	704.50	735.00	765.50	30.72	3.84×10^{-7}	3.31×10^{-2}	1.7
2	11	828.50	865.50	901.80	938.00	974.50	1011.00	1047.00	1083.50	1120.00	1156.50	36.44	3.72×10^{-7}	3.22×10^{-2}	1.6
3	15	193.00	237.50	282.00	326.00	370.50	415.00	459.50				44.42	3.33×10^{-7}	2.87×10^{-2}	1.5
4	12	485.00	519.50	553.50	587.50	621.50						34.13	3.20×10^{-7}	2.76×10^{-2}	1.4
5	10	673.00	698.70	724.30	749.90	775.70	801.40	827.20	852.80	878.50	904.30	25.70	2.89×10^{-7}	2.49×10^{-2}	1.3
												Average	3.39×10^{-7}	2.93×10^{-2}	1.5







Void filling
Lugeon: 1.3
Hydraulic Conductivity: 2.89E-7 m/s
Hydraulic Conductivity: 2.49E-2 m/d

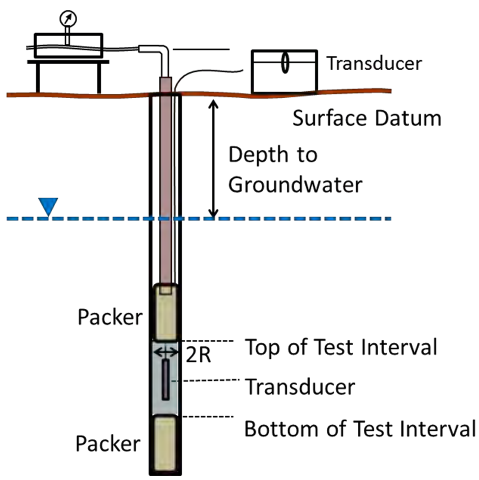
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.07 L/min system losses at 35 psi (during packer inflation); considered negligible in comparison to test flows. At pump maximum output only 20 psi attainable pressure (due to large test interval). Test pressures based on transducer data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1 and 2 used to calculate the representative K value for the test interval - K = 3.78E-07 m/s.

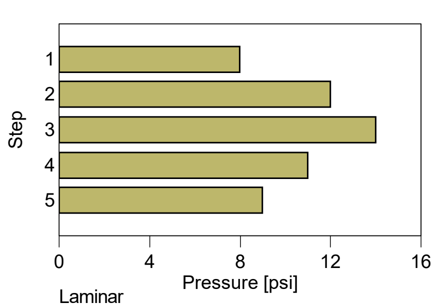
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

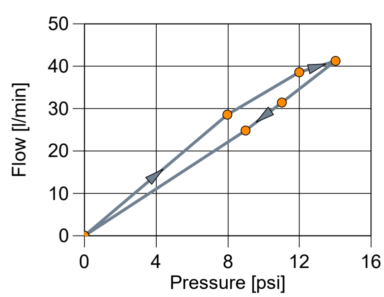
Location: Valentine Lake, NL	Lugeon Test: PT14	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/7/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

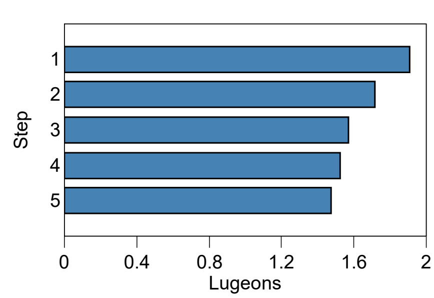


Top of Test Interval: 90.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 271.67 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 69.20 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	8	899.50	927.50	956.50	985.30	1013.70	1042.40	1071.00	1099.50	1128.20	1156.70	28.58	4.29×10^{-7}	3.70×10^{-2}	1.9
2	12	200.00	238.50	277.50	315.50	354.50	393.00	431.50	470.00			38.57	3.86×10^{-7}	3.33×10^{-2}	1.7
3	14	550.00	591.50	632.50	673.50	715.00	756.50	797.50	838.50	879.50		41.19	3.53×10^{-7}	3.05×10^{-2}	1.6
4	11	940.00	971.40	1002.80	1034.10	1065.50	1096.90					31.38	3.42×10^{-7}	2.96×10^{-2}	1.5
5	9	174.90	199.80	224.50	249.30	274.00	298.90	323.80	348.60	373.50	398.30	24.82	3.31×10^{-7}	2.86×10^{-2}	1.5
												Average	3.68×10^{-7}	3.18×10^{-2}	1.6







Laminar
Lugeon: 1.6
Hydraulic Conductivity: 3.68E-7 m/s
Hydraulic Conductivity: 3.18E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.005 L/min system losses at 50 psi (during packer inflation); considered negligible in comparison to test flows. At pump maximum output only 20 psi attainable pressure (due to large test interval). Test pressures based on transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

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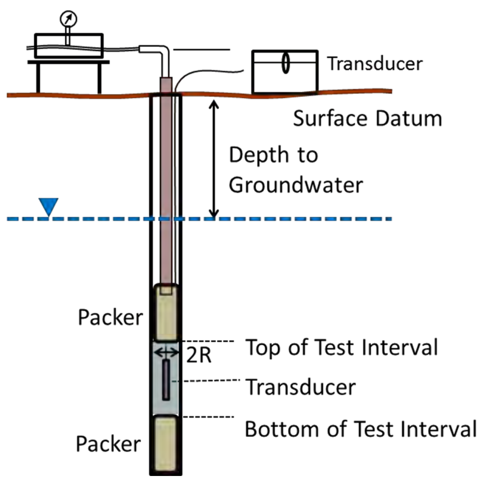
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

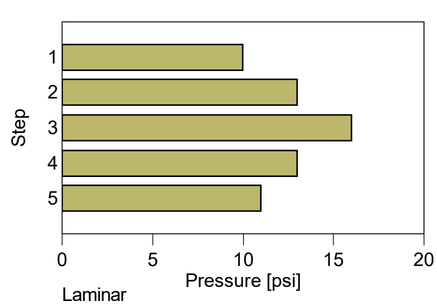
Client: Terrane Geoscience Inc.

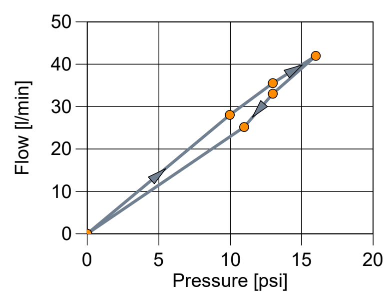
Location: Valentine Lake, NL	Lugeon Test: PT13	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/7/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

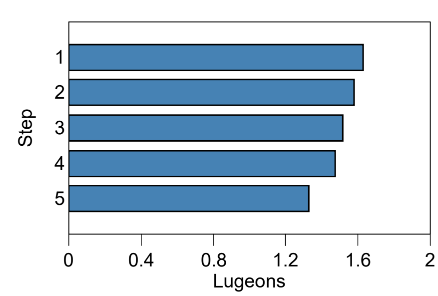


Top of Test Interval: 111.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 250.67 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 85.28 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	10	650.00	678.10	706.60	734.60	762.60	790.60					28.12	3.62×10^{-7}	3.13×10^{-2}	1.6
2	13	860.00	895.50	931.50	966.50	1002.00	1037.50	1073.00	1108.50			35.50	3.52×10^{-7}	3.04×10^{-2}	1.6
3	16	180.00	222.00	263.50	305.50	347.50	389.50					41.90	3.37×10^{-7}	2.92×10^{-2}	1.5
4	13	450.00	483.50	516.50	549.50	582.50	615.50					33.10	3.28×10^{-7}	2.83×10^{-2}	1.5
5	11	660.00	685.20	710.40	735.70	761.00	786.30					25.26	2.96×10^{-7}	2.56×10^{-2}	1.3
												Average	3.35×10^{-7}	2.90×10^{-2}	1.5







Laminar
Lugeon: 1.5
Hydraulic Conductivity: 3.35E-7 m/s
Hydraulic Conductivity: 2.90E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. At pump maximum output only 20 psi attainable pressure (due to large test interval). Test pressures based on transducer data. Flow reading difficult due to high flows.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

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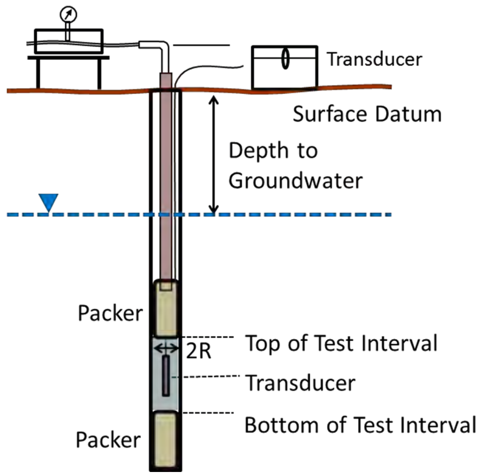
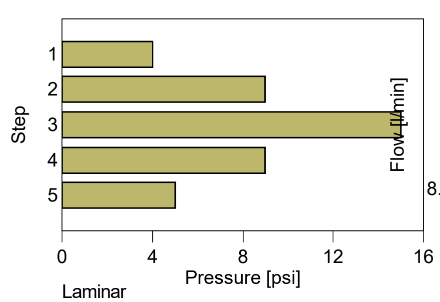
Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

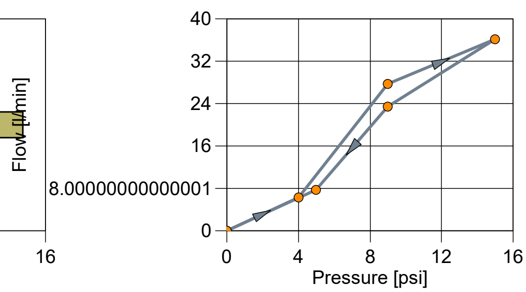
Location: Valentine Lake, NL	Lugeon Test: PT12	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/7/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

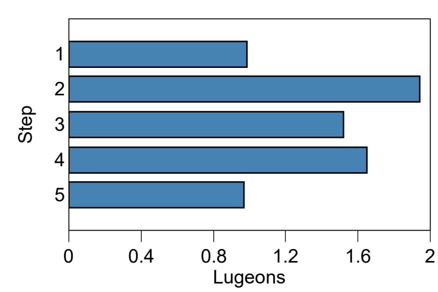


Top of Test Interval: 132.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 229.67 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 101.37 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	4	360.00	366.20	372.45	378.75	385.00	391.25	397.50				6.25	2.17×10^{-7}	1.88×10^{-2}	1.0
2	9	617.00	644.80	672.50	700.00	727.60						27.65	4.28×10^{-7}	3.69×10^{-2}	1.9
3	15	1099.00	1131.00	1168.50	1206.00	1243.50						36.13	3.35×10^{-7}	2.90×10^{-2}	1.5
4	9	360.00	383.60	407.00	430.50	454.00	477.50					23.50	3.63×10^{-7}	3.14×10^{-2}	1.6
5	5	500.00	507.60	515.30	523.00	530.70						7.68	2.14×10^{-7}	1.85×10^{-2}	1.0
												Average	3.11×10^{-7}	2.69×10^{-2}	1.4







Laminar
Lugeon: 1.4
Hydraulic Conductivity: 3.11E-7 m/s
Hydraulic Conductivity: 2.69E-2 m/d

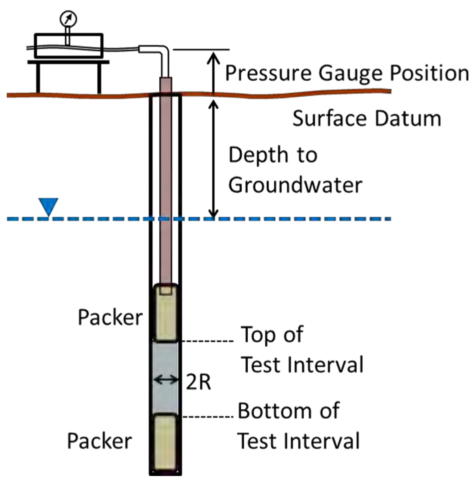
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. At pump maximum output only 20 psi attainable pressure (due to large test interval). Prior to test, surface gauge read 5 psi with release valve fully opened. Test pressures based on transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average all steps).

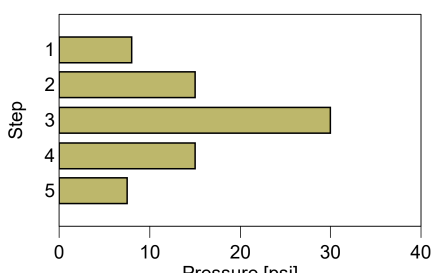
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

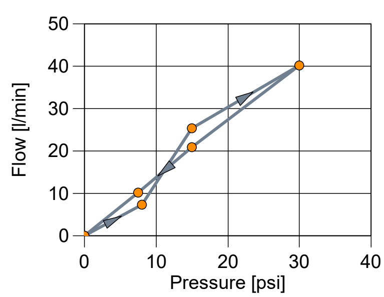
Location: Valentine Lake, NL	Lugeon Test: PT11	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

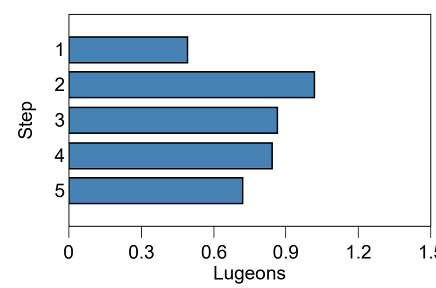


Top of Test Interval: 153.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 208.67 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 117.46 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	8	64.00	71.30	78.60	85.85	93.10	100.35					7.27	1.07×10^{-7}	9.26×10^{-3}	0.49
2	15	210.80	236.50	261.90	287.20	312.70	338.00	363.10	388.50	413.50	438.60	25.31	2.22×10^{-7}	1.92×10^{-2}	1.02
3	30	649.00	693.00	733.00	773.00	812.00	852.00	892.00	931.50	971.00	1010.50	40.17	1.89×10^{-7}	1.63×10^{-2}	0.86
4	15	80.00	101.00	121.90	142.80	163.80	184.80	205.80				20.97	1.84×10^{-7}	1.59×10^{-2}	0.84
5	8	240.00	250.00	260.10	270.30	280.50	290.70					10.14	1.57×10^{-7}	1.36×10^{-2}	0.72
												Average	1.72×10^{-7}	1.48×10^{-2}	0.79







Laminar
Lugeon: 0.788
Hydraulic Conductivity: 1.72E-7 m/s
Hydraulic Conductivity: 1.48E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average all steps).

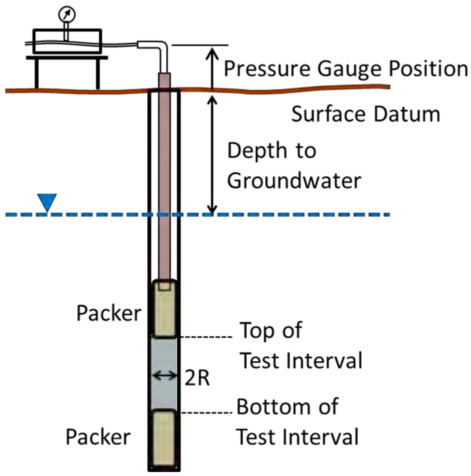
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

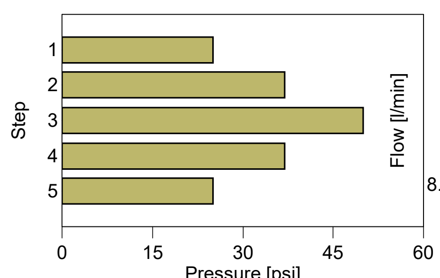
Client: Terrane Geoscience Inc.

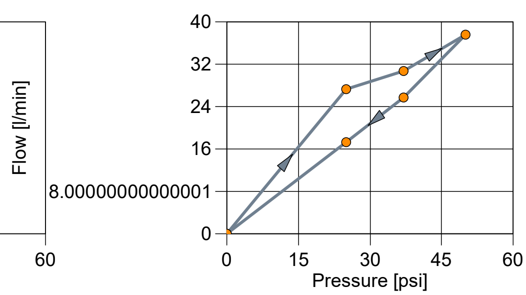
Location: Valentine Lake, NL	Lugeon Test: PT10	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

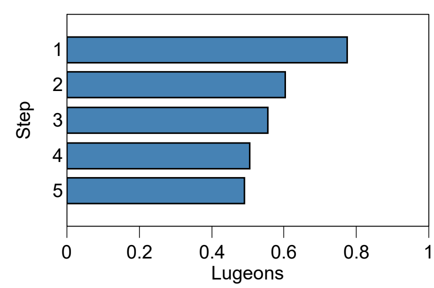


Top of Test Interval: 174.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 187.67 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 133.54 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	25	597.70	625.60	653.30	680.80	708.20	735.30	762.30	789.30	816.30		27.32	1.66×10^{-7}	1.43×10^{-2}	0.77
2	37	869.80	901.00	932.00	962.90	993.50	1024.30	1055.00	1085.10	1115.60	1145.80	30.67	1.29×10^{-7}	1.12×10^{-2}	0.60
3	50	247.90	285.50	323.00	360.50	398.00						37.53	1.19×10^{-7}	1.03×10^{-2}	0.55
4	37	457.50	483.30	508.80	534.50	560.20	585.70	611.40	637.10			25.66	1.08×10^{-7}	9.34×10^{-3}	0.50
5	25	675.60	692.55	709.65	726.90	744.30	761.60	779.11	796.60	814.20		17.33	1.05×10^{-7}	9.08×10^{-3}	0.49
												Average	1.25×10^{-7}	1.08×10^{-2}	0.59







Void filling
Lugeon: 0.491
Hydraulic Conductivity: 1.05E-7 m/s
Hydraulic Conductivity: 9.08E-3 m/d

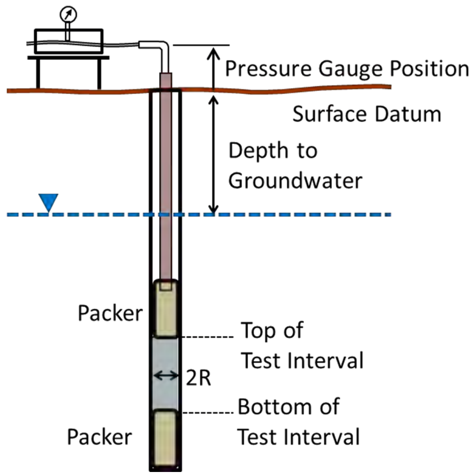
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.05 L/min system losses at 50 psi (during packer inflation); considered negligible in comparison to test flows. Pressure adjustments required during steps 1, 3, 4, and 5.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 1.25E-7 m/s.

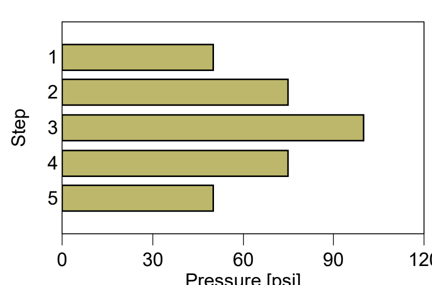
Lugeon Test Analysis Report
Project: Valentine Gold Feasibility Geotechnical Investigation
Number: 80047.03
Client: Terrane Geoscience Inc.

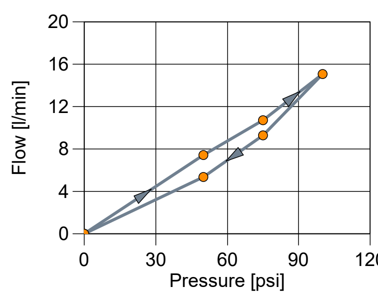
Location: Valentine Lake, NL	Lugeon Test: PT9	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

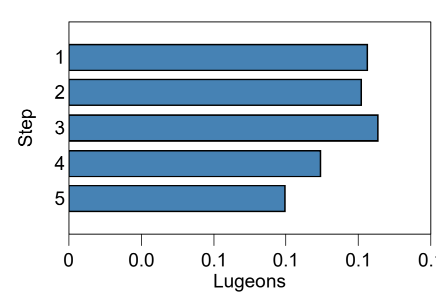


Top of Test Interval: 195.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 166.67 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 149.63 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	50	960.95	968.90	976.70	984.35	991.90	999.30	1006.55	1013.75	1020.87	1027.85	7.43	2.62×10^{-8}	2.27×10^{-3}	0.12
2	75	91.00	103.50	114.95	125.50	136.00	146.60	157.00	167.35	177.60	187.75	10.75	2.57×10^{-8}	2.22×10^{-3}	0.12
3	100	282.60	298.35	313.25	328.15	343.00	357.90					15.06	2.72×10^{-8}	2.35×10^{-3}	0.13
4	75	373.00	382.10	391.35	400.70	410.00	429.25	428.60	437.85	447.10		9.26	2.21×10^{-8}	1.91×10^{-3}	0.10
5	50	441.50	447.08	452.37	457.63	462.91	468.25	473.59	479.00	484.40	489.89	5.38	1.90×10^{-8}	1.64×10^{-3}	0.09
												Average	2.40×10^{-8}	2.08×10^{-3}	0.11







Void filling
Lugeon: 0.09
Hydraulic Conductivity: 1.90E-8 m/s
Hydraulic Conductivity: 1.64E-3 m/d

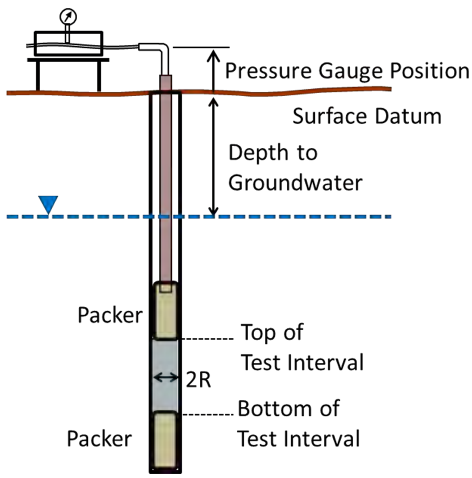
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.28 L/min system losses at 100 psi (during packer inflation); considered negligible in comparison to test flows. Several pressure adjustments required during step 3.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1,2, and 3 used to calculate the representative K value for the test interval - K = 2.64E-8 m/s.

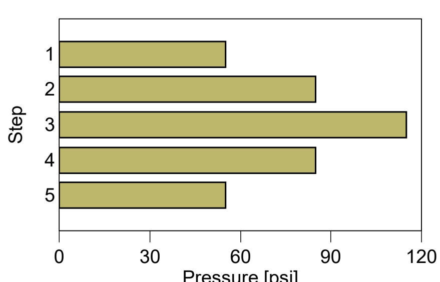
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

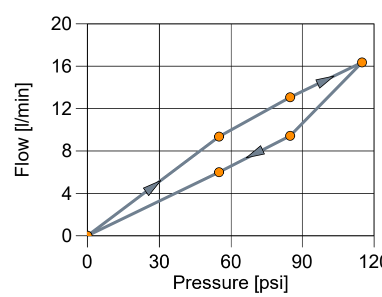
Location: Valentine Lake, NL	Lugeon Test: PT8	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

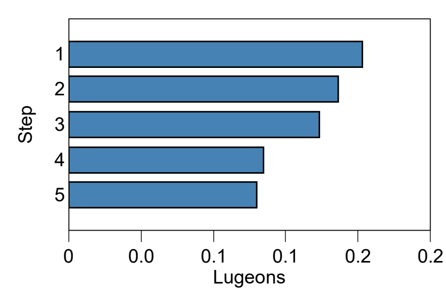


Top of Test Interval: 216.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 145.67 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 165.72 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	55	415.70	425.60	435.10	444.50	453.75	462.85	471.75				9.34	3.39×10^{-8}	2.93×10^{-3}	0.16
2	85	524.70	538.90	552.30	565.55	578.65	591.60	604.40	617.10	629.65	642.20	13.06	3.11×10^{-8}	2.68×10^{-3}	0.15
3	115	703.00	719.80	736.40	752.95	769.35	785.70	801.90	818.00	833.95	850.00	16.33	2.89×10^{-8}	2.50×10^{-3}	0.14
4	85	857.00	866.30	875.75	885.15	894.65	904.15	913.55	923.10			9.44	2.25×10^{-8}	1.94×10^{-3}	0.11
5	55	941.50	947.80	953.77	959.65	965.50	971.35					5.97	2.16×10^{-8}	1.87×10^{-3}	0.10
												Average	2.76×10^{-8}	2.38×10^{-3}	0.13







Void filling
Lugeon: 0.10
Hydraulic Conductivity: 2.16E-8 m/s
Hydraulic Conductivity: 1.87E-3 m/d

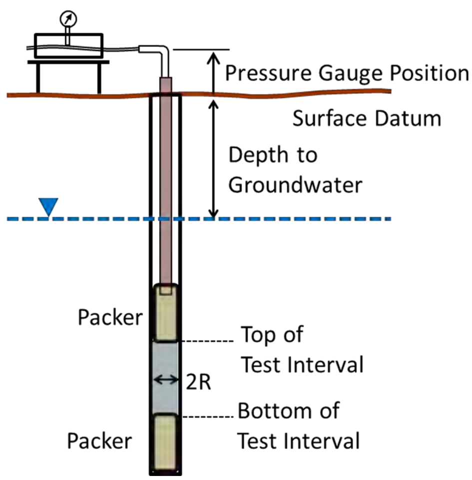
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. A pressure adjustment required during steps 1, 3, and 5.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 2.76E-8 m/s.

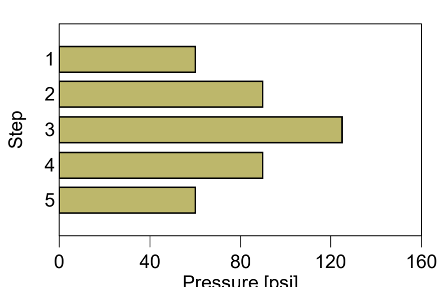
Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

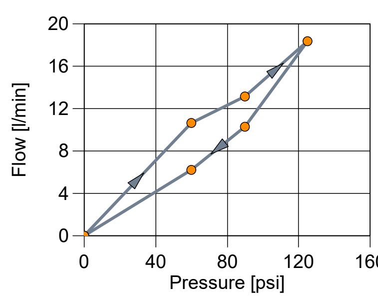
Location: Valentine Lake, NL	Lugeon Test: PT7	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

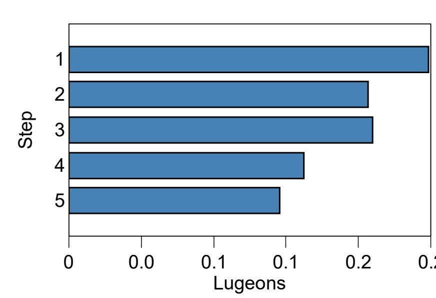


Top of Test Interval: 237.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 124.67 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 181.81 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	60	797.00	808.75	820.00	830.90	841.70	852.20	862.60	872.80	882.90	892.80	10.64	4.07×10^{-8}	3.51×10^{-3}	0.20
2	90	1000.80	1014.10	1027.40	1040.60	1053.65	1066.60	1079.55				13.13	3.38×10^{-8}	2.92×10^{-3}	0.17
3	125	165.40	183.85	202.30	220.55	238.80						18.35	3.43×10^{-8}	2.96×10^{-3}	0.17
4	90	285.00	295.30	305.60	315.95	326.20	336.50					10.30	2.66×10^{-8}	2.29×10^{-3}	0.13
5	60	353.10	359.25	365.55	371.80	377.95	384.25	390.50				6.23	2.38×10^{-8}	2.06×10^{-3}	0.12
												Average	3.18×10^{-8}	2.75×10^{-3}	0.16







Void filling
Lugeon: 0.116
Hydraulic Conductivity: 2.38E-8 m/s
Hydraulic Conductivity: 2.06E-3 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

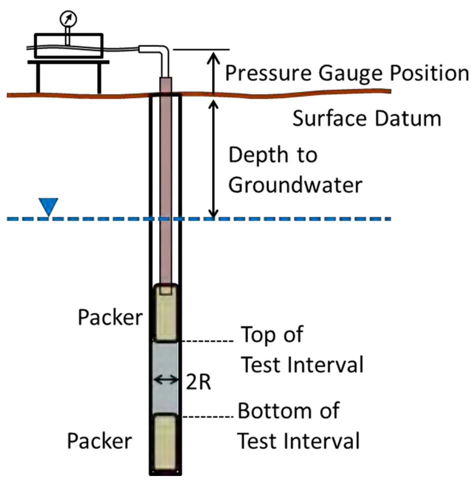
No leaks were noticed during packer inflation or testing. A pressure adjustment required during steps 1, 2, 3 and 5.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 3.18E-8 m/s.

Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

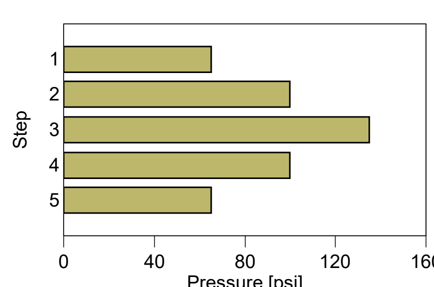
GEMTEC Consulting Engineers and Scientists

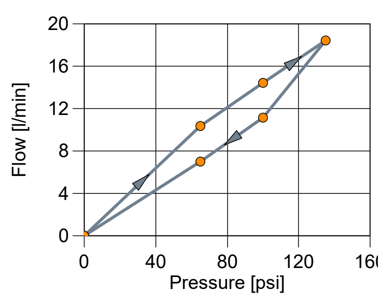
Location: Valentine Lake, NL	Lugeon Test: PT6	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

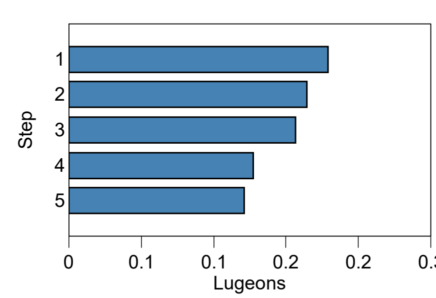


Top of Test Interval: 258.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 103.67 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 197.89 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	65	36.05	46.90	57.70	68.35	78.75	89.10	99.30	109.30	119.25	129.00	10.33	4.29×10^{-8}	3.71×10^{-3}	0.21
2	100	237.10	251.80	266.50	281.00	295.50	309.80	323.90	338.00			14.41	3.94×10^{-8}	3.40×10^{-3}	0.20
3	135	554.00	573.20	591.75	610.00	628.15	646.30					18.46	3.76×10^{-8}	3.25×10^{-3}	0.19
4	100	650.00	661.20	672.30	683.40	694.60	705.80	717.00				11.17	3.05×10^{-8}	2.64×10^{-3}	0.15
5	65	727.60	734.35	741.30	748.20	755.15	762.20	769.30	776.40	783.55		6.99	2.90×10^{-8}	2.51×10^{-3}	0.15
												Average	3.59×10^{-8}	3.10×10^{-3}	0.18







Void filling
Lugeon: 0.145
Hydraulic Conductivity: 2.90E-8 m/s
Hydraulic Conductivity: 2.51E-3 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.06 L/min system losses at 135 psi (during packer inflation); considered negligible in comparison to test flows. Several pressure adjustments required during step 3.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 3.59E-8 m/s.

GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

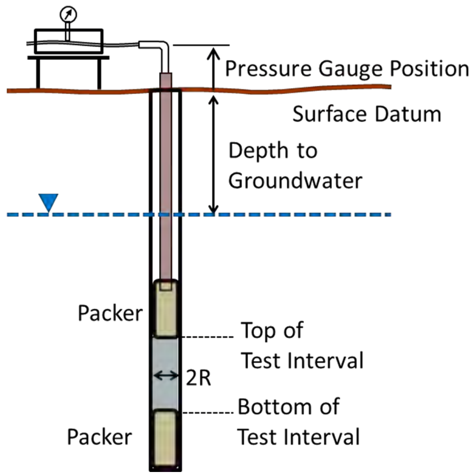
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

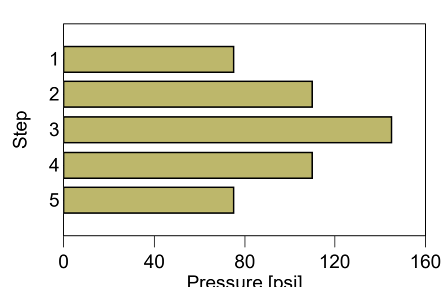
Client: Terrane Geoscience Inc.

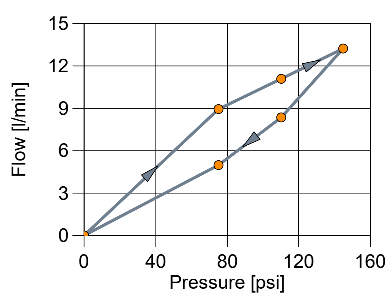
Location: Valentine Lake, NL	Lugeon Test: PT5	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

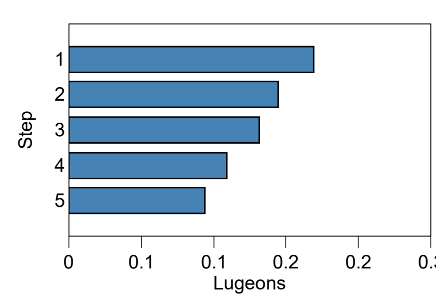


Top of Test Interval: 279.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 82.67 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 213.98 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	75	565.50	575.20	584.55	593.77	602.80	611.60	620.35	629.00	637.60	646.05	8.95	3.94×10^{-8}	3.40×10^{-3}	0.20
2	110	677.00	688.55	699.95	711.20	722.25	733.30	744.25	755.20	766.10	776.95	11.11	3.36×10^{-8}	2.91×10^{-3}	0.17
3	145	797.00	811.05	824.45	837.80	850.90	864.05	877.05	890.15	903.15	916.15	13.24	3.06×10^{-8}	2.64×10^{-3}	0.16
4	110	928.00	936.35	944.80	953.15	961.45	969.80	978.15				8.36	2.53×10^{-8}	2.19×10^{-3}	0.13
5	75	991.90	996.82	1001.75	1006.73	1011.70	1016.68	1021.66				4.96	2.18×10^{-8}	1.89×10^{-3}	0.11
												Average	3.01×10^{-8}	2.60×10^{-3}	0.16







Void filling
Lugeon: 0.113
Hydraulic Conductivity: 2.18E-8 m/s
Hydraulic Conductivity: 1.89E-3 m/d

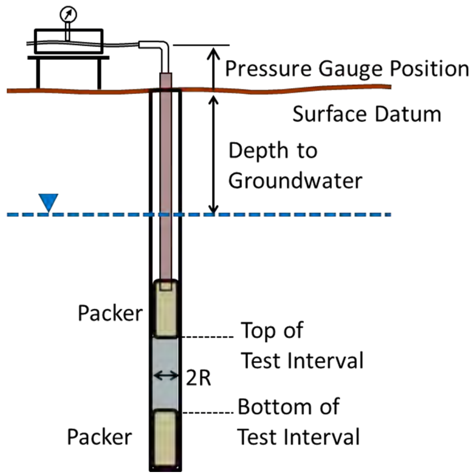
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 3.01E-8 m/s.

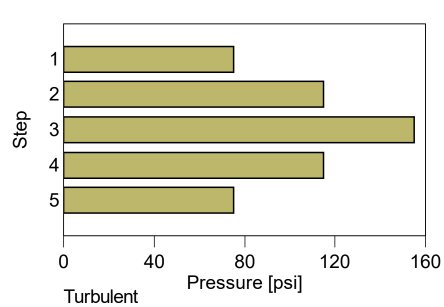
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

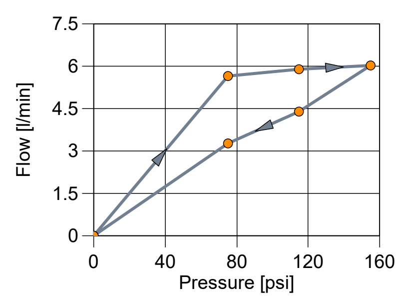
Location: Valentine Lake, NL	Lugeon Test: PT4	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

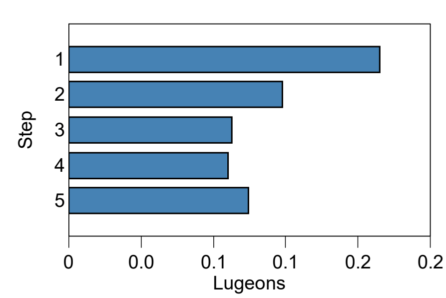


Top of Test Interval: 300.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 61.67 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 230.07 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	75	300.00	305.84	311.70	317.43	223.12	328.78	334.35	340.00	345.41	350.92	5.66	3.19×10^{-8}	2.75×10^{-3}	0.17
2	115	380.00	386.15	392.10	398.10	403.98	409.75	415.71	421.51	427.31	432.95	5.88	2.18×10^{-8}	1.89×10^{-3}	0.12
3	155	460.00	466.31	472.63	478.71	484.71	490.55	496.47	502.48	508.39	514.19	6.02	1.67×10^{-8}	1.44×10^{-3}	0.09
4	115	535.00	539.48	543.89	548.29	552.70	557.07	561.44	565.81			4.40	1.63×10^{-8}	1.41×10^{-3}	0.09
5	75	575.00	578.29	581.57	584.85	588.10	591.35	594.60				3.27	1.84×10^{-8}	1.59×10^{-3}	0.10
												Average	2.10×10^{-8}	1.82×10^{-3}	0.11







Turbulent
Lugeon: 0.118
Hydraulic Conductivity: 2.18E-8 m/s
Hydraulic Conductivity: 1.89E-3 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

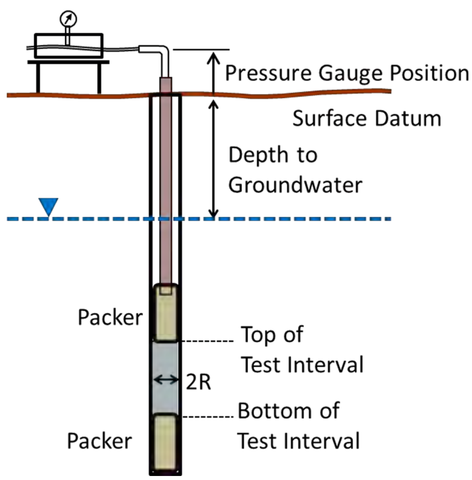
No leaks were noticed during packer inflation or testing.

Hydraulic conductivity value for test interval derived based on flow classification: Turbulent (Step 2).

Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

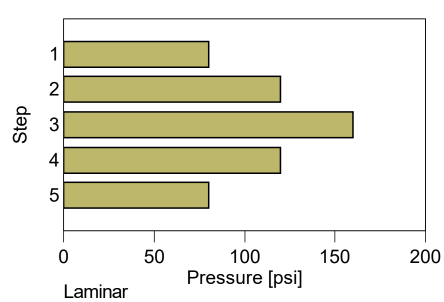
GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

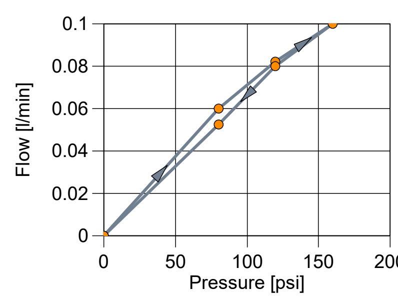
Location: Valentine Lake, NL	Lugeon Test: PT3	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

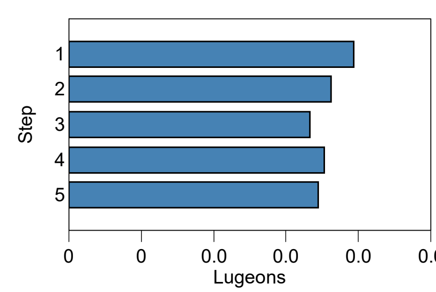


Top of Test Interval: 308.33 m
Bottom of Test Interval: 312.81 m
Length of Test Interval: 4.48 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 236.19 m
Vertical Bottom of Test Interval: 239.63 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	80	270.45	270.51	270.57	270.63							0.06	2.79×10^{-9}	2.41×10^{-4}	0.02
2	120	271.10	271.18	271.26	271.33	271.42	271.51					0.08	2.56×10^{-9}	2.21×10^{-4}	0.02
3	160	272.10	272.20	272.30	272.40	272.50						0.10	2.35×10^{-9}	2.03×10^{-4}	0.02
4	120	272.50	272.58	272.66	272.74							0.08	2.50×10^{-9}	2.16×10^{-4}	0.02
5	80	272.65	272.71	272.76	272.81	272.86						0.05	2.44×10^{-9}	2.11×10^{-4}	0.02
												Average	2.53×10^{-9}	2.18×10^{-4}	0.02







Laminar
Lugeon: 0.02
Hydraulic Conductivity: 2.53E-9 m/s
Hydraulic Conductivity: 2.18E-4 m/d

Performed using a straddle double packer test assembly to isolate test interval.

No leaks were noticed during packer inflation or testing.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

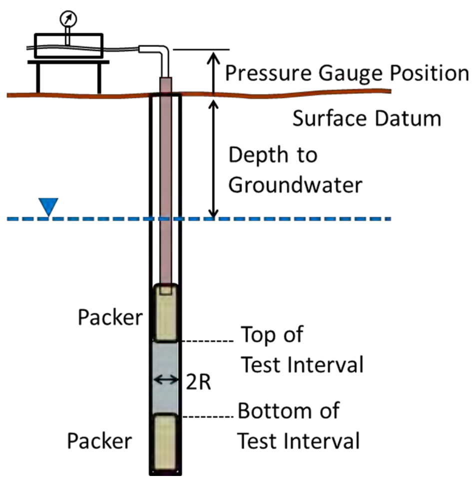
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

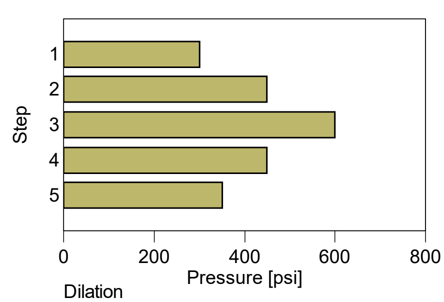
Client: Terrane Geoscience Inc.

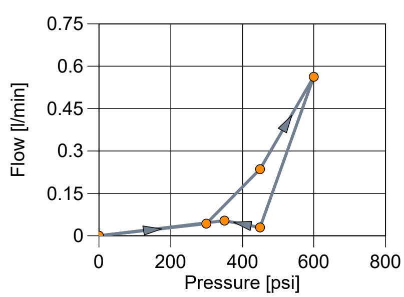
Location: Valentine Lake, NL	Lugeon Test: PT2	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/5/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

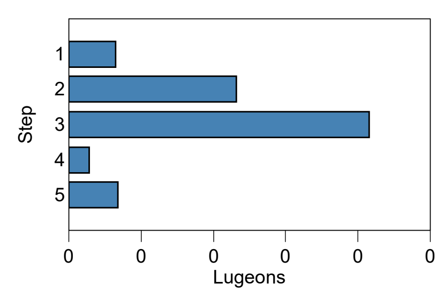


Top of Test Interval: 321.33 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 40.67 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 246.15 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	300	260.82	260.87	260.90	260.95	260.99						0.04	9.00×10^{-11}	7.77×10^{-6}	0.001
2	450	262.90	263.16	263.40	263.62	263.84						0.23	3.23×10^{-10}	2.79×10^{-5}	0.002
3	600	268.30	268.89	269.44	269.95	270.53	271.11					0.56	5.80×10^{-10}	5.01×10^{-5}	0.003
4	450	269.21	269.23	269.27	269.28	269.30	269.34	269.38				0.03	3.89×10^{-11}	3.36×10^{-6}	0.000
5	350	266.90	266.98	267.03	267.06							0.05	9.41×10^{-11}	8.13×10^{-6}	0.001
												Average	2.25×10^{-10}	1.95×10^{-5}	0.001







Dilation
Lugeon: 0.001
Hydraulic Conductivity: 9.00E-11 m/s
Hydraulic Conductivity: 7.77E-6 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No flow at test pressures up to Pmax 175 psi. Increased test step pressures up to Pmax 600 psi. Surface gauge pressure readings checked with transducer data.

Note: ~0.05 L/min system losses at 300 psi (during packer inflation). Not accounted for in test flow data.

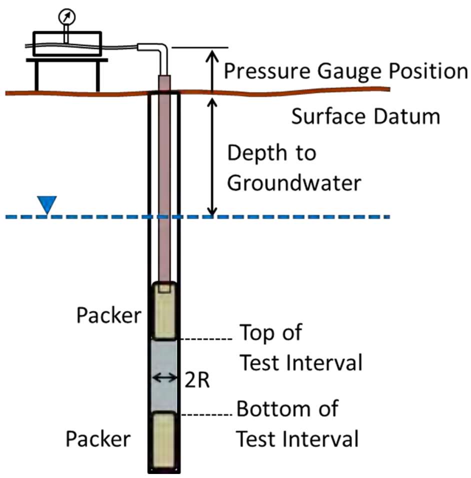
Hydraulic conductivity value for test interval derived based on flow classification: Dilation (Step 1).

GEMTEC Consulting Engineers and Scientists

Lugeon Test Analysis Report

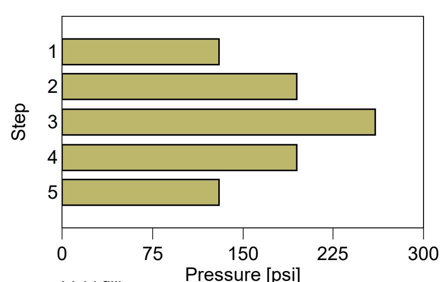
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

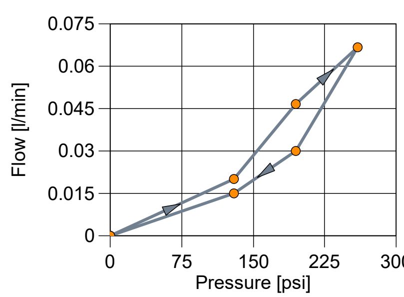
Location: Valentine Lake, NL	Lugeon Test: PT1	Tested bore: MA-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/5/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

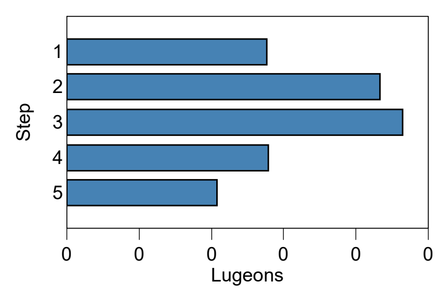


Top of Test Interval: 342.18 m
Bottom of Test Interval: 362.00 m
Length of Test Interval: 19.82 m
Gauge Position: 1.60 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 40° from vertical
Vertical Top of Test Interval: 262.13 m
Vertical Bottom of Test Interval: 277.31 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	130	148.51	148.53	148.55	148.57	148.59						0.02	1.73×10^{-10}	1.50×10^{-5}	0.001
2	195	149.07	149.11	149.17	149.22	149.26	149.31	149.35				0.05	2.71×10^{-10}	2.34×10^{-5}	0.002
3	260	149.94	150.01	150.09	150.16	150.23	150.31	150.37	150.45	150.51	150.54	0.07	2.91×10^{-10}	2.52×10^{-5}	0.002
4	195	150.26	150.29	150.31	150.34	150.39	150.42	150.44				0.03	1.74×10^{-10}	1.51×10^{-5}	0.001
5	130	150.33	150.35	150.36	150.38	150.39						0.01	1.30×10^{-10}	1.12×10^{-5}	0.001
												Average	2.08×10^{-10}	1.80×10^{-5}	0.001







Void filling
Lugeon: 0.001
Hydraulic Conductivity: 1.30E-10 m/s
Hydraulic Conductivity: 1.12E-5 m/d

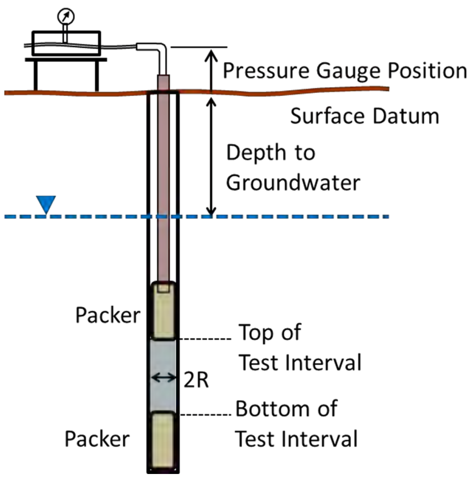
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

Note: ~0.03 L/min system losses at 180 psi (during packer inflation). Not accounted for in test flow data.

Hydraulic conductivity value for test interval derived based on flow classification: Void Filling (Step 5)

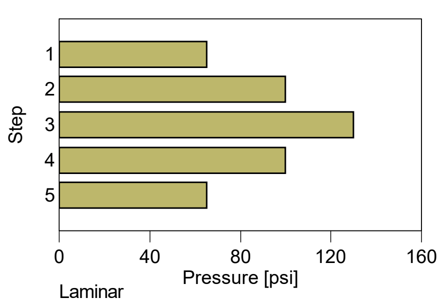
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

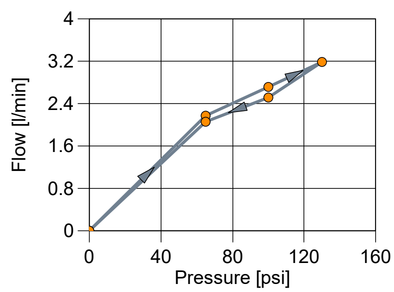
Location: Valentine Lake, NL	Lugeon Test: PT1	Tested bore: MA-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/14/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

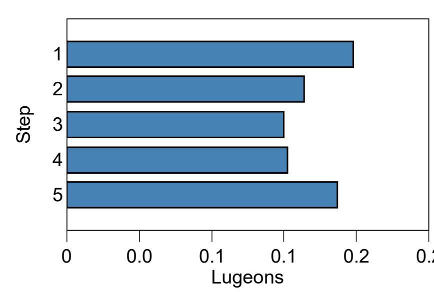


Top of Test Interval: 186.33 m
Bottom of Test Interval: 215.00 m
Length of Test Interval: 28.67 m
Gauge Position: 1.43 m
Depth to Groundwater: 1.80 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 152.63 m
Vertical Bottom of Test Interval: 176.12 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	65	112.00	114.43	116.75	119.01	121.21	123.37	125.48	127.53	129.57	131.59	2.18	2.61×10^{-8}	2.26×10^{-3}	0.16
2	100	140.00	143.87	145.67	148.39	151.12	153.81	156.45	159.14	161.79	164.42	2.71	2.17×10^{-8}	1.87×10^{-3}	0.13
3	130	184.89	188.09	191.30	194.49	197.67	200.86	204.01	207.18			3.18	1.98×10^{-8}	1.71×10^{-3}	0.12
4	100	215.00	217.65	220.18	222.73	225.24	227.74	230.21	232.68	235.15		2.52	2.01×10^{-8}	1.74×10^{-3}	0.12
5	65	238.00	239.65	241.29	244.58	246.23						2.06	2.47×10^{-8}	2.14×10^{-3}	0.15
												Average	2.25×10^{-8}	1.94×10^{-3}	0.14







Laminar
Lugeon: 0.14
Hydraulic Conductivity: 2.25E-8 m/s
Hydraulic Conductivity: 1.94E-3 m/d

Performed using a straddle double packer test assembly to isolate test interval.

No leaks were noticed during packer inflation or testing. Pressure adjustments required during steps 1, 3, and 4. Surface gauge pressure readings checked with transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

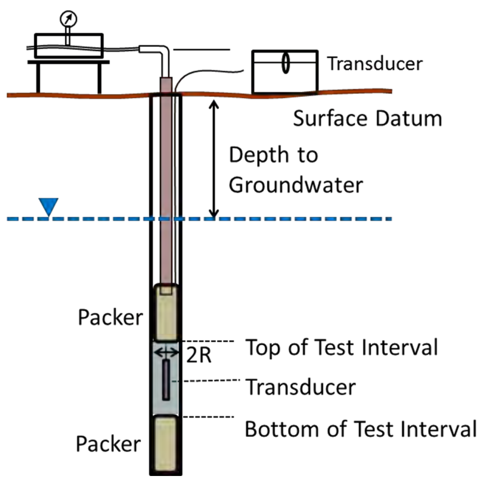
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

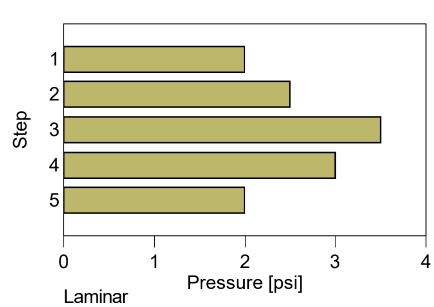
Client: Terrane Geoscience Inc.

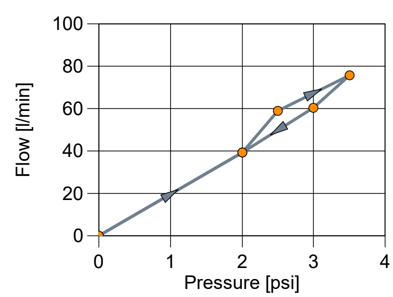
Location: Valentine Lake, NL	Lugeon Test: PT7	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/31/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

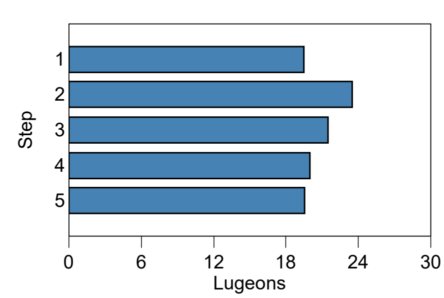


Top of Test Interval: 24.33 m
Bottom of Test Interval: 170.00 m
Length of Test Interval: 145.67 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 20.63 m
Vertical Bottom of Test Interval: 144.17 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	2	474.00	512.50	552.00	591.00	631.00	670.00	709.00	748.00			39.14	4.04×10^{-6}	3.49×10^{-1}	19.486
2	3	780.00	839.00	898.00	957.00							59.00	4.88×10^{-6}	4.21×10^{-1}	23.497
3	4	30.00	105.00	181.00	257.00	332.00	408.00					75.60	4.46×10^{-6}	3.86×10^{-1}	21.506
4	3	461.00	522.00	582.00	642.00	702.00						60.25	4.15×10^{-6}	3.59×10^{-1}	19.996
5	2	721.00	760.00	800.00	839.00	878.00	918.00	957.00	996.00			39.29	4.06×10^{-6}	3.51×10^{-1}	19.557
												Average	4.32×10^{-6}	3.73×10^{-1}	20.809







Laminar
Lugeon: 20.809
Hydraulic Conductivity: 4.32E-6 m/s
Hydraulic Conductivity: 3.73E-1 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.01 L/min system losses at 98 psi (during packer inflation); considered negligible in comparison to test flows. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Test pressures based on transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

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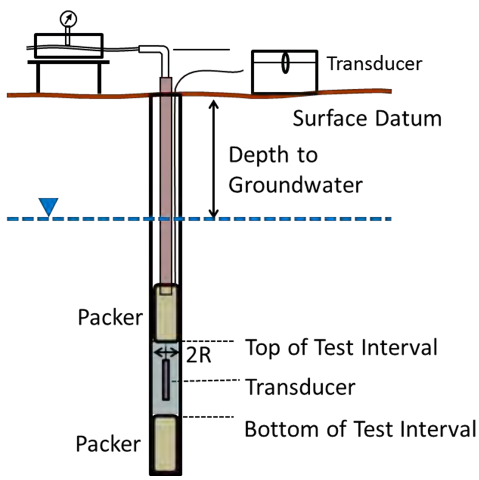
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

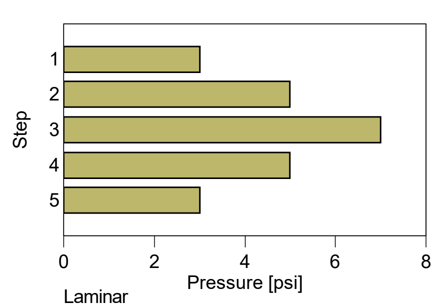
Client: Terrane Geoscience Inc.

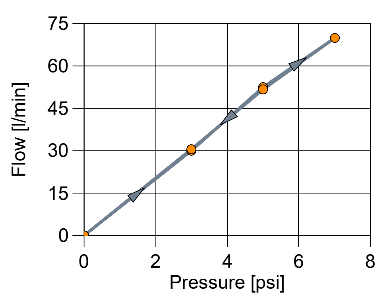
Location: Valentine Lake, NL	Lugeon Test: PT6	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/31/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

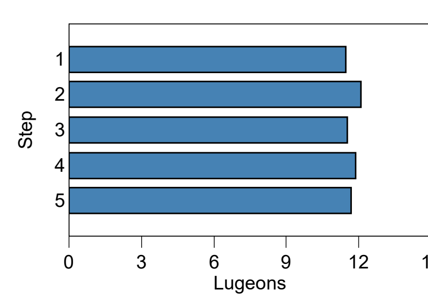


Top of Test Interval: 44.00 m
Bottom of Test Interval: 170.00 m
Length of Test Interval: 126.00 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 37.31 m
Vertical Bottom of Test Interval: 144.17 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	3	310.00	339.60	368.50	398.20	428.00	458.00	488.00	518.70	548.80	579.00	29.89	2.34×10^{-6}	2.02×10^{-1}	11.468
2	5	610.00	662.00	715.00	767.00	819.00	872.00	925.00				52.50	2.46×10^{-6}	2.13×10^{-1}	12.086
3	7	5965.00	6034.00	6102.00	6173.00	6242.00	6313.00	6383.00	6453.00	6524.00	6595.00	70.00	2.35×10^{-6}	2.03×10^{-1}	11.511
4	5	712.00	763.00	814.00	866.00	918.00	970.00					51.60	2.42×10^{-6}	2.09×10^{-1}	11.879
5	3	6995.00	7025.50	7055.70	7086.00	7116.00	7147.00	7177.50	7208.00	7239.00	7269.00	30.44	2.38×10^{-6}	2.06×10^{-1}	11.681
												Average	2.39×10^{-6}	2.06×10^{-1}	11.725







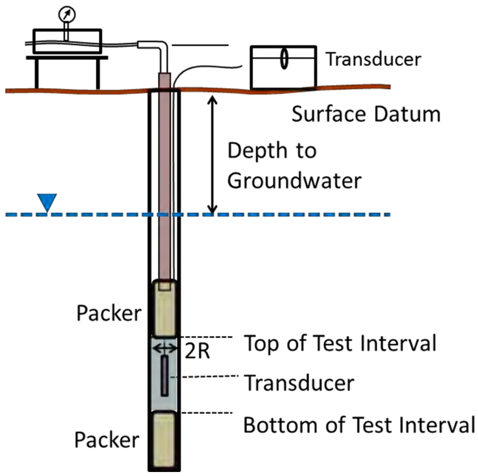
Laminar
Lugeon: 11.725
Hydraulic Conductivity: 2.39E-6 m/s
Hydraulic Conductivity: 2.06E-1 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.05 L/min system losses at 108 psi (during packer inflation); considered negligible in comparison to test flows. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Test pressures based on transducer data.

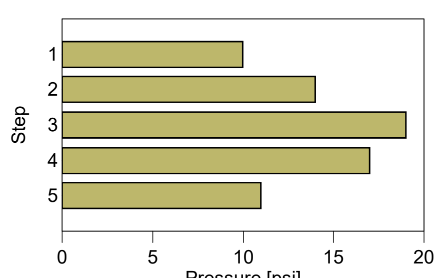
Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

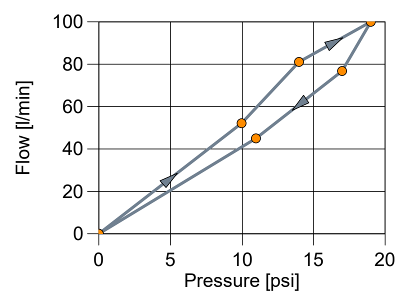
Lugeon Test Analysis Report		
Project: Valentine Gold Feasibility Geotechnical Investigation		
Number: 80047.03		
Client: Terrane Geoscience Inc.		
Location: Valentine Lake, NL	Lugeon Test: PT5	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/31/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

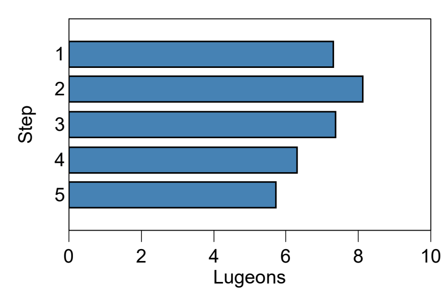


Top of Test Interval: 66.33 m
Bottom of Test Interval: 170.00 m
Length of Test Interval: 103.67 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 56.25 m
Vertical Bottom of Test Interval: 144.17 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	10	320.00	372.50	424.50	476.50							52.17	1.45×10^{-6}	1.25×10^{-1}	7.298
2	14	550.00	632.00	713.00	794.00	875.00						81.25	1.61×10^{-6}	1.39×10^{-1}	8.119
3	19	3935.00	4035.00	4135.00	4235.00							100.00	1.46×10^{-6}	1.26×10^{-1}	7.363
4	17	325.00	402.00	479.00	555.00							76.67	1.25×10^{-6}	1.08×10^{-1}	6.309
5	11	620.00	664.00	708.50	754.00	799.50	845.00					45.00	1.14×10^{-6}	9.82×10^{-2}	5.723
												Average	1.38×10^{-6}	1.20×10^{-1}	6.963







Void filling
Lugeon: 5.723
Hydraulic Conductivity: 1.14E-6 m/s
Hydraulic Conductivity: 9.82E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.07 L/min system losses at 100 psi (during packer inflation); considered negligible in comparison to test flows. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Test pressures based on transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

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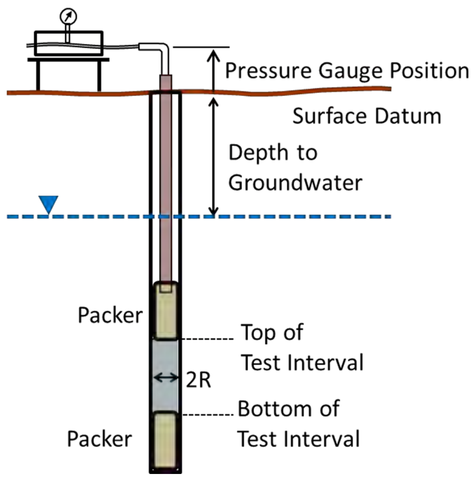
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

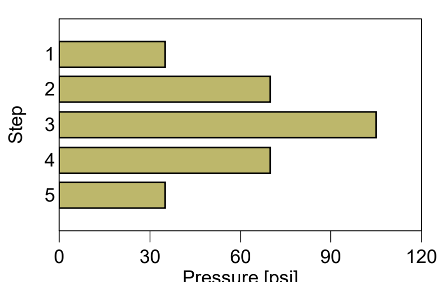
Client: Terrane Geoscience Inc.

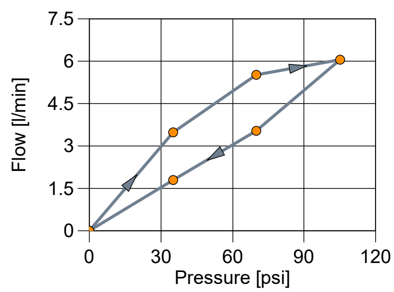
Location: Valentine Lake, NL	Lugeon Test: PT3	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/30/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

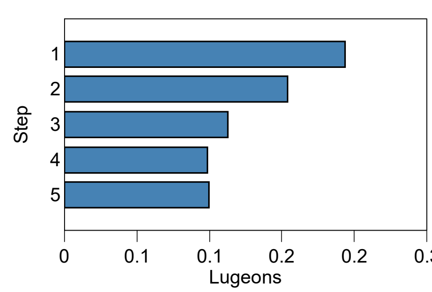


Top of Test Interval: 108.33 m
Bottom of Test Interval: 170.00 m
Length of Test Interval: 61.67 m
Gauge Position: 1.15 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 91.87 m
Vertical Bottom of Test Interval: 144.17 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	35	590.80	594.74	598.38	601.88	605.27	608.64	611.90	615.17			3.48	4.31×10^{-8}	3.72×10^{-3}	0.233
2	70	34.30	40.27	46.07	51.70	57.25	62.70	68.13	73.45	78.71	83.91	5.51	3.42×10^{-8}	2.95×10^{-3}	0.185
3	105	705.35	712.30	718.80	724.80	730.91	736.95	742.87	748.49	754.15	759.77	6.05	2.50×10^{-8}	2.16×10^{-3}	0.135
4	70	64.20	67.71	71.25	74.79	78.30						3.52	2.19×10^{-8}	1.89×10^{-3}	0.118
5	35	79.30	80.80	82.42	84.12	85.87	87.69	89.52	91.43	93.35	95.39	1.79	2.21×10^{-8}	1.91×10^{-3}	0.119
												Average	2.92×10^{-8}	2.53×10^{-3}	0.158







Void filling
Lugeon: 0.115
Hydraulic Conductivity: 2.12E-8 m/s
Hydraulic Conductivity: 1.84E-3 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.08 L/min system losses at 118 psi (during packer inflation); considered negligible in comparison to test flows. Surface gauge pressure readings checked with transducer data. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1, 2, and 3 used to calculate the representative K value for the test interval - K = 3.32E-08 m/s.

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CONSULTING ENGINEERS AND SCIENTISTS

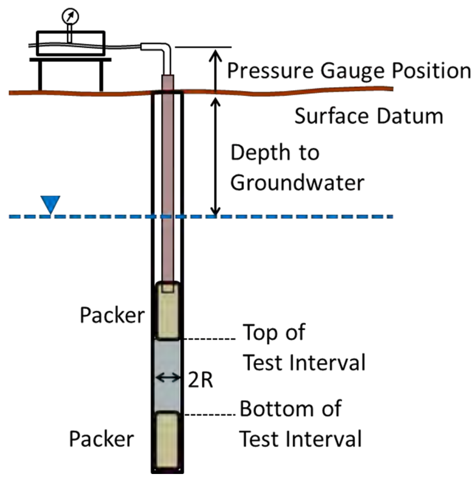
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

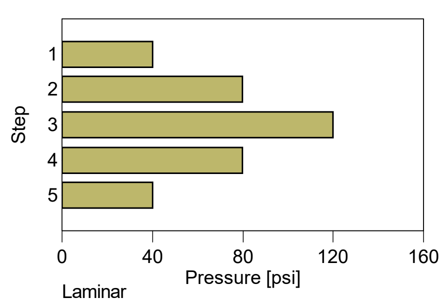
Client: Terrane Geoscience Inc.

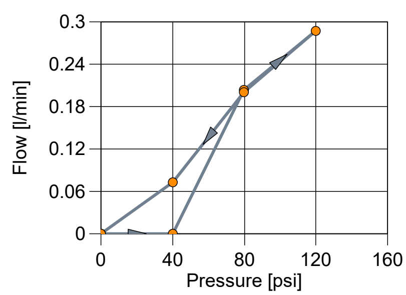
Location: Valentine Lake, NL	Lugeon Test: PT1	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/30/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

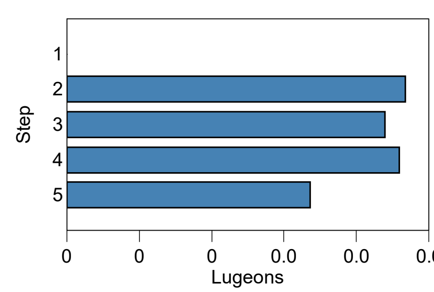


Top of Test Interval: 150.33 m
Bottom of Test Interval: 170.00 m
Length of Test Interval: 19.67 m
Gauge Position: 1.15 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 127.49 m
Vertical Bottom of Test Interval: 144.17 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	40														
2	80	56.15	56.36	56.56	56.76							0.20	2.91×10^{-9}	2.51×10^{-4}	0.019
3	120	57.20	57.50	57.80	58.10	58.37	58.64	58.92				0.29	2.73×10^{-9}	2.36×10^{-4}	0.018
4	80	59.20	59.40	59.60	59.81	60.00						0.20	2.86×10^{-9}	2.47×10^{-4}	0.018
5	40	60.00	60.07	60.15	60.22							0.07	2.09×10^{-9}	1.81×10^{-4}	0.013
												Average	2.65×10^{-9}	2.29×10^{-4}	0.017







Laminar
Lugeon: 0.017
Hydraulic Conductivity: 2.60E-9 m/s
Hydraulic Conductivity: 2.24E-4 m/d

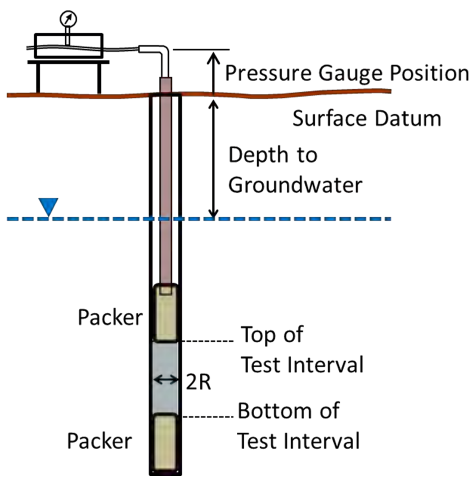
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.11 L/min system losses at 135 psi (during packer inflation). Not accounted for in test flow data. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis.

No flow measured in step 1; the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 2,3,4, and 5 used to calculate the representative K value for the test interval - K = 2.65E-09 m/s.

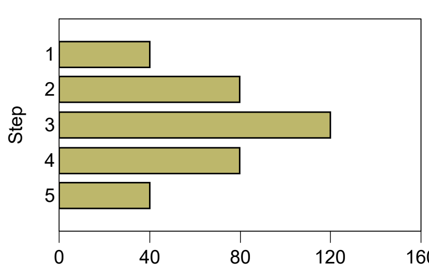
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

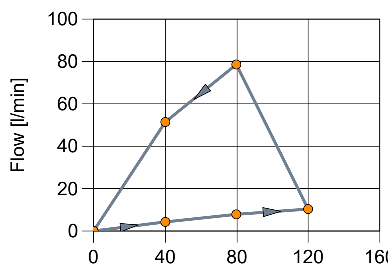
Location: Valentine Lake, NL	Lugeon Test: PT15	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/4/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

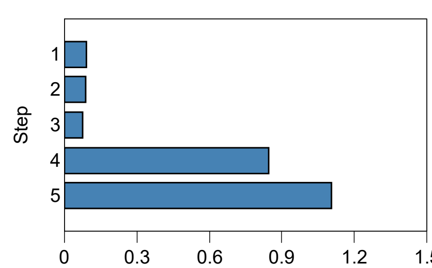


Top of Test Interval: 158.33 m
Bottom of Test Interval: 326.00 m
Length of Test Interval: 167.67 m
Gauge Position: 1.30 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 134.27 m
Vertical Bottom of Test Interval: 276.46 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	40	23.00	28.05	32.80	37.21	41.34	45.30	49.23	53.21			4.32	1.95×10^{-8}	1.68×10^{-3}	0.092
2	80	587.00	598.80	605.35	613.65	621.60	629.20	636.80	644.30	651.76	659.15	8.02	1.82×10^{-8}	1.57×10^{-3}	0.086
3	120	694.00	705.60	716.50	726.95	737.20	747.15	757.10	767.00	776.80	786.30	10.26	1.56×10^{-8}	1.34×10^{-3}	0.074
4	80	4050.00	4129.00	4208.00	4286.00	4365.00						78.75	1.79×10^{-7}	1.55×10^{-2}	0.847
5	40	465.00	516.00	567.00	619.00	671.00	723.00					51.60	2.33×10^{-7}	2.01×10^{-2}	1.104
												Average	9.31×10^{-8}	8.04×10^{-3}	0.441







Wash out
Lugeon: 1.104
Hydraulic Conductivity: 2.33E-7 m/s
Hydraulic Conductivity: 2.01E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Sudden pressure release when decreasing from P4 to P5. Significantly greater flow rates for step 5, suggesting backflow washed material from fracture zones, increasing permeability.

Although pressure-flow step profile suggests a Wash-out classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1, 2, and 3 used to calculate the representative K value for the test interval - K = 1.78E-08 m/s.

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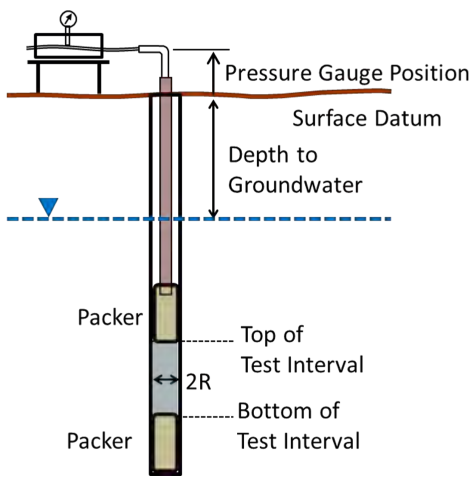
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

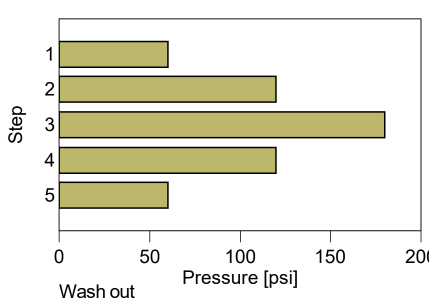
Client: Terrane Geoscience Inc.

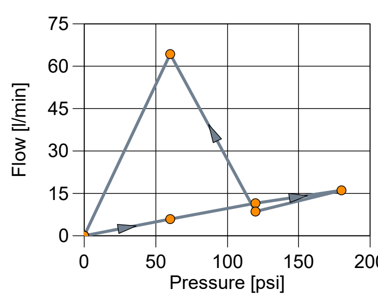
Location: Valentine Lake, NL	Lugeon Test: PT14	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/4/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

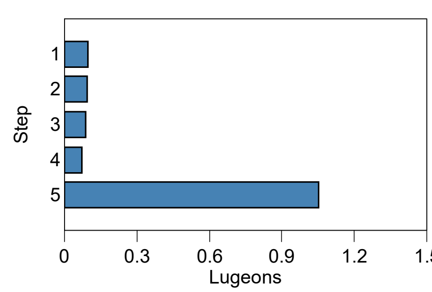


Top of Test Interval: 179.33 m
Bottom of Test Interval: 326.00 m
Length of Test Interval: 146.67 m
Gauge Position: 1.30 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 152.08 m
Vertical Bottom of Test Interval: 276.46 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	60	41.90	48.35	54.63	60.70	66.67	72.50	78.21	83.87	89.45	95.00	5.90	2.01×10^{-8}	1.73×10^{-3}	0.097
2	120	141.00	154.00	166.40	178.00	189.40	200.70	211.80	222.70	233.60		11.57	1.97×10^{-8}	1.71×10^{-3}	0.095
3	180	354.00	371.00	388.00	403.80	419.60	435.30	450.80	466.20			16.03	1.82×10^{-8}	1.58×10^{-3}	0.088
4	120	25.50	33.90	42.50	51.30	60.10	68.90					8.68	1.48×10^{-8}	1.28×10^{-3}	0.071
5	60	840.00	905.00	969.00	1033.50	1098.00	1162.00	1226.50	1291.00	1355.00	1419.50	64.39	2.19×10^{-7}	1.89×10^{-2}	1.054
												Average	5.83×10^{-8}	5.04×10^{-3}	0.281







Wash out
Lugeon: 1.054
Hydraulic Conductivity: 2.19E-7 m/s
Hydraulic Conductivity: 1.89E-2 m/d

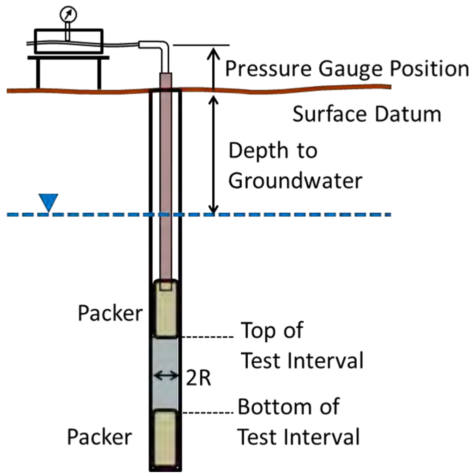
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.19 L/min system losses at 210 psi (during packer inflation); considered negligible in comparison to test flows. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Pressure adjustments required during testing. Pressure release and backflow when decreasing from P4 to P5. Significantly greater flow rates for step 5, suggesting backflow washed material from fracture zones, increasing permeability. Surface gauge pressure readings checked with transducer data.

Although pressure-flow step profile suggests a Wash-out classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1, 2, 3, and 4 used to calculate the representative K value for the test interval - K = 1.82E-08 m/s.

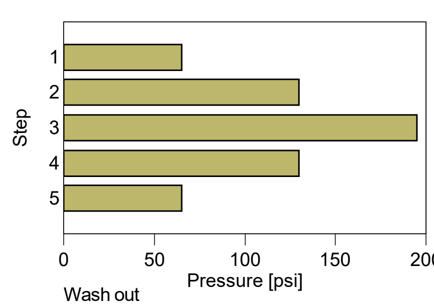
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

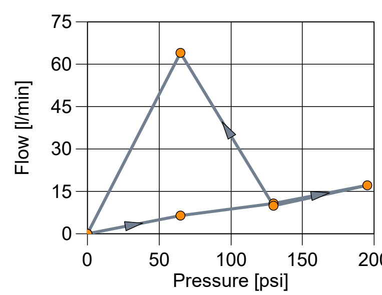
Location: Valentine Lake, NL	Lugeon Test: PT13	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/4/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

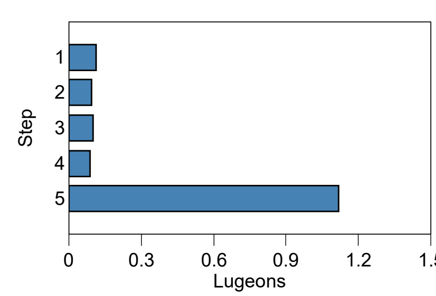


Top of Test Interval: 199.33 m
Bottom of Test Interval: 326.00 m
Length of Test Interval: 126.67 m
Gauge Position: 1.35 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 169.04 m
Vertical Bottom of Test Interval: 276.46 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	65	658.71	665.61	672.41	679.06	685.50	691.65	697.71	703.69			6.43	2.29×10^{-8}	1.98×10^{-3}	0.112
2	130	802.02	812.91	823.83	834.65	845.31	855.89	866.25				10.71	1.91×10^{-8}	1.65×10^{-3}	0.094
3	195	948.60	966.80	984.60	1002.00	1019.30	1036.30	1053.20	1070.10	1086.70	1103.30	17.19	2.05×10^{-8}	1.77×10^{-3}	0.101
4	130	129.00	138.50	148.40	158.30	168.25	178.30	188.55	198.52	208.45		9.93	1.78×10^{-8}	1.53×10^{-3}	0.087
5	65	800.00	864.00	928.00	992.00							64.00	2.28×10^{-7}	1.97×10^{-2}	1.119
												Average	6.17×10^{-8}	5.33×10^{-3}	0.303







Wash out
Lugeon: 1.119
Hydraulic Conductivity: 2.28E-7 m/s
Hydraulic Conductivity: 1.97E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.07 L/min system losses at 220 psi (during packer inflation); considered negligible in comparison to test flows. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Pressure adjustments required during testing. Pressure release and backflow when decreasing from P4 to P5. Significantly greater flow rates for step 5, suggesting backflow washed material from fracture zones, increasing permeability. Surface gauge pressure readings checked with transducer data.

Although pressure-flow step profile suggests a Wash-out classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1, 2, 3, and 4 used to calculate the representative K value for the test interval - K = 2.01E-08 m/s.

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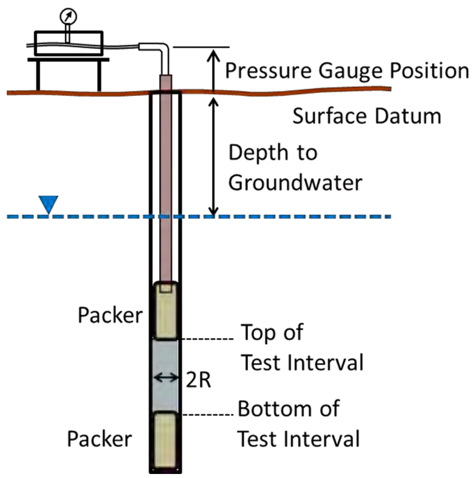
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

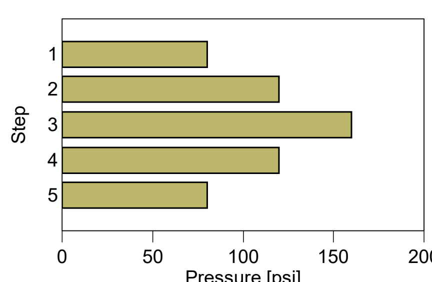
Client: Terrane Geoscience Inc.

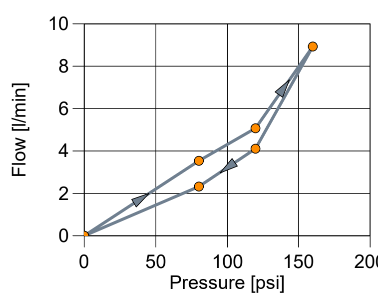
Location: Valentine Lake, NL	Lugeon Test: PT12	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/4/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

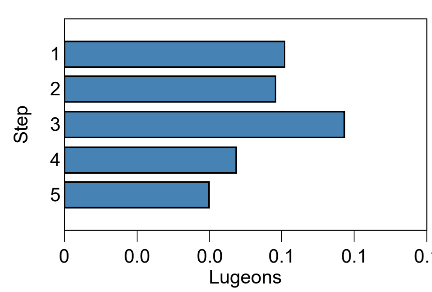


Top of Test Interval: 221.33 m
Bottom of Test Interval: 326.00 m
Length of Test Interval: 104.67 m
Gauge Position: 1.20 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 187.70 m
Vertical Bottom of Test Interval: 276.46 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	80	389.37	393.68	397.70	401.50	405.08	408.48	411.77	414.95	418.05	421.05	3.52	1.21×10^{-8}	1.04×10^{-3}	0.061
2	120	55.15	60.77	65.65	70.75	75.75	80.75	85.65	90.55			5.06	1.16×10^{-8}	1.00×10^{-3}	0.058
3	160	520.90	530.30	539.50	548.50	557.60	566.60	575.50	584.20	592.75	601.40	8.94	1.54×10^{-8}	1.33×10^{-3}	0.077
4	120	3.00	5.82	9.25	13.35	17.75	22.20	26.75	31.30	35.85		4.11	9.41×10^{-9}	8.13×10^{-4}	0.047
5	80	34.26	35.90	37.88	40.07	42.40	44.85	47.35	49.88	52.45	55.05	2.31	7.93×10^{-9}	6.85×10^{-4}	0.040
												Average	1.13×10^{-8}	9.74×10^{-4}	0.057







Void filling
Lugeon: 0.040
Hydraulic Conductivity: 7.93E-9 m/s
Hydraulic Conductivity: 6.85E-4 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

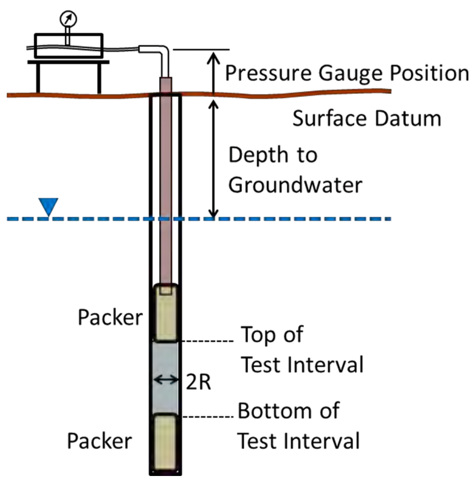
No leaks were noticed during packer inflation or testing. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Pressure adjustments required during steps 2 and 3. Surface gauge pressure readings checked with transducer data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 1.13E-8 m/s.

GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

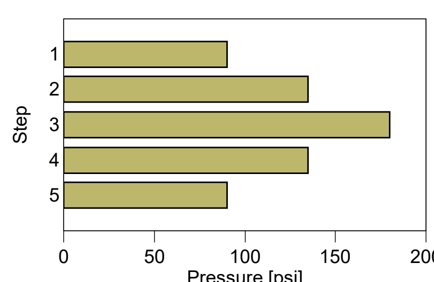
Lugeon Test Analysis Report
Project: Valentine Gold Feasibility Geotechnical Investigation
Number: 80047.03
Client: Terrane Geoscience Inc.

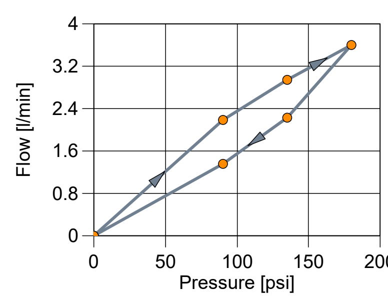
Location: Valentine Lake, NL	Lugeon Test: PT11	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/4/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

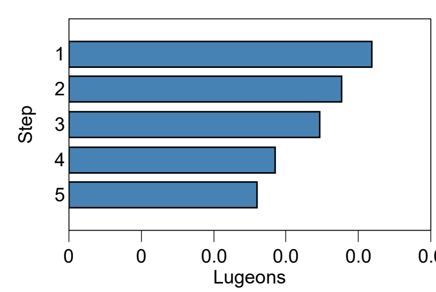


Top of Test Interval: 242.33 m
Bottom of Test Interval: 326.00 m
Length of Test Interval: 83.67 m
Gauge Position: 1.20 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 205.51 m
Vertical Bottom of Test Interval: 276.46 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	90	40.08	42.51	44.85	47.10	49.29	51.44	53.55	55.61	57.66	59.69	2.18	8.08×10^{-9}	6.98×10^{-4}	0.042
2	135	66.36	69.51	72.57	75.58	78.52	81.42	84.31	87.16	90.00	92.80	2.94	7.27×10^{-9}	6.28×10^{-4}	0.038
3	180	301.03	304.85	308.64	312.31	315.98	319.55	323.08	326.55	330.03	333.46	3.60	6.69×10^{-9}	5.78×10^{-4}	0.035
4	135	35.60	37.78	39.99	42.24	44.47	46.70	48.93				2.22	5.50×10^{-9}	4.75×10^{-4}	0.028
5	90	49.00	50.16	51.61	52.99	54.38	55.76					1.35	5.01×10^{-9}	4.33×10^{-4}	0.026
												Average	6.51×10^{-9}	5.62×10^{-4}	0.034







Void filling
Lugeon: 0.026
Hydraulic Conductivity: 4.93E-9 m/s
Hydraulic Conductivity: 4.26E-4 m/d

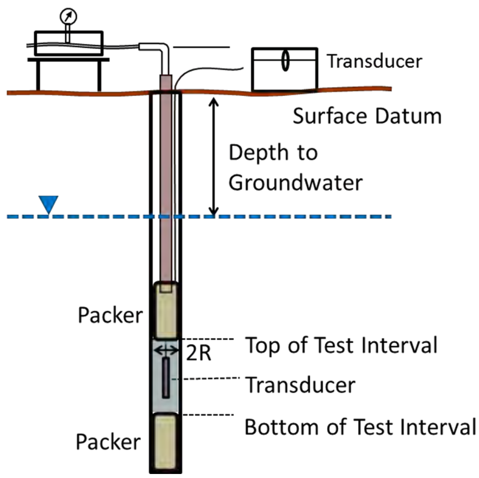
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Pressure adjustments required during step 3. Surface gauge pressure readings checked with transducer data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 6.51E-09 m/s.

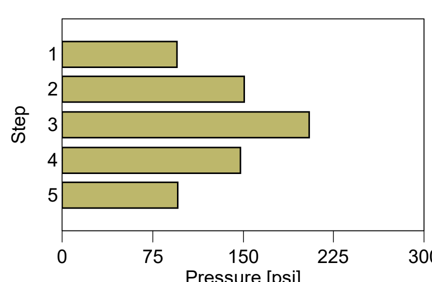
Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

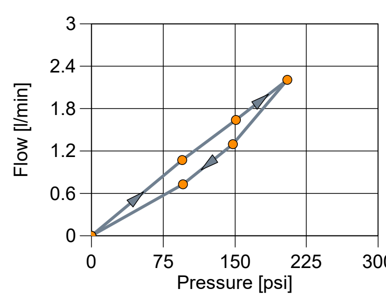
Location: Valentine Lake, NL	Lugeon Test: PT10	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/4/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

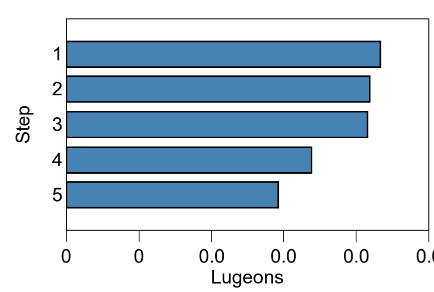


Top of Test Interval: 263.33 m
Bottom of Test Interval: 326.00 m
Length of Test Interval: 62.67 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 223.32 m
Vertical Bottom of Test Interval: 276.46 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	95	1.00	2.28	3.44	4.51	5.57	6.59	7.57	8.55	9.53		1.07	4.82×10^{-9}	4.16×10^{-4}	0.026
2	151	73.90	75.66	77.36	79.05	80.67	82.27	83.85	85.49	87.08	88.65	1.64	4.66×10^{-9}	4.03×10^{-4}	0.025
3	205	191.50	194.00	196.36	198.58	200.75	202.91	205.04	207.15	209.26	211.37	2.21	4.63×10^{-9}	4.00×10^{-4}	0.025
4	148	13.16	14.40	15.73	17.07	18.31	19.60	20.91	22.19	23.48	24.83	1.30	3.76×10^{-9}	3.25×10^{-4}	0.020
5	96	25.49	26.16	26.86	27.57	28.30	29.04	29.79	30.55	31.28	32.04	0.73	3.26×10^{-9}	2.81×10^{-4}	0.018
												Average	4.23×10^{-9}	3.65×10^{-4}	0.023







Void filling
Lugeon: 0.018
Hydraulic Conductivity: 3.26E-9 m/s
Hydraulic Conductivity: 2.81E-4 m/d

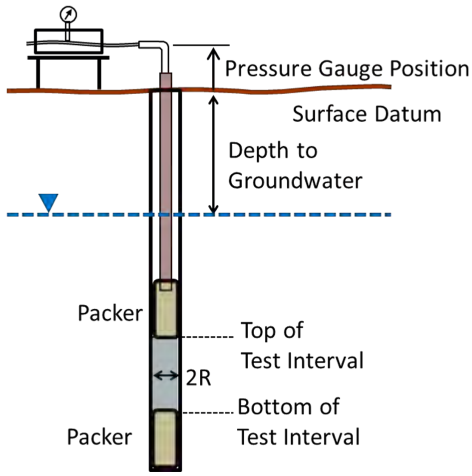
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Pressure adjustments required during step 3. Test pressures based on transducer data.

Although pressure-flow step profile suggests a Void Filling classification, the hydraulic conductivity (K) value determined for step 1 used to calculate the representative K value for the test interval - K = 4.82E-09 m/s.

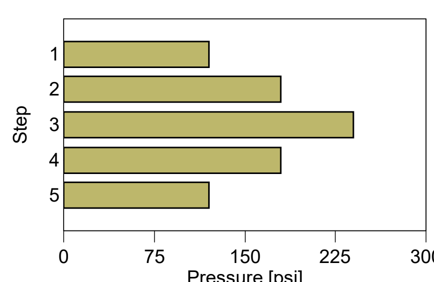
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

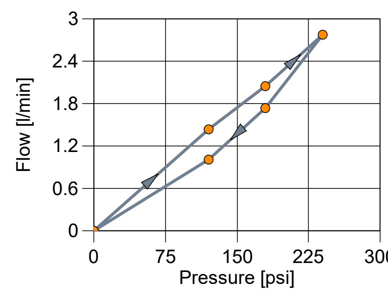
Location: Valentine Lake, NL	Lugeon Test: PT9	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/4/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

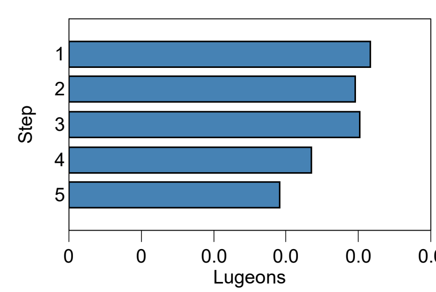


Top of Test Interval: 284.33 m
Bottom of Test Interval: 326.00 m
Length of Test Interval: 41.67 m
Gauge Position: 1.20 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 241.13 m
Vertical Bottom of Test Interval: 276.46 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	120	39.06	40.74	42.28	43.77	45.22	46.62	47.98	49.33	50.66	52.00	1.44	7.28×10^{-9}	6.29×10^{-4}	0.042
2	180	57.35	59.55	61.67	63.71	65.77	67.82	69.83	71.83	73.80	75.77	2.05	6.91×10^{-9}	5.97×10^{-4}	0.040
3	240	88.49	91.30	94.07	96.83	99.60						2.78	7.04×10^{-9}	6.08×10^{-4}	0.040
4	180	2.00	3.62	5.34	7.10	8.87	10.62	12.38	14.15			1.74	5.86×10^{-9}	5.07×10^{-4}	0.034
5	120	15.59	16.51	17.48	18.47	19.48	20.50	21.53	22.57	23.60	24.64	1.01	5.09×10^{-9}	4.40×10^{-4}	0.029
												Average	6.44×10^{-9}	5.56×10^{-4}	0.037







Void filling
Lugeon: 0.029
Hydraulic Conductivity: 5.09E-9 m/s
Hydraulic Conductivity: 4.40E-4 m/d

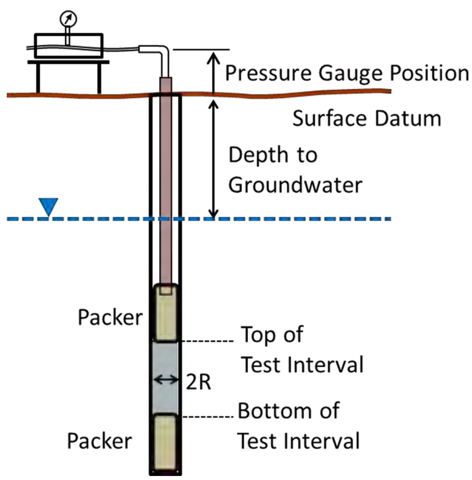
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.08 L/min system losses at 240 psi (during packer inflation); considered negligible in comparison to test flows. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Pressure adjustments required during step 3. Surface gauge pressure readings checked with transducer data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1, 2, and 3 used to calculate the representative K value for the test interval - K = 7.08E-09 m/s.

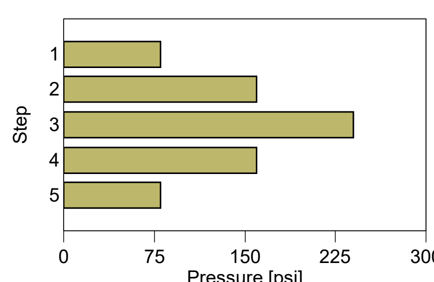
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

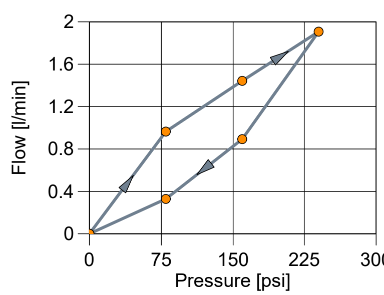
Location: Valentine Lake, NL	Lugeon Test: PT8	Tested bore: MA-GT-20-03
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/3/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

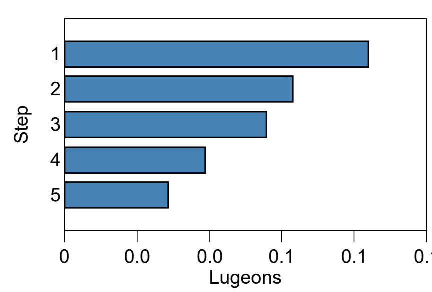


Top of Test Interval: 305.33 m
Bottom of Test Interval: 326.00 m
Length of Test Interval: 20.67 m
Gauge Position: 1.30 m
Depth to Groundwater: -1.00 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 258.93 m
Vertical Bottom of Test Interval: 276.46 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	80	87.00	88.18	89.19	90.14	91.05	91.93	92.77				0.96	1.31×10^{-8}	1.14×10^{-3}	0.084
2	160	395.90	397.56	399.08	400.54	401.97	403.33	404.66	405.98			1.44	9.87×10^{-9}	8.53×10^{-4}	0.063
3	240	408.50	410.70	412.70	414.60	416.42	418.18	419.94				1.91	8.72×10^{-9}	7.53×10^{-4}	0.056
4	160	22.90	23.78	24.67	25.57							0.89	6.10×10^{-9}	5.27×10^{-4}	0.039
5	80	25.70	25.99	26.32	26.65	27.00	27.34					0.33	4.48×10^{-9}	3.87×10^{-4}	0.029
												Average	8.47×10^{-9}	7.31×10^{-4}	0.054







Void filling
Lugeon: 0.029
Hydraulic Conductivity: 4.48E-9 m/s
Hydraulic Conductivity: 3.87E-4 m/d

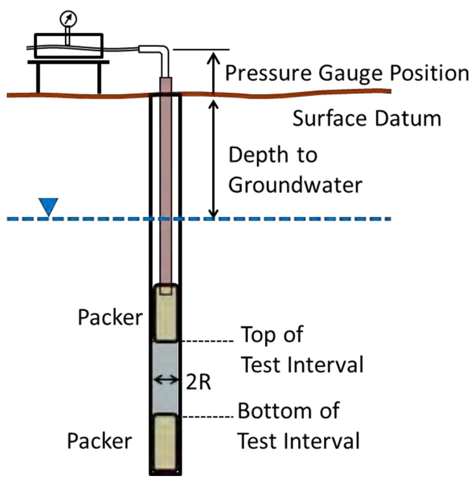
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.08 L/min system losses at 267 psi (during packer inflation); considered negligible in comparison to test flows. Flowing artesian conditions; static water level not determined. Estimated -1 m below ground surface for purposes of analysis. Slight pressure adjustments required during step 3. Surface gauge pressure readings checked with transducer data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 8.47E-9 m/s.

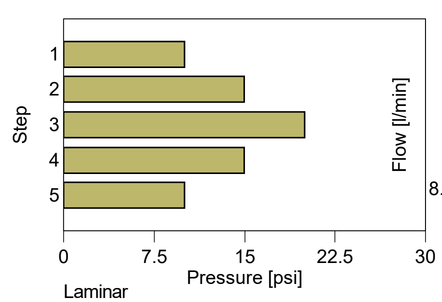
Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

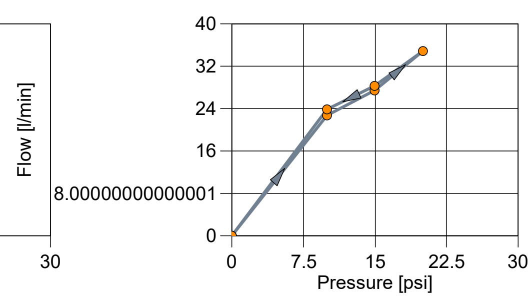
Location: Valentine Lake, NL	Lugeon Test: PT1	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/8/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

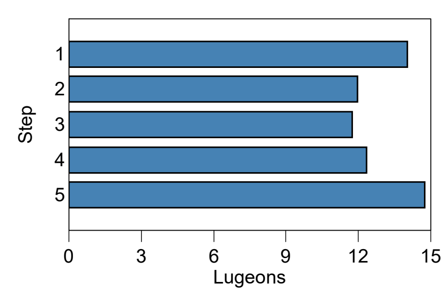


Top of Test Interval: 15.33 m
Bottom of Test Interval: 35.00 m
Length of Test Interval: 19.67 m
Gauge Position: 1.35 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 13.54 m
Vertical Bottom of Test Interval: 30.90 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	10	92.20	115.80	138.10	161.00	183.70	206.30	229.10	251.40	274.00	296.50	22.70	2.18×10^{-6}	1.89×10^{-1}	14
2	15	370.00	397.30	424.70	425.00	479.50	507.00	534.50				27.42	1.86×10^{-6}	1.60×10^{-1}	12
3	20	608.30	643.20	678.30	713.20	748.30	783.20	818.00	853.00	887.80	922.60	34.92	1.83×10^{-6}	1.58×10^{-1}	12
4	15	986.60	1014.40	1042.50	1070.90	1099.00	1127.30	1155.70	1184.20	1212.70	1241.10	28.28	1.92×10^{-6}	1.65×10^{-1}	12
5	10	273.00	295.80	319.30	343.10	367.20	391.40	415.60	439.80			23.83	2.29×10^{-6}	1.98×10^{-1}	15
												Average	2.01×10^{-6}	1.74×10^{-1}	13







Laminar
Lugeon: 13
Hydraulic Conductivity: 2.01E-6 m/s
Hydraulic Conductivity: 1.74E-1 m/d

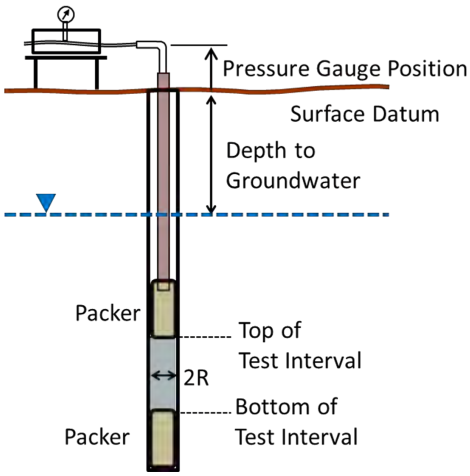
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

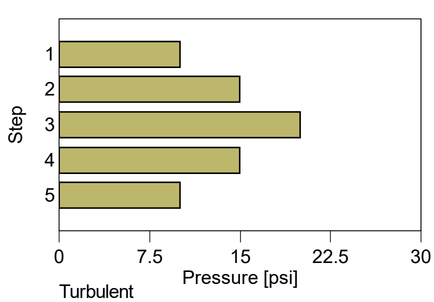
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

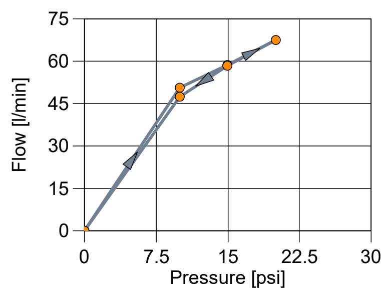
Location: Valentine Lake, NL	Lugeon Test: PT2	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/8/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

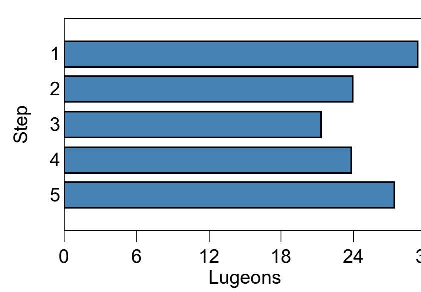


Top of Test Interval: 35.00 m
Bottom of Test Interval: 56.00 m
Length of Test Interval: 21.00 m
Gauge Position: 1.35 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 30.90 m
Vertical Bottom of Test Interval: 49.45 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	10	687.00	737.50	788.50	839.00	889.00	940.00	990.50	1041.00			50.57	4.60×10^{-6}	3.98×10^{-1}	29
2	15	97.00	155.50	213.00	271.50	330.50	388.50	447.50	506.50	565.50		58.56	3.76×10^{-6}	3.25×10^{-1}	24
3	20	614.00	681.50	749.00	816.50	884.00						67.50	3.34×10^{-6}	2.89×10^{-1}	21
4	15	1029.50	1087.50	1145.00	1203.00	1261.00	1320.00	1378.50	1436.50	1495.50	1554.00	58.28	3.74×10^{-6}	3.23×10^{-1}	24
5	10	842.00	893.50	940.50	987.00	1034.50	1080.50	1127.00	1173.50	1220.50	1267.50	47.28	4.30×10^{-6}	3.72×10^{-1}	27
												Average	3.95×10^{-6}	3.41×10^{-1}	25







Turbulent
Lugeon: 23.904
Hydraulic Conductivity: 3.76E-6 m/s
Hydraulic Conductivity: 3.25E-1 m/d

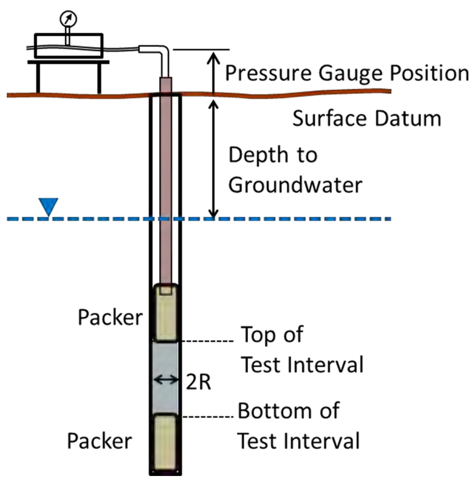
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.23 L/min system losses at 30 psi (during packer inflation); considered negligible in comparison to test flows.

Hydraulic conductivity value for test interval derived based on flow classification: Turbulent (Step 2).

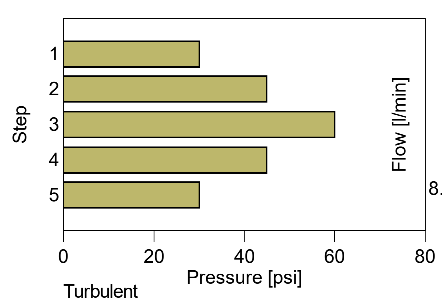
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

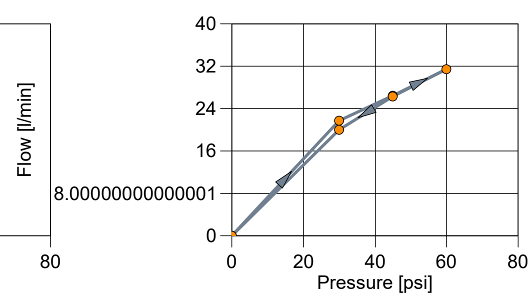
Location: Valentine Lake, NL	Lugeon Test: PT3	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/9/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

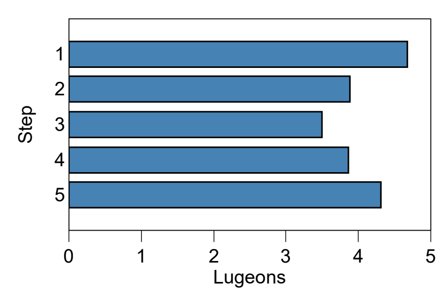


Top of Test Interval: 56.00 m
Bottom of Test Interval: 77.00 m
Length of Test Interval: 21.00 m
Gauge Position: 1.43 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 49.45 m
Vertical Bottom of Test Interval: 67.99 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	30	380.00	402.10	424.00	445.80	467.40	488.90	510.40	531.90			21.70	7.35×10^{-7}	6.35×10^{-2}	4.7
2	45	570.00	596.70	622.90	649.40	675.70	702.10	728.50	754.90			26.41	6.09×10^{-7}	5.27×10^{-2}	3.9
3	60	810.00	841.60	872.90	904.40	935.70	967.00	998.30				31.38	5.49×10^{-7}	4.74×10^{-2}	3.5
4	45	70.00	96.50	122.90	149.30	175.60	201.90	228.10	254.40	280.60	306.90	26.32	6.07×10^{-7}	5.25×10^{-2}	3.9
5	30	345.00	365.10	385.20	405.20	425.30	445.20	465.20	485.10	505.00	524.90	19.99	6.77×10^{-7}	5.85×10^{-2}	4.3
												Average	6.36×10^{-7}	5.49×10^{-2}	4.0







Turbulent
Lugeon: 3.879
Hydraulic Conductivity: 6.09E-7 m/s
Hydraulic Conductivity: 5.27E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.02 L/min system losses at 60 psi (during packer inflation); considered negligible in comparison to test flows.

Hydraulic conductivity value for test interval derived based on flow classification: Turbulent (Step 2).

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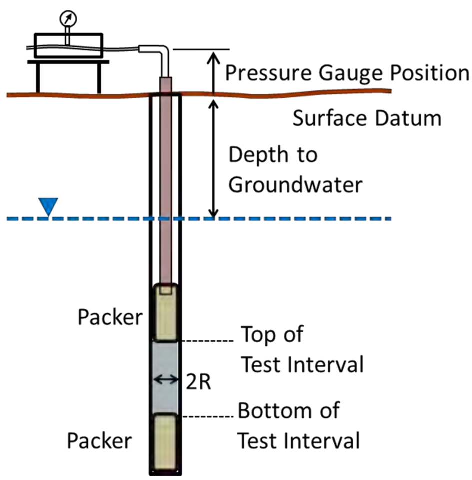
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

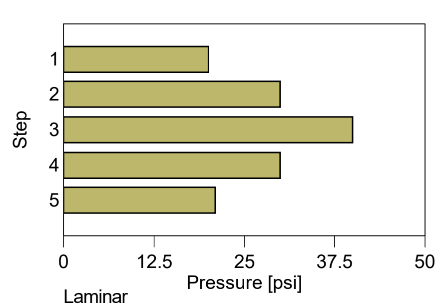
Client: Terrane Geoscience Inc.

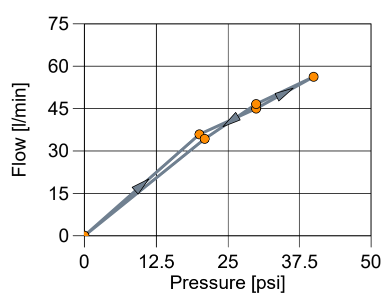
Location: Valentine Lake, NL	Lugeon Test: PT4	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/9/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

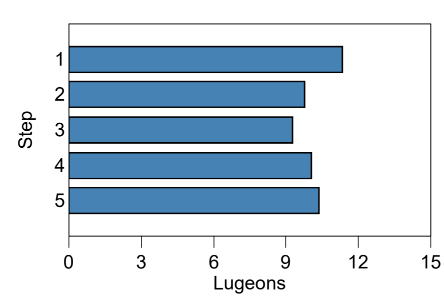


Top of Test Interval: 77.00 m
Bottom of Test Interval: 98.00 m
Length of Test Interval: 21.00 m
Gauge Position: 1.35 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 67.99 m
Vertical Bottom of Test Interval: 86.53 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	20	670.00	707.50	743.50	779.50	815.50	851.00	886.50	922.00			36.00	1.78×10^{-6}	1.54×10^{-1}	11.3
2	30	970.00	1015.50	1060.50	1105.50	1150.50	1195.50					45.10	1.53×10^{-6}	1.32×10^{-1}	9.8
3	40	240.00	297.00	353.50	410.00	466.00	522.00	578.00				56.33	1.46×10^{-6}	1.26×10^{-1}	9.3
4	30	774.00	820.50	867.00	913.50							46.50	1.58×10^{-6}	1.37×10^{-1}	10.1
5	21	950.00	984.50	1019.00	1053.50	1087.50	1122.00	1156.50	1190.50	1225.00	1259.50	34.39	1.63×10^{-6}	1.41×10^{-1}	10.4
												Average	1.60×10^{-6}	1.38×10^{-1}	10.2







Laminar
Lugeon: 10.2
Hydraulic Conductivity: 1.60E-6 m/s
Hydraulic Conductivity: 1.38E-1 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. At pump maximum output only 40 psi attainable pressure. Pressure adjustments required during steps 1 and 3. Surface gauge pressure readings checked with transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

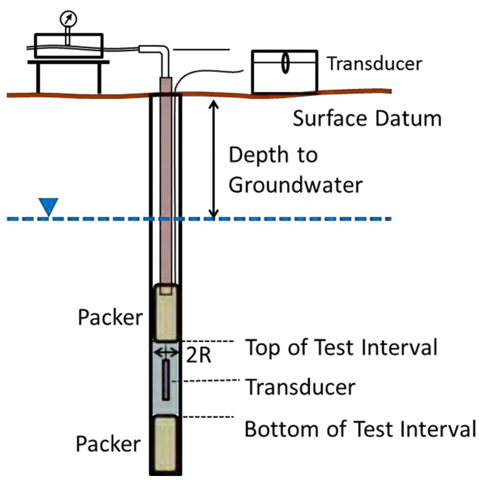
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

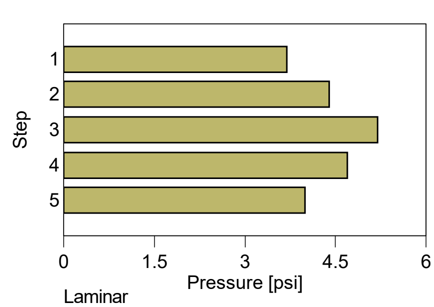
Client: Terrane Geoscience Inc.

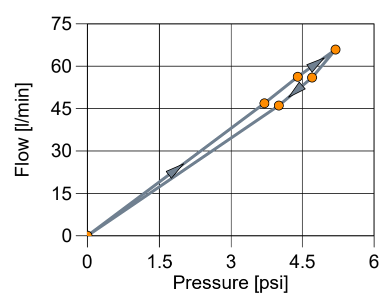
Location: Valentine Lake, NL	Lugeon Test: PT5	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/9/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

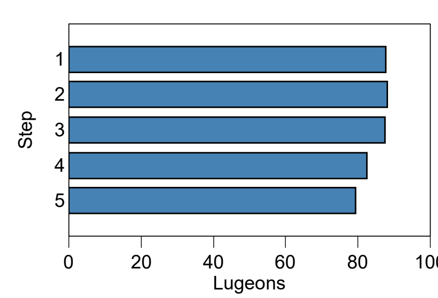


Top of Test Interval: 98.00 m
Bottom of Test Interval: 119.00 m
Length of Test Interval: 21.00 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 86.53 m
Vertical Bottom of Test Interval: 105.07 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	3.7	620.00	667.00	714.00	761.00	808.00						47.00	1.38×10^{-5}	1.19×10^{0}	88
2	4.4	900.00	956.50	1012.50	1068.50	1124.50						56.13	1.38×10^{-5}	1.20×10^{0}	88
3	5.2	260.00	326.00	392.00	457.50	523.00	589.00	655.00				65.83	1.37×10^{-5}	1.19×10^{0}	87
4	4.7	780.00	836.00	892.50	948.50	1004.50	1060.50					56.10	1.30×10^{-5}	1.12×10^{0}	82
5	4.0	120.00	166.00	212.00	258.00	304.00						46.00	1.25×10^{-5}	1.08×10^{0}	79
												Average	1.34×10^{-5}	1.15×10^{0}	85







Laminar
Lugeon: 85
Hydraulic Conductivity: 1.34E-5 m/s
Hydraulic Conductivity: 1.15E0 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.2 L/min system losses at 150 psi (during packer inflation). At pump maximum output only 20 psi attainable pressure. High flows up to 66 L/min recorded. Test pressures based on transducer data; which indicated lower test pressures than that recorded on surface gauge (suggests artesian pressures within test interval). Some water loss (not measured) noted during step 3; low confidence in flow measurements for this step.

Hydraulic conductivity (K) values determined for steps 1, 2, 4, and 5 used to calculate the representative K value for the test interval - K = 1.33E-05 m/s.

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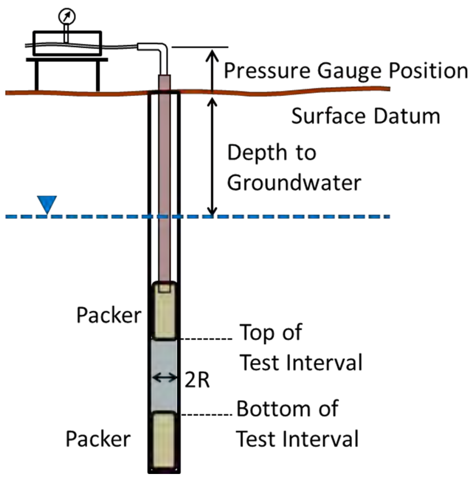
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

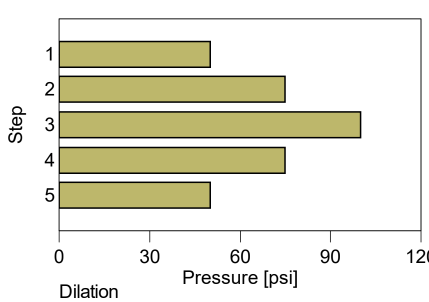
Client: Terrane Geoscience Inc.

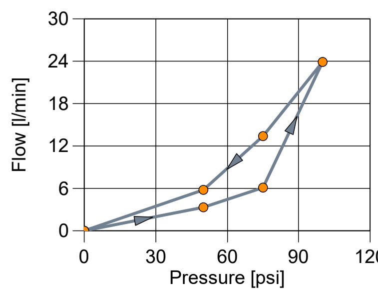
Location: Valentine Lake, NL	Lugeon Test: PT6	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/10/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

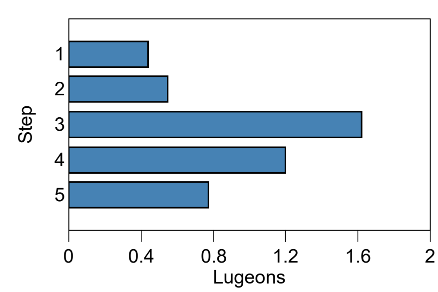


Top of Test Interval: 119.00 m
Bottom of Test Interval: 140.00 m
Length of Test Interval: 21.00 m
Gauge Position: 1.44 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 105.07 m
Vertical Bottom of Test Interval: 123.61 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	50	352.00	355.47	358.88	362.23	365.55	368.83	372.10	375.33	378.56	381.79	3.31	6.90×10^{-8}	5.96×10^{-3}	0.439
2	75	395.00	401.10	407.15	413.25	419.35	425.45					6.09	8.58×10^{-8}	7.41×10^{-3}	0.546
3	100	500.00	523.85	547.70	571.60	595.60	619.60	643.60				23.93	2.55×10^{-7}	2.20×10^{-2}	1.620
4	75	741.30	754.90	768.40	781.70	795.20	808.50	821.90	835.20	848.50	861.80	13.39	1.89×10^{-7}	1.63×10^{-2}	1.200
5	50	886.30	892.41	898.45	904.45	910.35	916.20	921.98	927.64	933.21	938.74	5.83	1.21×10^{-7}	1.05×10^{-2}	0.773
												Average	1.44×10^{-7}	1.24×10^{-2}	0.916







Dilation
Lugeon: 0.439
Hydraulic Conductivity: 6.90E-8 m/s
Hydraulic Conductivity: 5.96E-3 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing.

Although pressure-flow step profile suggests a Dilation classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 1.44E-7 m/s.

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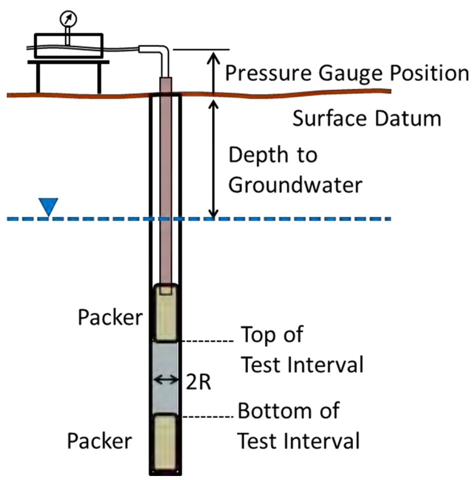
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

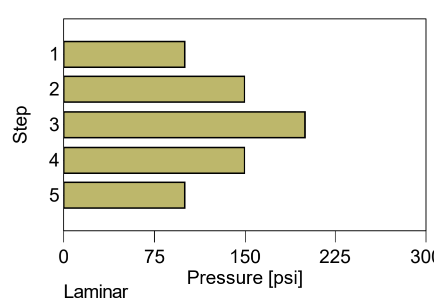
Client: Terrane Geoscience Inc.

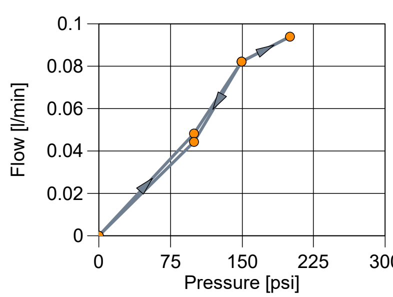
Location: Valentine Lake, NL	Lugeon Test: PT7	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/10/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

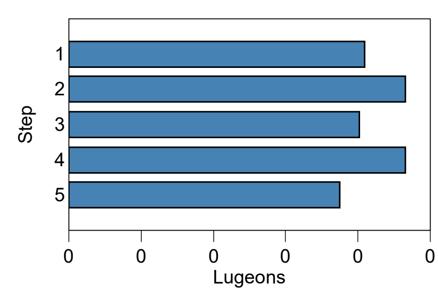


Top of Test Interval: 140.00 m
Bottom of Test Interval: 161.00 m
Length of Test Interval: 21.00 m
Gauge Position: 1.42 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 123.61 m
Vertical Bottom of Test Interval: 142.15 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	100	54.34	54.39	54.44	54.49	54.53	54.58	54.63				0.05	5.14×10^{-10}	4.44×10^{-5}	0.003
2	150	54.89	54.98	55.06	55.14	55.22	55.30					0.08	5.85×10^{-10}	5.06×10^{-5}	0.004
3	200	55.53	55.64	55.73	55.82	55.91	56.00					0.09	5.05×10^{-10}	4.36×10^{-5}	0.003
4	150	55.90	55.99	56.07	56.15	56.23	56.31					0.08	5.85×10^{-10}	5.06×10^{-5}	0.004
5	100	56.20	56.20	56.26	56.32	56.36	56.41	56.46	56.51			0.04	4.71×10^{-10}	4.07×10^{-5}	0.003
												Average	5.32×10^{-10}	4.60×10^{-5}	0.003







Laminar
Lugeon: 0.003
Hydraulic Conductivity: 5.32E-10 m/s
Hydraulic Conductivity: 4.60E-5 m/d

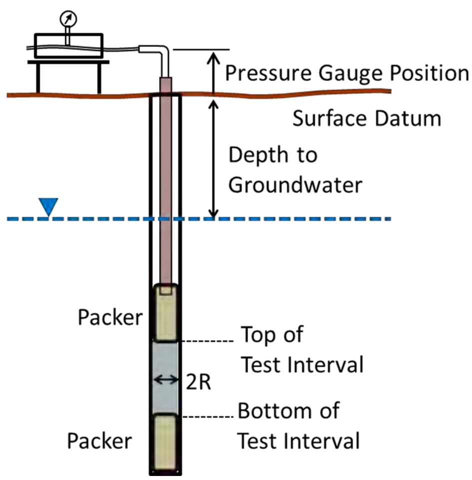
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.07 L/min system losses at 110 psi (during packer inflation). Not accounted for in test flow data. Test pressures higher than determined Pmax required to induce flow for steps 2, 3, and 4. Test pressure-flow profile does not suggest dilation, and test results at these steps are considered reliable.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

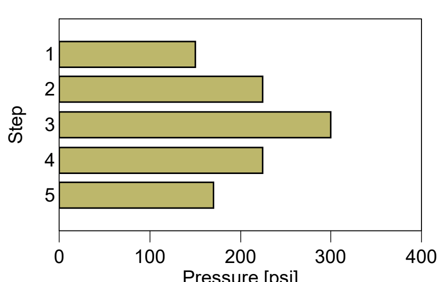
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

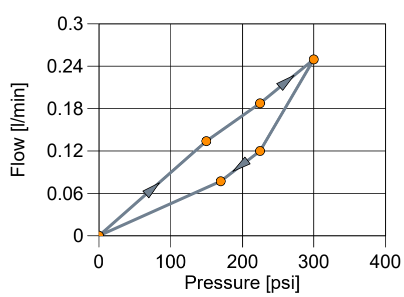
Location: Valentine Lake, NL	Lugeon Test: PT8	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/10/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

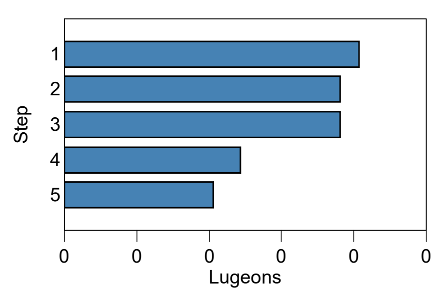


Top of Test Interval: 161.00 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 21.00 m
Gauge Position: 1.42 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 142.15 m
Vertical Bottom of Test Interval: 160.70 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	150	65.80	65.99	66.15	66.31	66.44	66.56	66.69	66.81	66.91	67.01	0.13	9.60×10^{-10}	8.29×10^{-5}	0.006
2	225	67.80	68.00	68.20	68.38	68.56	68.74					0.19	8.99×10^{-10}	7.76×10^{-5}	0.006
3	300	70.00	70.25	70.50	70.75							0.25	8.98×10^{-10}	7.76×10^{-5}	0.006
4	225	70.90	71.02	71.14	71.26	71.38						0.12	5.74×10^{-10}	4.96×10^{-5}	0.004
5	170	71.20	71.27	71.35	71.42	71.50	71.58	71.66				0.08	4.84×10^{-10}	4.18×10^{-5}	0.003
												Average	7.63×10^{-10}	6.59×10^{-5}	0.005







Void filling
Lugeon: 0.003
Hydraulic Conductivity: 4.84E-10 m/s
Hydraulic Conductivity: 4.18E-5 m/d

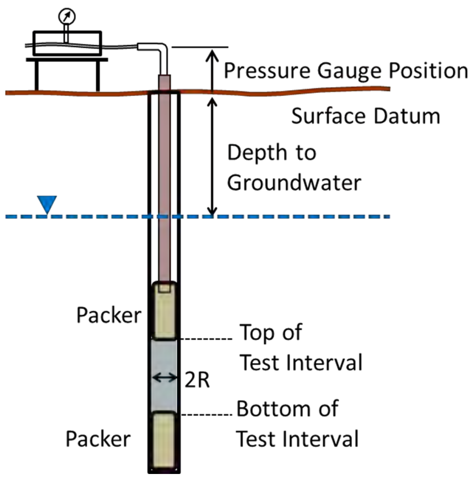
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.08 L/min system losses at 130 psi (during packer inflation). Not accounted for in test flow data. Test pressures higher than determined Pmax required to induce flow for all steps. Test pressure-flow profile does not suggest dilation and test results are considered reliable.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 7.63E-10 m/s.

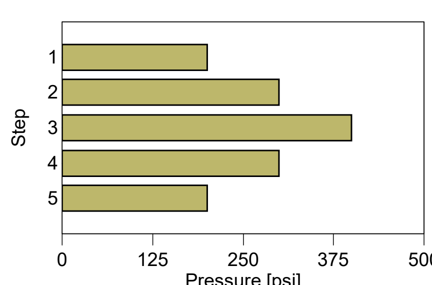
Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

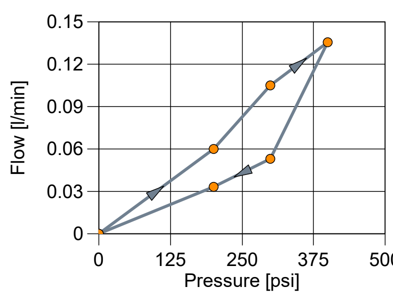
Location: Valentine Lake, NL	Lugeon Test: PT9	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/11/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

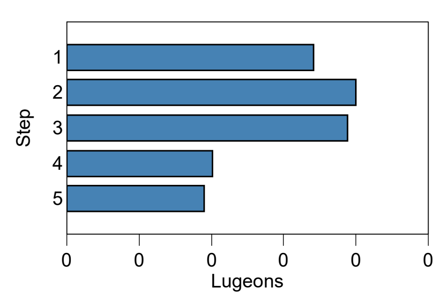


Top of Test Interval: 182.00 m
Bottom of Test Interval: 203.00 m
Length of Test Interval: 21.00 m
Gauge Position: 1.44 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 160.70 m
Vertical Bottom of Test Interval: 179.24 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	200	93.89	93.95	94.02	94.07	94.13						0.06	3.22×10^{-10}	2.78×10^{-5}	0.002
2	300	95.34	95.45	95.56	95.66	95.75	95.87	95.97				0.10	3.77×10^{-10}	3.26×10^{-5}	0.002
3	400	96.40	96.62	96.75	96.88	97.00	97.13	97.24	97.35			0.14	3.66×10^{-10}	3.17×10^{-5}	0.002
4	300	97.22	97.27	97.33	97.39	97.44	97.49	97.54	97.59			0.05	1.90×10^{-10}	1.64×10^{-5}	0.001
5	200	97.31	97.35	97.37	97.42	97.44	97.48	97.50	97.55	97.57	97.61	0.03	1.79×10^{-10}	1.55×10^{-5}	0.001
												Average	2.87×10^{-10}	2.48×10^{-5}	0.002







Void filling
Lugeon: 0.001
Hydraulic Conductivity: 1.79E-10 m/s
Hydraulic Conductivity: 1.55E-5 m/d

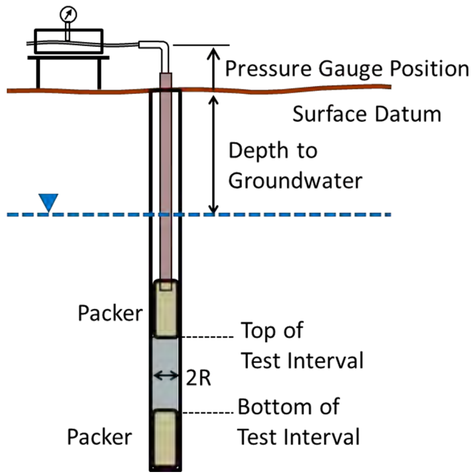
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Test pressures higher than determined Pmax required to induce flow for all steps. Test pressure-flow profile does not suggest dilation and test results are considered reliable. Several pressure adjustments required during steps 2 and 3.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 2.87E-10 m/s.

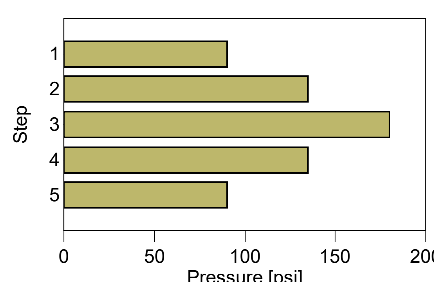
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

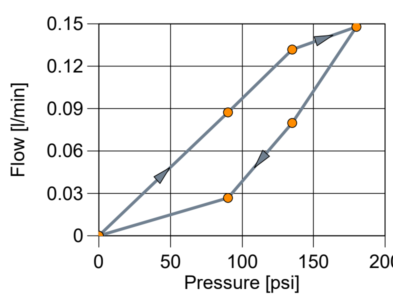
Location: Valentine Lake, NL	Lugeon Test: PT10	Tested bore: MA-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/11/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

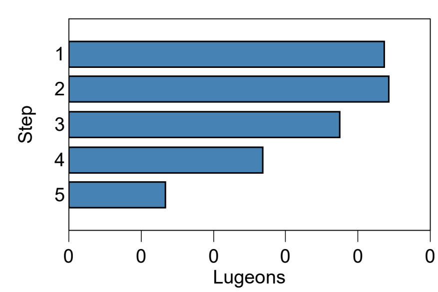


Top of Test Interval: 203.00 m
Bottom of Test Interval: 224.00 m
Length of Test Interval: 21.00 m
Gauge Position: 1.44 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 28° from vertical
Vertical Top of Test Interval: 179.24 m
Vertical Bottom of Test Interval: 197.78 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	90	100.44	100.53	100.64	100.72	100.81	100.89	100.97	101.05			0.09	1.03×10^{-9}	8.94×10^{-5}	0.007
2	135	101.48	101.63	101.76	101.90	102.02	102.15	102.27				0.13	1.05×10^{-9}	9.07×10^{-5}	0.007
3	180	102.80	102.97	103.12	103.26	103.40	103.54					0.15	8.88×10^{-10}	7.67×10^{-5}	0.006
4	135	103.43	103.52	103.60	103.69	103.76	103.84	103.92	103.99	104.07		0.08	6.38×10^{-10}	5.51×10^{-5}	0.004
5	90	103.83	103.83	103.83	103.87	103.91	103.95	103.99				0.03	3.17×10^{-10}	2.73×10^{-5}	0.002
												Average	7.85×10^{-10}	6.79×10^{-5}	0.005







Void filling
Lugeon: 0.002
Hydraulic Conductivity: 3.17E-10 m/s
Hydraulic Conductivity: 2.73E-5 m/d

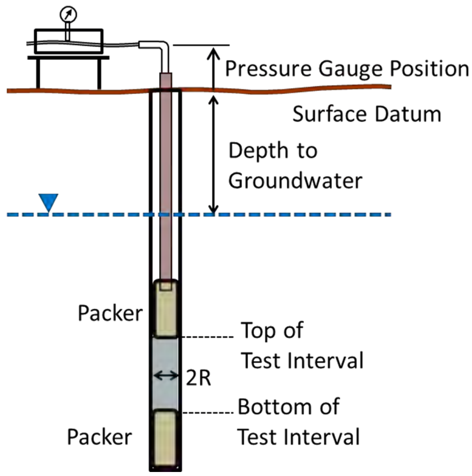
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.08 L/min system losses at 130 psi (during packer inflation). Surface gauge pressure readings checked with transducer data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 7.85E-10 m/s.

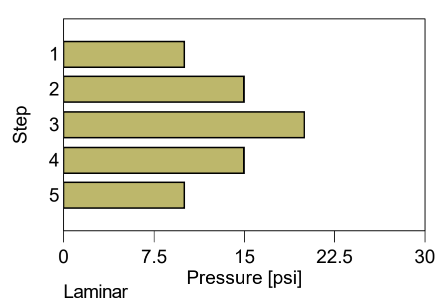
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

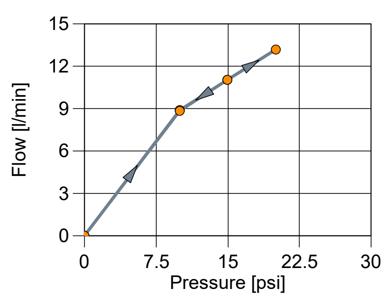
Location: Valentine Lake, NL	Lugeon Test: PT2	Tested bore: MA-GT-20-06
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/28/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

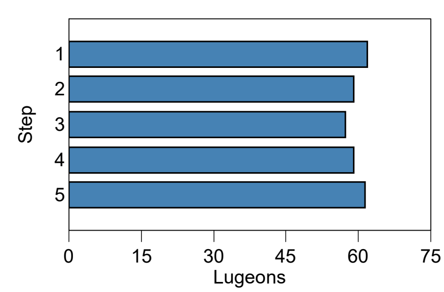


Top of Test Interval: 23.85 m
Bottom of Test Interval: 25.10 m
Length of Test Interval: 1.25 m
Gauge Position: 1.40 m
Depth to Groundwater: 3.30 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 20.23 m
Vertical Bottom of Test Interval: 21.29 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	10	111.00	119.90	128.70	137.70	146.50	155.40	164.30	173.30			8.90	5.18×10^{-6}	4.48×10^{-1}	62
2	15	183.00	193.80	204.70	216.00	226.90	237.90	249.00	260.10	271.20		11.02	4.94×10^{-6}	4.27×10^{-1}	59
3	20	279.00	292.70	305.80	319.40	332.70	345.90	359.20	372.10	384.90	397.70	13.19	4.80×10^{-6}	4.15×10^{-1}	57
4	15	419.00	430.20	441.50	452.60	463.70	474.50	485.40	496.30			11.04	4.95×10^{-6}	4.27×10^{-1}	59
5	10	502.00	510.90	519.70	528.50	537.30						8.82	5.14×10^{-6}	4.44×10^{-1}	61
												Average	5.00×10^{-6}	4.32×10^{-1}	60







Laminar
Lugeon: 59.737
Hydraulic Conductivity: 5.00E-6 m/s
Hydraulic Conductivity: 4.32E-1 m/d

Performed using a straddle double packer test assembly to isolate test interval.

~0.05 L/min system losses at 50 psi (during packer inflation); considered negligible in comparison to test flows.). Surface gauge pressure readings checked with transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

GEMTEC
Consulting Engineers and Scientists

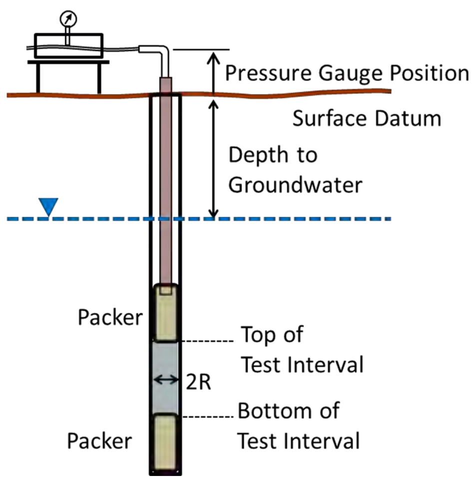
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

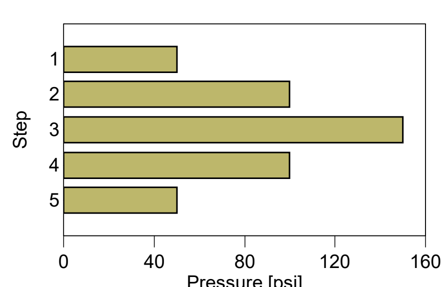
Client: Terrane Geoscience Inc.

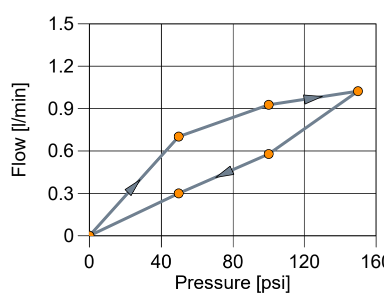
Location: Valentine Lake, NL	Lugeon Test: PT1	Tested bore: MA-GT-20-06
Test Conducted by: Terrane Geoscience Inc.		Test Date: 7/25/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/27/2020
Lithology:		

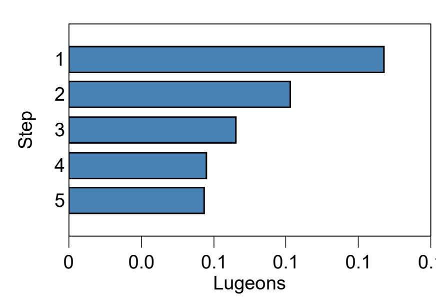


Top of Test Interval: 183.30 m
Bottom of Test Interval: 197.00 m
Length of Test Interval: 13.70 m
Gauge Position: 1.42 m
Depth to Groundwater: 3.30 m
Radius of Test Section: 0.05 m
Dip of bore: 32° from vertical
Vertical Top of Test Interval: 155.45 m
Vertical Bottom of Test Interval: 167.07 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	50	9046.20	9046.96	9047.87	9048.70	9049.37	9050.04	9050.67	9051.30	9051.92	9052.50	0.70	1.91×10^{-8}	1.65×10^{-3}	0.131
2	100	9054.30	9055.47	9056.50	9057.45	9058.39	9059.27	9060.15	9061.00	9061.81	9062.62	0.92	1.34×10^{-8}	1.16×10^{-3}	0.092
3	150	29066.50	29067.73	29068.84	29069.90	29070.91	29071.91	29072.90	29073.86	29074.81	29075.71	1.02	1.01×10^{-8}	8.72×10^{-4}	0.069
4	100	77.00	77.56	78.13	78.72	79.30	79.88					0.58	8.34×10^{-9}	7.21×10^{-4}	0.057
5	50	79.90	80.18	80.46	80.88	81.10						0.30	8.18×10^{-9}	7.07×10^{-4}	0.056
												Average	1.18×10^{-8}	1.02×10^{-3}	0.081







Void filling
Lugeon: 0.056
Hydraulic Conductivity: 8.18E-9 m/s
Hydraulic Conductivity: 7.07E-4 m/d

Performed using a straddle double packer test assembly to isolate test interval.

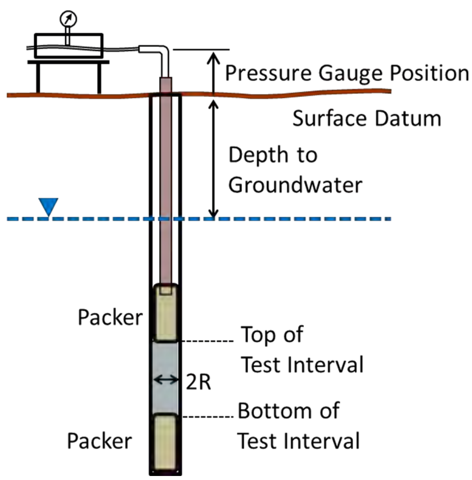
No leaks were noticed during packer inflation or testing.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 1.18E-8 m/s.

Lugeon Test Analysis Report	
Project: Valentine Gold Feasibility Geotechnical Investigation	
Number: 80047.03	
Client: Terrane Geoscience Inc.	

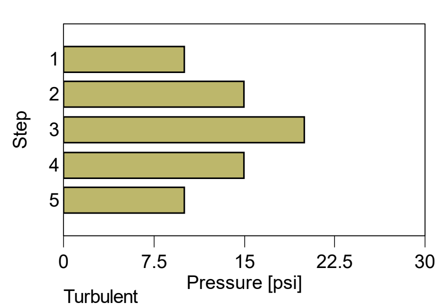
GEMTEC Consulting Engineers and Scientists

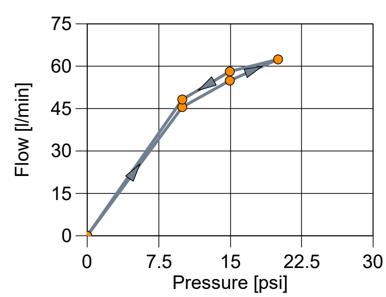
Location: Valentine Lake, NL	Lugeon Test: PT6	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/20/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

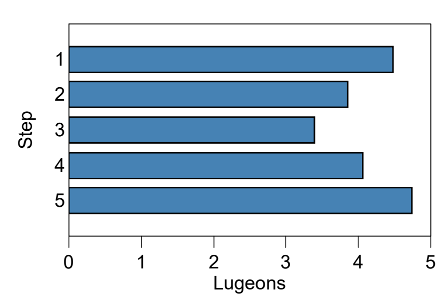


Top of Test Interval: 5.33 m
Bottom of Test Interval: 125.00 m
Length of Test Interval: 119.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 4.37 m
Vertical Bottom of Test Interval: 102.39 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	10	715.00	759.50	804.50	849.50	895.50	941.50	987.50				45.42	9.05×10^{-7}	7.82×10^{-2}	4.5
2	15	35.00	90.00	145.00	200.00							55.00	7.80×10^{-7}	6.74×10^{-2}	3.9
3	20	230.00	293.00	356.00	418.00	480.00	542.00					62.40	6.86×10^{-7}	5.93×10^{-2}	3.4
4	15	730.00	788.00	846.00	904.00							58.00	8.22×10^{-7}	7.10×10^{-2}	4.1
5	10	50.00	98.50	146.50	194.50	242.50						48.13	9.59×10^{-7}	8.29×10^{-2}	4.7
												Average	8.31×10^{-7}	7.18×10^{-2}	4.1







Turbulent
Lugeon: 3.852
Hydraulic Conductivity: 7.80E-7 m/s
Hydraulic Conductivity: 6.74E-2 m/d

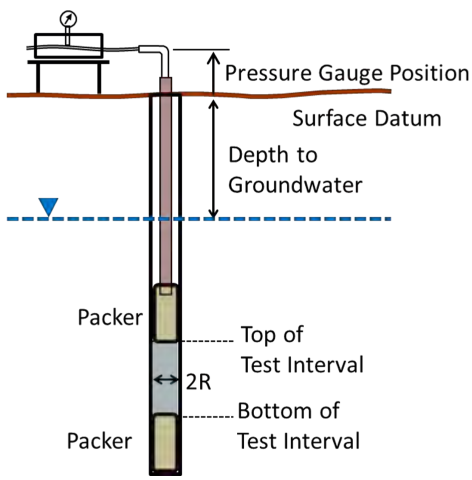
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Test pressures higher than determined Pmax required to induce flow. Test pressure-flow profile does not suggest dilation and test results at these steps are considered reliable.

Although pressure-flow step profile suggests a Turbulent classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 8.31E-7 m/s.

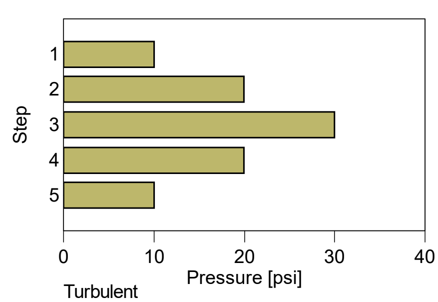
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

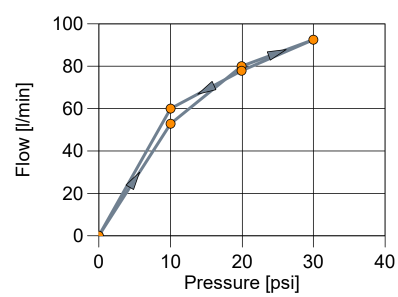
Location: Valentine Lake, NL	Lugeon Test: PT5	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/20/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

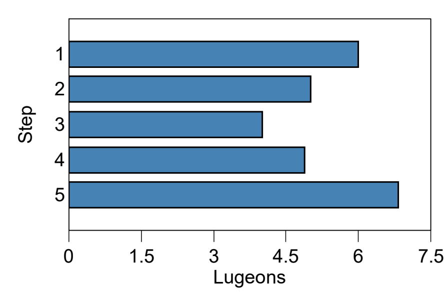


Top of Test Interval: 21.33 m
Bottom of Test Interval: 125.00 m
Length of Test Interval: 103.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 17.47 m
Vertical Bottom of Test Interval: 102.39 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	10	781.00	834.00	887.00	939.00	992.00	1045.00					52.80	1.19×10^{-6}	1.03×10^{-1}	6.0
2	20	89.00	169.00	249.00	329.00							80.00	9.97×10^{-7}	8.61×10^{-2}	5.0
3	30	353.00	446.00	538.00	631.00	723.00	815.00					92.40	7.95×10^{-7}	6.87×10^{-2}	4.0
4	20	883.00	961.00	1039.00	1117.00							78.00	9.72×10^{-7}	8.40×10^{-2}	4.9
5	10	170.00	230.00	290.00	349.00	407.00	466.00	527.00	587.00	648.00	710.00	60.00	1.36×10^{-6}	1.17×10^{-1}	6.8
												Average	1.06×10^{-6}	9.18×10^{-2}	5.3







Turbulent
Lugeon: 5.0
Hydraulic Conductivity: 9.97E-7 m/s
Hydraulic Conductivity: 8.61E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.18 L/min system losses at 58 psi (during packer inflation); considered negligible in comparison to test flows. Test pressures higher than determined Pmax required to induce flow. Test pressure-flow profile does not suggest dilation and test results at these steps are considered reliable.

Although pressure-flow step profile suggests a Turbulent classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 2, 3 and 4 used to calculate the representative K value for the test interval - K = 9.21E-07 m/s.

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Consulting Engineers and Scientists

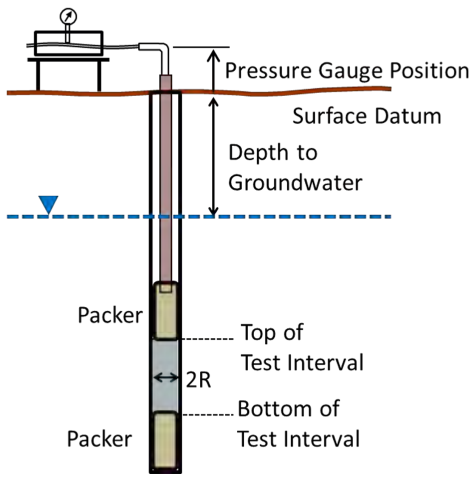
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

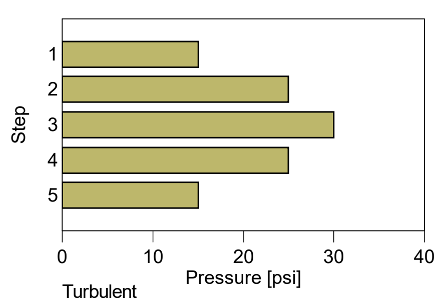
Client: Terrane Geoscience Inc.

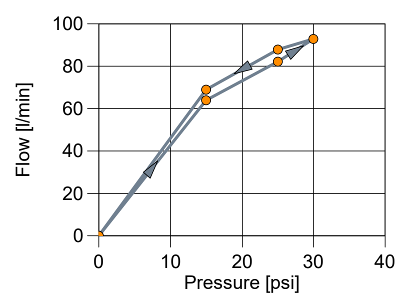
Location: Valentine Lake, NL	Lugeon Test: PT4	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/20/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

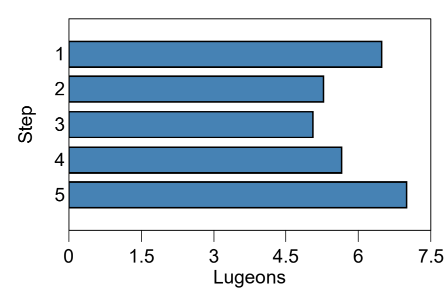


Top of Test Interval: 42.33 m
Bottom of Test Interval: 125.00 m
Length of Test Interval: 82.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 34.67 m
Vertical Bottom of Test Interval: 102.39 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	15	705.00	769.00	833.00	897.00							64.00	1.25×10^{-6}	1.08×10^{-1}	6.5
2	25	947.00	1029.00	1111.00	1193.00							82.00	1.02×10^{-6}	8.78×10^{-2}	5.3
3	30	594.00	687.00	780.00	873.00							93.00	9.74×10^{-7}	8.41×10^{-2}	5.1
4	25	0.00	88.00	176.00	264.00							88.00	1.09×10^{-6}	9.42×10^{-2}	5.7
5	15	296.00	365.00	434.00	503.00							69.00	1.35×10^{-6}	1.17×10^{-1}	7.0
												Average	1.14×10^{-6}	9.81×10^{-2}	5.9







Turbulent
Lugeon: 5.3
Hydraulic Conductivity: 1.02E-6 m/s
Hydraulic Conductivity: 8.78E-2 m/d

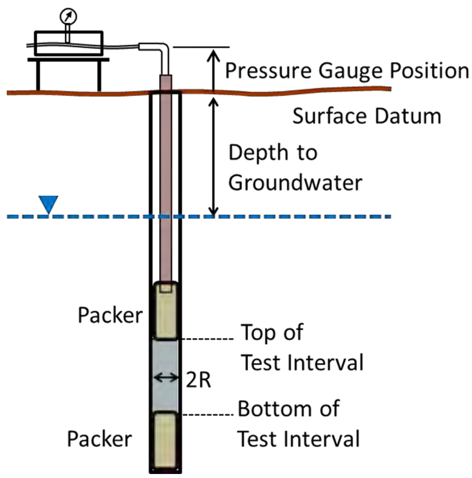
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing.

Hydraulic conductivity value for test interval derived based on flow classification: Turbulent (Step 2).

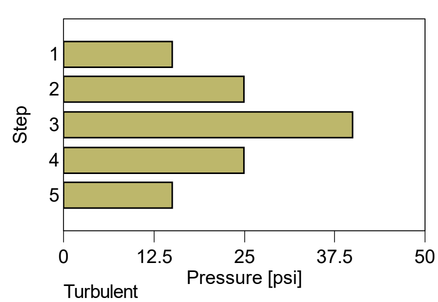
Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

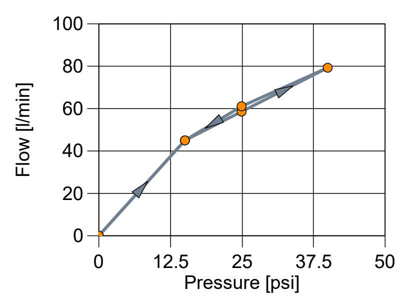
Location: Valentine Lake, NL	Lugeon Test: PT3	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/20/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

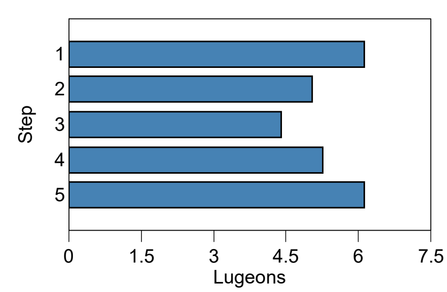


Top of Test Interval: 63.33 m
Bottom of Test Interval: 125.00 m
Length of Test Interval: 61.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 51.88 m
Vertical Bottom of Test Interval: 102.39 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	15	706.00	751.00	796.00	841.00							45.00	1.13×10^{-6}	9.78×10^{-2}	6.1
2	25	886.00	944.00	1003.00	1061.00	1120.00	1178.00	1237.00				58.50	9.33×10^{-7}	8.06×10^{-2}	5.0
3	40	323.00	402.00	482.00	561.00	640.00	719.00					79.20	8.15×10^{-7}	7.04×10^{-2}	4.4
4	25	806.00	865.00	924.00	984.00	1047.00	1109.00	1171.00	1233.00			61.00	9.73×10^{-7}	8.41×10^{-2}	5.3
5	15	275.00	320.00	365.00	410.00							45.00	1.13×10^{-6}	9.78×10^{-2}	6.1
												Average	9.97×10^{-7}	8.62×10^{-2}	5.4







Turbulent
Lugeon: 5.0
Hydraulic Conductivity: 9.33E-7 m/s
Hydraulic Conductivity: 8.06E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing.

Although pressure-flow step profile suggests a Turbulent classification, the hydraulic conductivity (K) value determined for step 1 used to calculate the representative K value for the test interval - K = 1.13E-06 m/s.

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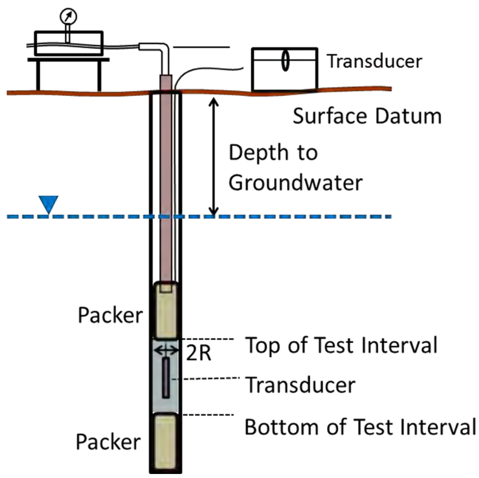
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

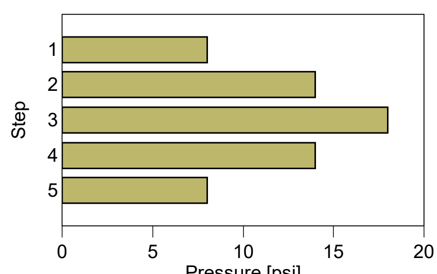
Client: Terrane Geoscience Inc.

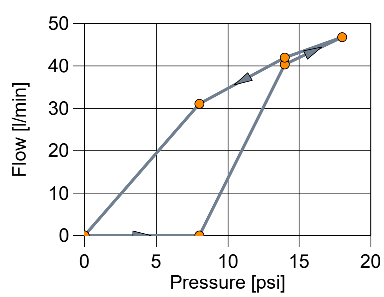
Location: Valentine Lake, NL	Lugeon Test: PT2	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/20/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

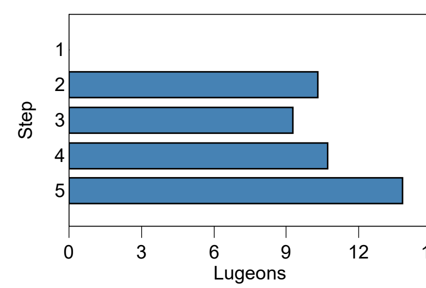


Top of Test Interval: 84.33 m
Bottom of Test Interval: 125.00 m
Length of Test Interval: 40.67 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 69.08 m
Vertical Bottom of Test Interval: 102.39 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	8														
2	14	1167.00	1207.00	1247.00	1288.00	1329.00	1369.00					40.40	1.79×10^{-6}	1.55×10^{-1}	10
3	18	468.00	515.00	561.00	608.00	655.00	702.00					46.80	1.62×10^{-6}	1.40×10^{-1}	9
4	14	726.00	768.00	810.00	852.00							42.00	1.87×10^{-6}	1.61×10^{-1}	11
5	8	875.00	906.00	937.00	968.00							31.00	2.41×10^{-6}	2.08×10^{-1}	14
												Average	1.92×10^{-6}	1.66×10^{-1}	11







Laminar
Lugeon: 11.020
Hydraulic Conductivity: 1.92E-6 m/s
Hydraulic Conductivity: 1.66E-1 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

Negative flow readings during leak test suggesting artesian pressures within test interval. Pressure adjustments required during step 2. Test pressures based on transducer data. Test pressures and flow data measured for step 1 not considered reliable.

The hydraulic conductivity (K) value determined for step 3 used to calculate the representative K value for the test interval - K = 1.62E-06 m/s.

Lugeon Test Analysis Report

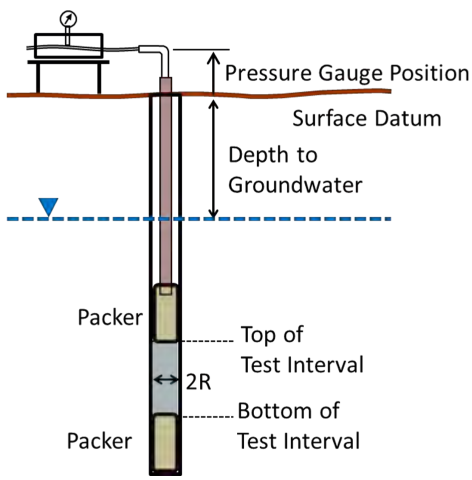
GEMTEC Consulting Engineers and Scientists

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

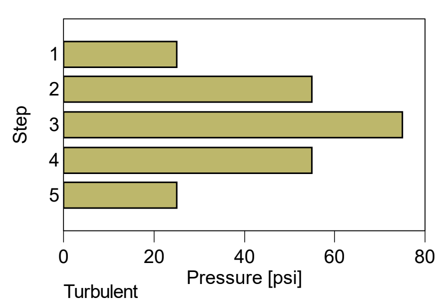
Client: Terrane Geoscience Inc.

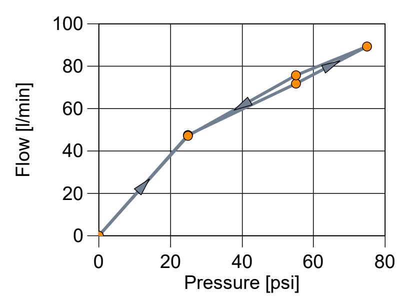
Location: Valentine Lake, NL	Lugeon Test: PT1	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/20/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

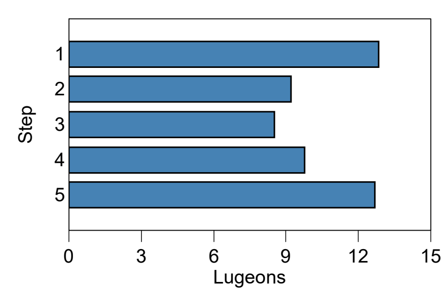


Top of Test Interval: 105.33 m
Bottom of Test Interval: 125.00 m
Length of Test Interval: 19.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 86.28 m
Vertical Bottom of Test Interval: 102.39 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	25	413.00	460.00	508.00	555.00	603.00	650.00	698.00				47.50	1.99×10^{-6}	1.72×10^{-1}	12.8
2	55	8845.00	8916.00	8988.00	9059.00	9131.00	9203.00	9275.00				71.67	1.43×10^{-6}	1.24×10^{-1}	9.2
3	75	315.00	405.00	494.00	583.00	672.00						89.25	1.32×10^{-6}	1.14×10^{-1}	8.5
4	55	9930.00	10006.00	10081.00	10156.00	10233.00	10309.00	10385.00	10461.00			75.86	1.52×10^{-6}	1.31×10^{-1}	9.8
5	25	491.00	538.00	585.00	632.00							47.00	1.97×10^{-6}	1.70×10^{-1}	12.7
												Average	1.65×10^{-6}	1.42×10^{-1}	10.6







Turbulent
Lugeon: 9.2
Hydraulic Conductivity: 1.43E-6 m/s
Hydraulic Conductivity: 1.24E-1 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.01 L/min system losses at 90 psi (during packer inflation); considered negligible in comparison to test flows. Pressure adjustment required during step 3.

Hydraulic conductivity value for test interval derived based on flow classification: Turbulent (Step 2).

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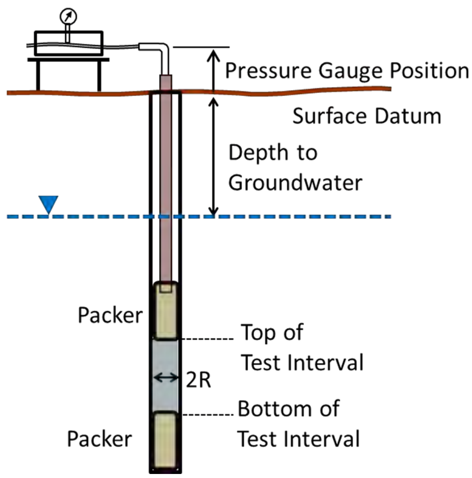
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

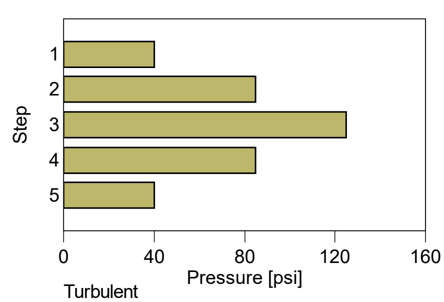
Client: Terrane Geoscience Inc.

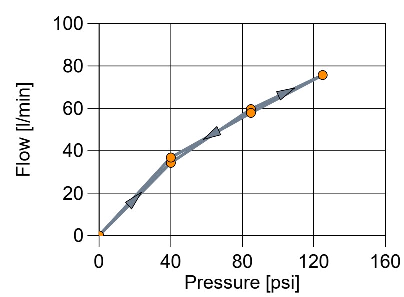
Location: Valentine Lake, NL	Lugeon Test: PT11	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/22/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

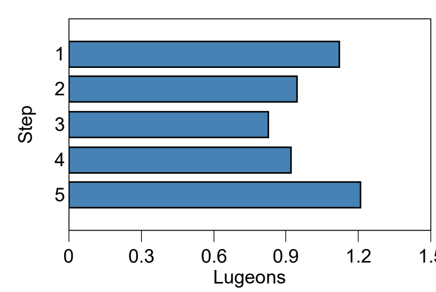


Top of Test Interval: 125.33 m
Bottom of Test Interval: 230.00 m
Length of Test Interval: 104.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 102.66 m
Vertical Bottom of Test Interval: 188.40 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	40	69.00	105.00	140.00	174.00	209.00	243.00	276.00	310.00	343.00	377.00	34.22	2.23×10^{-7}	1.93×10^{-2}	1.12
2	85	479.00	540.00	600.00	660.00	719.00	779.00	838.00	897.00	956.00		59.63	1.88×10^{-7}	1.63×10^{-2}	0.95
3	125	190.00	266.00	342.00	417.00	493.00	569.00	645.00				75.83	1.64×10^{-7}	1.42×10^{-2}	0.83
4	85	726.00	783.00	839.00	897.00	955.00	1014.00	1073.00	1132.00			58.00	1.83×10^{-7}	1.58×10^{-2}	0.92
5	40	178.00	212.00	248.00	285.00	322.00	360.00	398.00	436.00			36.86	2.40×10^{-7}	2.07×10^{-2}	1.21
												Average	2.00×10^{-7}	1.73×10^{-2}	1.00







Turbulent
Lugeon: 0.946
Hydraulic Conductivity: 1.88E-7 m/s
Hydraulic Conductivity: 1.63E-2 m/d

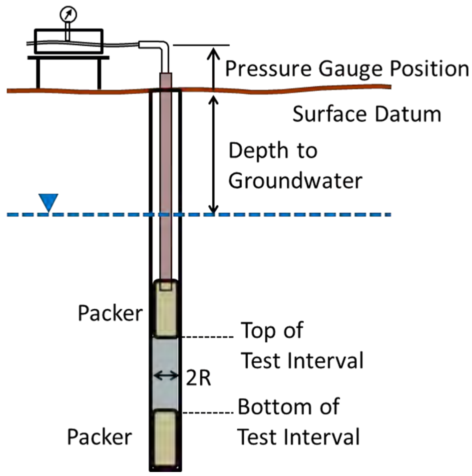
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Pressure adjustments required during steps 3, 4 and 5.

Although pressure-flow step profile suggests a Turbulent classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 2.00E-7 m/s.

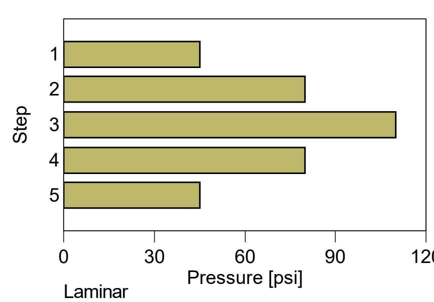
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

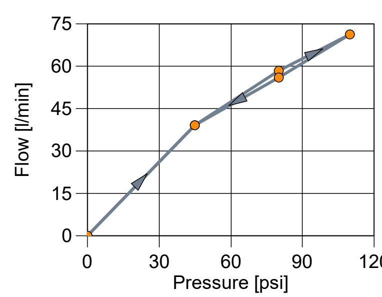
Location: Valentine Lake, NL	Lugeon Test: PT10	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/22/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

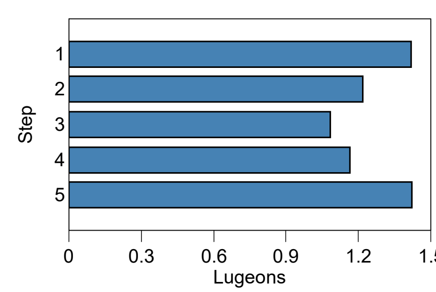


Top of Test Interval: 145.33 m
Bottom of Test Interval: 230.00 m
Length of Test Interval: 84.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 119.05 m
Vertical Bottom of Test Interval: 188.40 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	45	47.00	89.00	129.00	168.00	206.00	244.00	282.00				39.17	2.74×10^{-7}	2.37×10^{-2}	1.4
2	80	336.00	396.00	454.00	512.00	570.00						58.50	2.35×10^{-7}	2.03×10^{-2}	1.2
3	110	620.00	693.00	766.00	837.00	908.00	979.00	1049.00	1119.00	1189.00		71.13	2.10×10^{-7}	1.81×10^{-2}	1.1
4	80	246.00	302.00	358.00	414.00							56.00	2.25×10^{-7}	1.95×10^{-2}	1.2
5	45	476.00	513.00	551.00	591.00	630.00	670.00	710.00	749.00	789.00	829.00	39.22	2.75×10^{-7}	2.37×10^{-2}	1.4
												Average	2.44×10^{-7}	2.11×10^{-2}	1.3







Laminar
Lugeon: 1.26
Hydraulic Conductivity: 2.44E-7 m/s
Hydraulic Conductivity: 2.11E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.03 L/min system losses at 150 psi (during packer inflation); considered negligible in comparison to test flows.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

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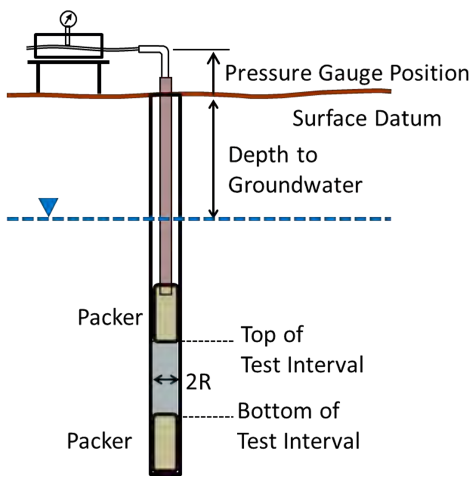
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

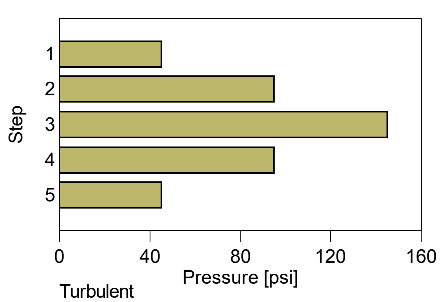
Client: Terrane Geoscience Inc.

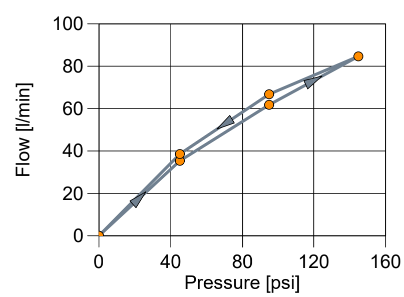
Location: Valentine Lake, NL	Lugeon Test: PT9	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/22/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

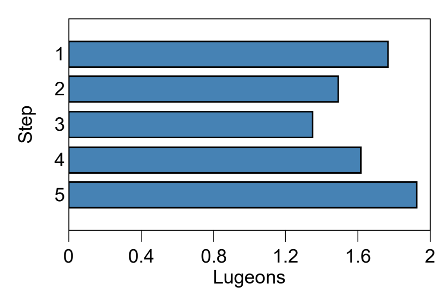


Top of Test Interval: 168.33 m
Bottom of Test Interval: 230.00 m
Length of Test Interval: 61.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 137.89 m
Vertical Bottom of Test Interval: 188.40 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	45	535.00	572.00	607.00	643.00	678.00	713.00	748.00				35.50	3.27×10^{-7}	2.82×10^{-2}	1.8
2	95	885.00	946.00	1008.00	1070.00	1132.00						61.75	2.76×10^{-7}	2.39×10^{-2}	1.5
3	145	195.00	280.00	365.00	449.00	533.00						84.50	2.50×10^{-7}	2.16×10^{-2}	1.3
4	95	311.00	383.00	451.00	517.00	582.00	647.00	712.00				66.83	2.99×10^{-7}	2.58×10^{-2}	1.6
5	45	760.00	798.00	837.00	876.00	915.00						38.75	3.57×10^{-7}	3.08×10^{-2}	1.9
												Average	3.02×10^{-7}	2.61×10^{-2}	1.6







Turbulent
Lugeon: 1.5
Hydraulic Conductivity: 2.76E-7 m/s
Hydraulic Conductivity: 2.39E-2 m/d

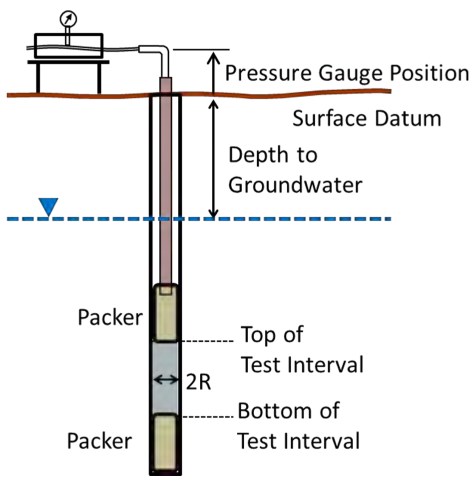
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Pressure adjustments required during steps 1 and 3.

Hydraulic conductivity value for test interval derived based on flow classification: Turbulent (Step 2).

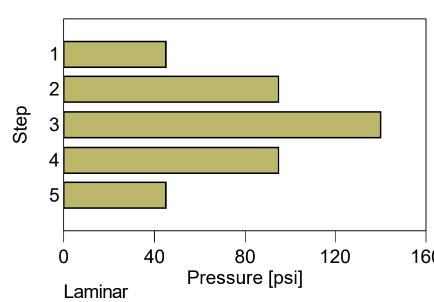
Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

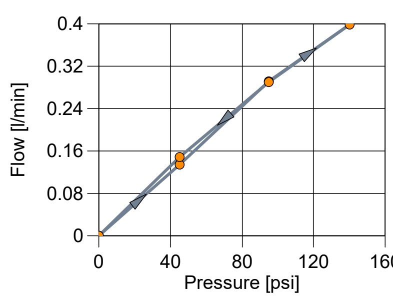
Location: Valentine Lake, NL	Lugeon Test: PT8	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/22/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

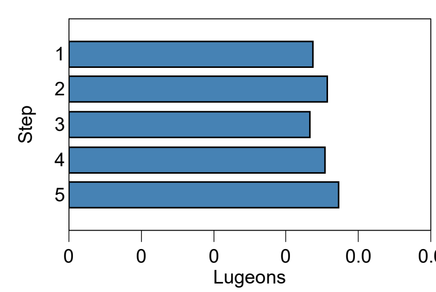


Top of Test Interval: 189.33 m
Bottom of Test Interval: 230.00 m
Length of Test Interval: 40.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 155.09 m
Vertical Bottom of Test Interval: 188.40 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	45	367.05	367.18	367.32	367.46	367.59	367.72					0.13	1.76×10^{-9}	1.52×10^{-4}	0.010
2	95	368.16	368.45	368.75	369.04	369.33	369.62					0.29	1.87×10^{-9}	1.61×10^{-4}	0.011
3	140	370.41	370.84	371.20	371.62	372.01	372.41	372.81	373.20	373.60	374.00	0.40	1.74×10^{-9}	1.51×10^{-4}	0.010
4	95	374.15	374.44	374.73	375.02							0.29	1.85×10^{-9}	1.60×10^{-4}	0.011
5	45	375.03	375.15	375.30	375.46	375.61	375.77	375.92				0.15	1.95×10^{-9}	1.68×10^{-4}	0.011
												Average	1.83×10^{-9}	1.58×10^{-4}	0.011







Laminar
Lugeon: 0.011
Hydraulic Conductivity: 1.83E-9 m/s
Hydraulic Conductivity: 1.58E-4 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

Leak test indicated 0.26L/min at 165 psi. Test flows within the same range as leak flows during steps 2, 3, and 4. Potential for enhanced hydraulic conductivity value determined for this test interval.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

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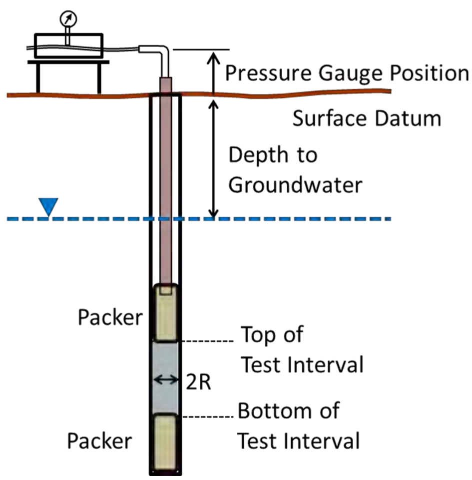
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

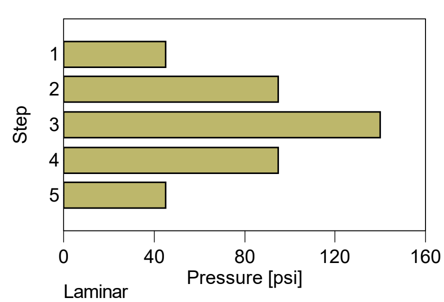
Client: Terrane Geoscience Inc.

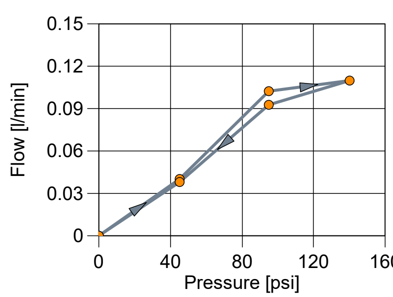
Location: Valentine Lake, NL	Lugeon Test: PT7	Tested bore: VL-GT-20-01
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/22/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

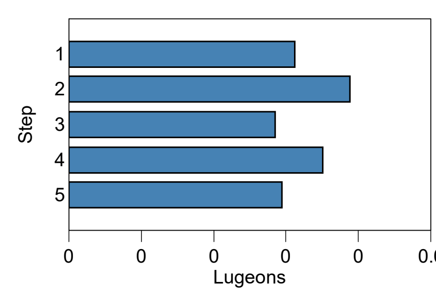


Top of Test Interval: 210.33 m
Bottom of Test Interval: 230.00 m
Length of Test Interval: 19.67 m
Gauge Position: 1.62 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 172.29 m
Vertical Bottom of Test Interval: 188.40 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	45	55.76	55.77	55.82	55.88							0.04	9.69×10^{-10}	8.37×10^{-5}	0.006
2	95	56.29	56.40	56.50	56.60	56.70						0.10	1.21×10^{-9}	1.04×10^{-4}	0.008
3	140	57.00	57.11	57.22	57.33							0.11	8.86×10^{-10}	7.65×10^{-5}	0.006
4	95	57.19	57.29	57.38	57.47	57.56						0.09	1.09×10^{-9}	9.41×10^{-5}	0.007
5	45	57.39	57.40	57.43	57.45	57.49	57.54	57.58	57.63	57.68	57.73	0.04	9.15×10^{-10}	7.91×10^{-5}	0.006
												Average	1.01×10^{-9}	8.76×10^{-5}	0.007







Laminar
Lugeon: 0.007
Hydraulic Conductivity: 1.01E-9 m/s
Hydraulic Conductivity: 8.76E-5 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

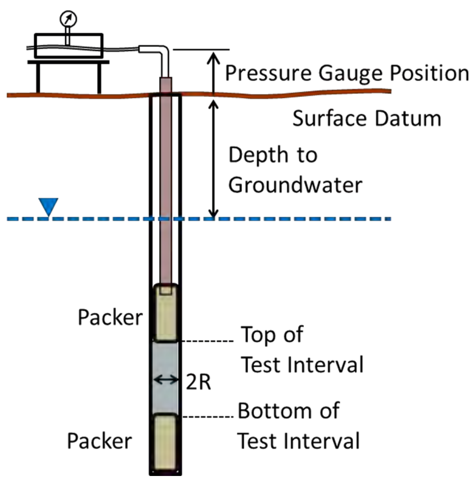
Leak test indicated 0.3 L/min at 160 psi. Test flows less than leak flow, and not considered to impact results.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

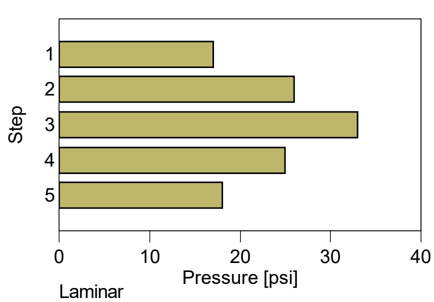
GEMTEC Consulting Engineers and Scientists

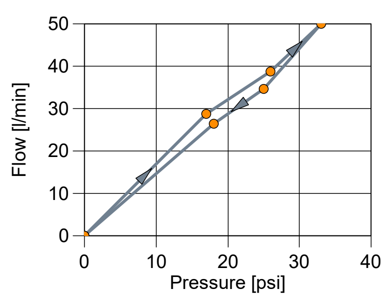
Location: Valentine Lake, NL	Lugeon Test: PT9	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/2/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

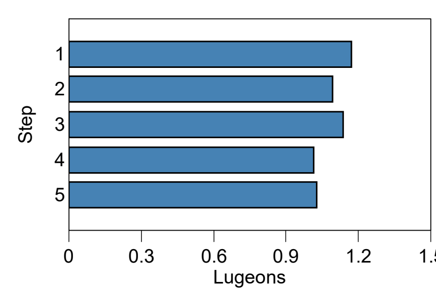


Top of Test Interval: 8.00 m
Bottom of Test Interval: 185.00 m
Length of Test Interval: 177.00 m
Gauge Position: 1.40 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 6.55 m
Vertical Bottom of Test Interval: 151.54 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	17	540.00	568.70	597.40	626.10							28.70	2.49×10^{-7}	2.15×10^{-2}	1.17
2	26	680.00	719.50	758.50	797.00	835.50	874.00					38.80	2.33×10^{-7}	2.01×10^{-2}	1.09
3	33	10.00	60.00	110.00	160.00							50.00	2.42×10^{-7}	2.09×10^{-2}	1.14
4	25	110.00	144.50	179.50	214.00	249.00	283.50					34.70	2.15×10^{-7}	1.86×10^{-2}	1.01
5	18	300.00	324.30	350.00	377.30	404.60	431.90					26.38	2.18×10^{-7}	1.89×10^{-2}	1.03
												Average	2.31×10^{-7}	2.00×10^{-2}	1.09







Laminar
Lugeon: 1.089
Hydraulic Conductivity: 2.31E-7 m/s
Hydraulic Conductivity: 2.00E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

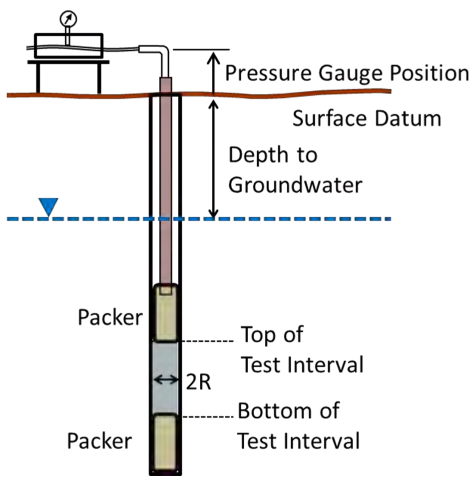
~0.12 L/min system losses at 30 psi (during packer inflation); considered negligible in comparison to test flows. Test pressures higher than determined Pmax required to induce flow. Test pressure-flow profile does not suggest dilation and test results at these steps are considered reliable. Test pressures based on transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

Lugeon Test Analysis Report

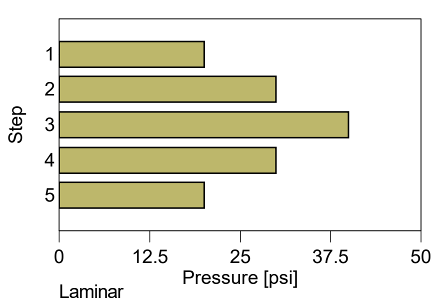
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

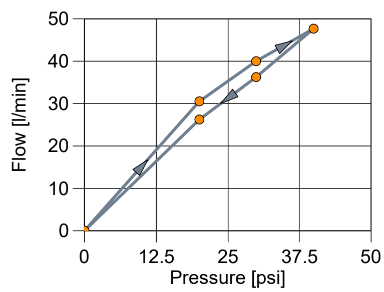
Location: Valentine Lake, NL	Lugeon Test: PT8	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/2/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

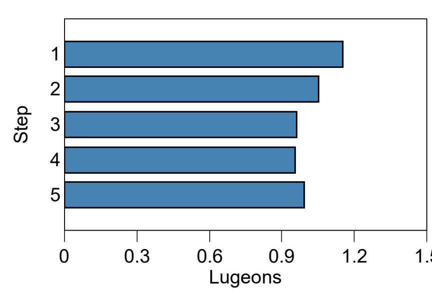


Top of Test Interval: 18.33 m
Bottom of Test Interval: 185.00 m
Length of Test Interval: 166.67 m
Gauge Position: 1.40 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 15.02 m
Vertical Bottom of Test Interval: 151.54 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	20	810.00	841.30	872.30	902.80	933.40	963.90	994.00	1024.20	1054.30	1084.50	30.50	2.43×10^{-7}	2.10×10^{-2}	1.15
2	30	230.00	270.50	310.00	350.00	390.00	430.00					40.00	2.22×10^{-7}	1.92×10^{-2}	1.05
3	40	660.00	707.50	755.50	803.00	850.50	898.00					47.60	2.03×10^{-7}	1.75×10^{-2}	0.96
4	30	50.00	86.00	122.00	158.50	195.00	231.50					36.30	2.02×10^{-7}	1.74×10^{-2}	0.96
5	20	300.00	326.10	352.50	378.90	405.30						26.33	2.10×10^{-7}	1.81×10^{-2}	0.99
												Average	2.16×10^{-7}	1.87×10^{-2}	1.02







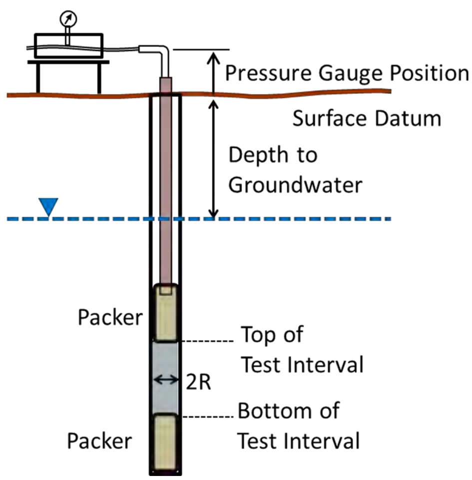
Laminar
Lugeon: 1.023
Hydraulic Conductivity: 2.16E-7 m/s
Hydraulic Conductivity: 1.87E-2 m/d
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.13 L/min system losses at 40 psi (during packer inflation); considered negligible in comparison to test flows. Test pressures higher than determined Pmax required to induce flow. Test pressure-flow profile does not suggest dilation and test results at these steps are considered reliable. A low (~5 psi) back pressure was noted from steps 3 to 4 to 5 (possible small artesian pressure?).

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

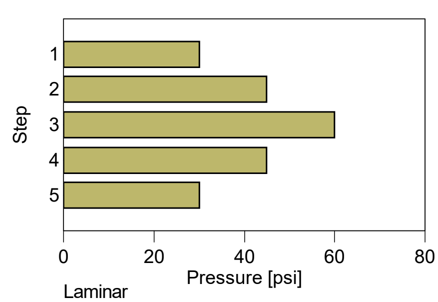
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

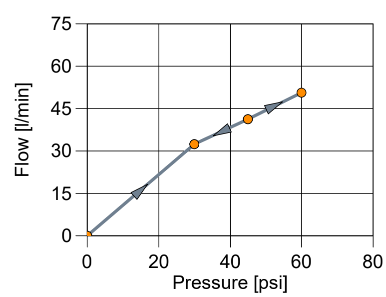
Location: Valentine Lake, NL	Lugeon Test: PT7	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/2/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

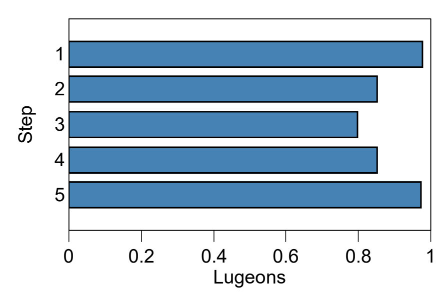


Top of Test Interval: 39.33 m
Bottom of Test Interval: 185.00 m
Length of Test Interval: 145.67 m
Gauge Position: 1.40 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 32.22 m
Vertical Bottom of Test Interval: 151.54 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	30	400.00	432.80	465.10	497.40	529.70						32.43	2.03×10^{-7}	1.75×10^{-2}	0.98
2	45	680.00	721.50	762.50	803.50	844.50						41.13	1.77×10^{-7}	1.53×10^{-2}	0.85
3	60	0.00	50.50	101.00	151.50	202.00						50.50	1.65×10^{-7}	1.43×10^{-2}	0.80
4	45	300.00	341.50	382.50	423.50	464.50						41.13	1.77×10^{-7}	1.53×10^{-2}	0.85
5	30	580.00	612.30	644.60	676.90							32.30	2.02×10^{-7}	1.74×10^{-2}	0.97
												Average	1.85×10^{-7}	1.60×10^{-2}	0.89







Laminar
Lugeon: 0.890
Hydraulic Conductivity: 1.85E-7 m/s
Hydraulic Conductivity: 1.60E-2 m/d

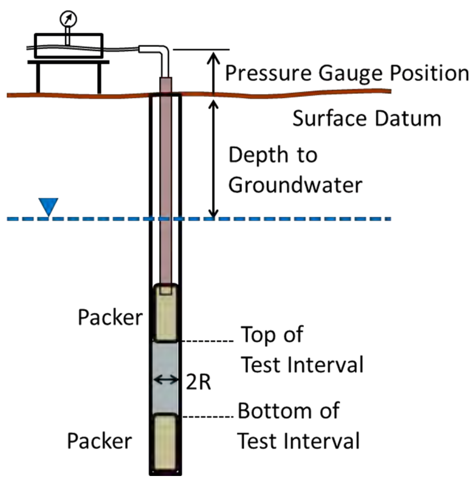
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.03 L/min system losses at 60 psi (during packer inflation); considered negligible in comparison to test flows. Test pressures higher than determined Pmax required to induce flow. Test pressure-flow profile does not suggest dilation and test results at these steps are considered reliable.

Although pressure-flow step profile suggests a Laminar classification, the hydraulic conductivity (K) value determined for step 5 used to calculate the representative K value for the test interval - K = 2.02E-07 m/s.

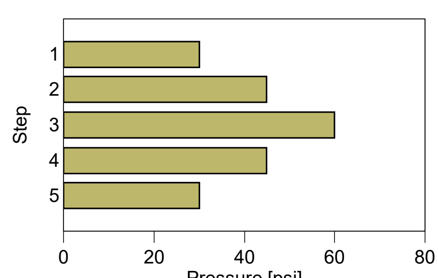
	Lugeon Test Analysis Report
GEMTEC Consulting Engineers and Scientists	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

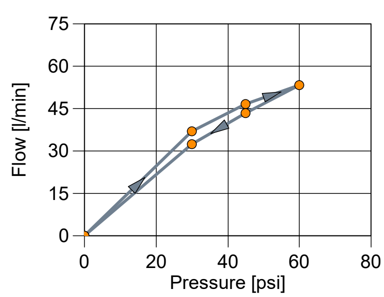
Location: Valentine Lake, NL	Lugeon Test: PT6	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/2/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

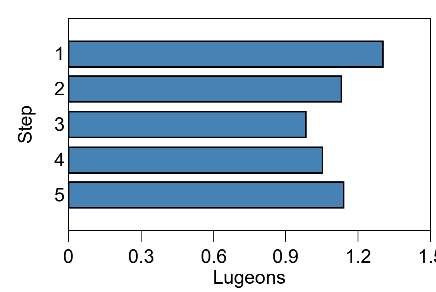


Top of Test Interval: 60.33 m
Bottom of Test Interval: 185.00 m
Length of Test Interval: 124.67 m
Gauge Position: 1.40 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 49.42 m
Vertical Bottom of Test Interval: 151.54 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	30	602.50	639.50	676.50	713.50	750.50						37.00	2.65×10^{-7}	2.29×10^{-2}	1.30
2	45	871.00	918.00	965.50	1012.00	1059.00	1106.00	1152.00	1199.00	1245.50	1291.50	46.72	2.30×10^{-7}	1.99×10^{-2}	1.13
3	60	382.00	436.50	489.50	542.50	595.50	648.50					53.30	2.00×10^{-7}	1.73×10^{-2}	0.98
4	45	885.50	929.00	972.50	1016.00							43.50	2.14×10^{-7}	1.85×10^{-2}	1.05
5	30	87.50	120.00	152.00	184.50	217.00	249.50					32.40	2.32×10^{-7}	2.00×10^{-2}	1.14
												Average	2.28×10^{-7}	1.97×10^{-2}	1.12







Turbulent
Lugeon: 1.131
Hydraulic Conductivity: 2.30E-7 m/s
Hydraulic Conductivity: 1.99E-2 m/d

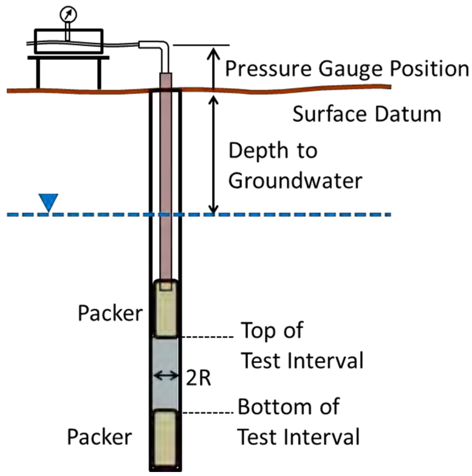
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.25 L/min system losses at 80 psi (during packer inflation); considered negligible in comparison to test flows.

Hydraulic conductivity value for test interval derived based on flow classification: Turbulent (Step 2).

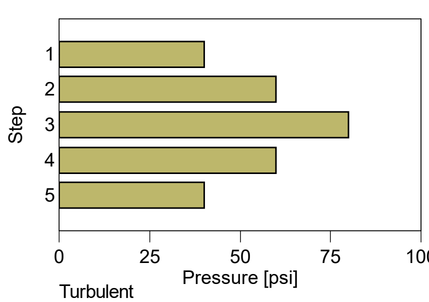
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

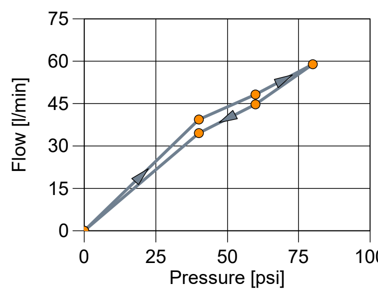
Location: Valentine Lake, NL	Lugeon Test: PT5	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/2/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

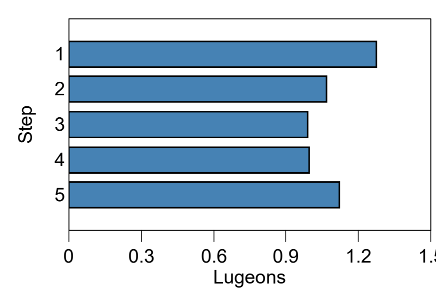


Top of Test Interval: 81.33 m
Bottom of Test Interval: 185.00 m
Length of Test Interval: 103.67 m
Gauge Position: 1.40 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 66.62 m
Vertical Bottom of Test Interval: 151.54 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	40	620.00	659.50	699.00	738.50	777.50	816.50	855.50				39.25	2.53×10^{-7}	2.19×10^{-2}	1.28
2	60	922.00	972.50	1021.00	1068.50	1116.50	1164.00	1211.50	1259.00			48.14	2.12×10^{-7}	1.83×10^{-2}	1.07
3	80	393.00	452.50	511.50	571.00	629.50	688.00	747.00	805.50	864.00	922.50	58.83	1.97×10^{-7}	1.70×10^{-2}	0.99
4	60	0.00	45.00	90.00	134.50	179.50	224.50	269.00	314.00			44.86	1.98×10^{-7}	1.71×10^{-2}	1.00
5	40	356.00	390.50	425.00	459.50	494.00						34.50	2.23×10^{-7}	1.92×10^{-2}	1.12
												Average	2.17×10^{-7}	1.87×10^{-2}	1.09







Turbulent
Lugeon: 1.068
Hydraulic Conductivity: 2.12E-7 m/s
Hydraulic Conductivity: 1.83E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

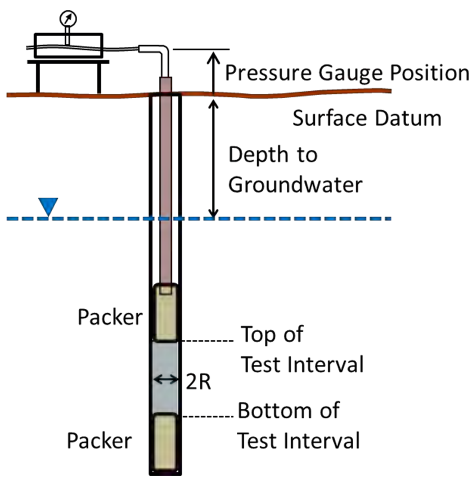
~0.38 L/min system losses at 100 psi (during packer inflation); considered negligible in comparison to test flows. Minor reverse flow after test that stopped within 20 seconds.

Hydraulic conductivity value for test interval derived based on flow classification: Turbulent (Step 2).

GEMTEC Consulting Engineers and Scientists

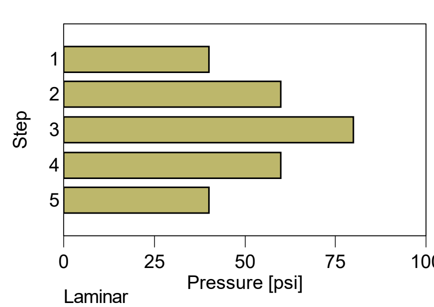
Lugeon Test Analysis Report
Project: Valentine Gold Feasibility Geotechnical Investigation
Number: 80047.03
Client: Terrane Geoscience Inc.

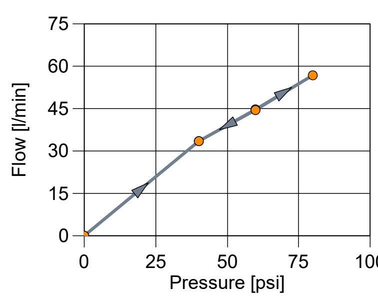
Location: Valentine Lake, NL	Lugeon Test: PT4	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/2/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

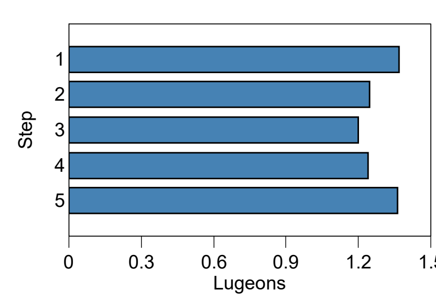


Top of Test Interval: 102.33 m
Bottom of Test Interval: 185.00 m
Length of Test Interval: 82.67 m
Gauge Position: 1.40 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 83.82 m
Vertical Bottom of Test Interval: 151.54 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	40	499.00	534.50	568.50	602.50	635.50	669.00	702.50	735.50	768.00	801.00	33.56	2.64×10^{-7}	2.28×10^{-2}	1.4
2	60	870.00	915.50	960.00	1005.00	1049.50	1094.00	1138.50				44.75	2.40×10^{-7}	2.07×10^{-2}	1.2
3	80	212.00	271.50	329.50	387.00	444.00	500.00	555.50	611.00	666.50		56.81	2.31×10^{-7}	2.00×10^{-2}	1.2
4	60	767.00	810.70	855.50	900.00	945.00	989.50	1034.00	1079.00	1123.50	1168.00	44.56	2.39×10^{-7}	2.06×10^{-2}	1.2
5	40	200.00	231.00	264.00	298.50	332.00	366.00	400.00	434.00			33.43	2.63×10^{-7}	2.27×10^{-2}	1.4
												Average	2.47×10^{-7}	2.14×10^{-2}	1.3







Laminar
Lugeon: 1.283
Hydraulic Conductivity: 2.47E-7 m/s
Hydraulic Conductivity: 2.14E-2 m/d

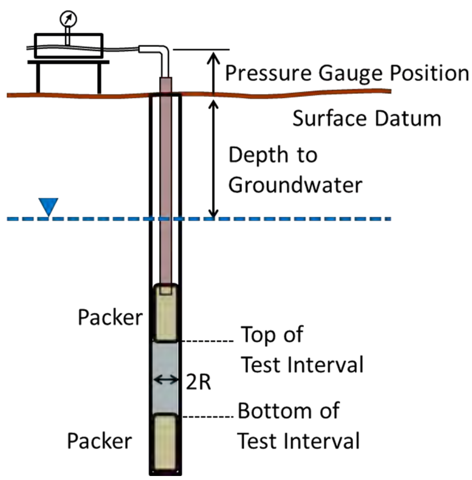
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.11 L/min system losses at 100 psi (during packer inflation); considered negligible in comparison to test flows. Minor reverse flow after test that stopped within 20 seconds.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

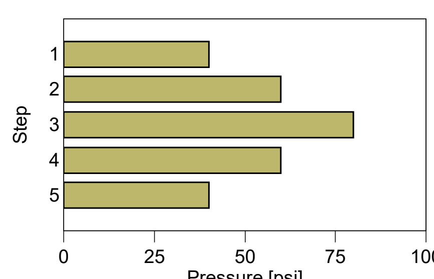
GEMTEC Consulting Engineers and Scientists

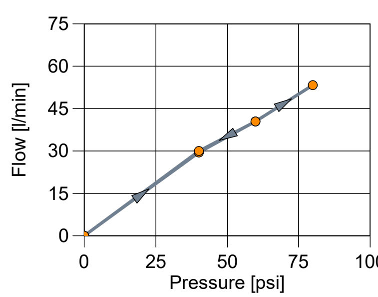
Lugeon Test Analysis Report		
Project: Valentine Gold Feasibility Geotechnical Investigation		
Number: 80047.03		
Client: Terrane Geoscience Inc.		
Location: Valentine Lake, NL	Lugeon Test: PT3	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/2/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

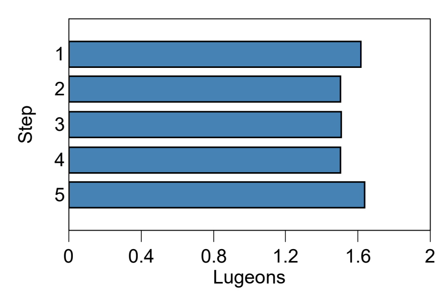


Top of Test Interval: 123.33 m
Bottom of Test Interval: 185.00 m
Length of Test Interval: 61.67 m
Gauge Position: 1.40 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 101.03 m
Vertical Bottom of Test Interval: 151.54 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	40	360.00	392.00	422.90	452.10	481.40	510.40	539.50	568.40	597.30	626.20	29.58	2.99×10^{-7}	2.58×10^{-2}	1.6
2	60	743.00	783.50	823.50	864.50	904.70	945.00	985.50	1025.50	1065.50	1106.00	40.33	2.79×10^{-7}	2.41×10^{-2}	1.5
3	80	185.00	240.00	293.50	346.00	399.50	452.50	505.50	558.00	611.00		53.25	2.79×10^{-7}	2.41×10^{-2}	1.5
4	60	675.00	715.00	754.00	794.50	835.50	876.00	917.00	957.50			40.36	2.79×10^{-7}	2.41×10^{-2}	1.5
5	40	995.00	1024.40	1054.40	1084.00	1114.00	1144.00	1174.40	1204.40	1234.90		29.99	3.03×10^{-7}	2.62×10^{-2}	1.6
												Average	2.88×10^{-7}	2.49×10^{-2}	1.6







Laminar
Lugeon: 1.554
Hydraulic Conductivity: 2.88E-7 m/s
Hydraulic Conductivity: 2.49E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.15 L/min system losses at 100 psi (during packer inflation); considered negligible in comparison to test flows.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

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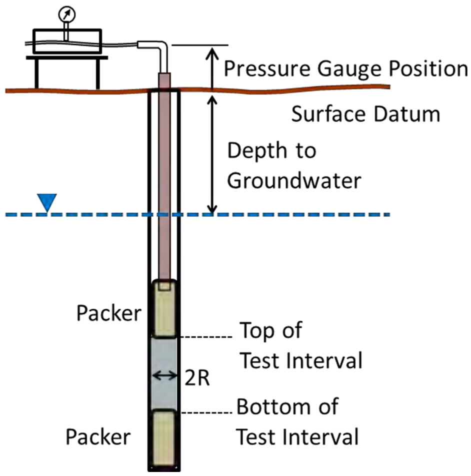
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

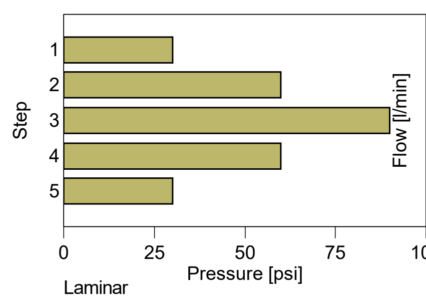
Client: Terrane Geoscience Inc.

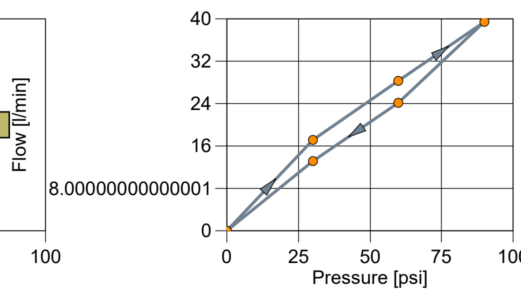
Location: Valentine Lake, NL	Lugeon Test: PT2	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/2/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

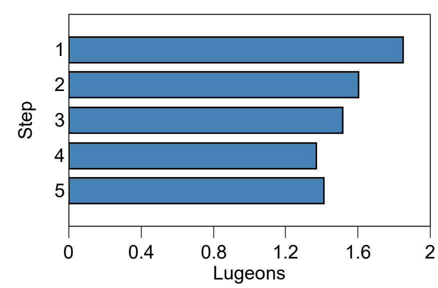


Top of Test Interval: 144.33 m
Bottom of Test Interval: 185.00 m
Length of Test Interval: 40.67 m
Gauge Position: 1.40 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 118.23 m
Vertical Bottom of Test Interval: 151.54 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	30	654.00	671.60	689.00	706.20	723.30	740.20	757.10	774.00			17.14	3.22×10^{-7}	2.79×10^{-2}	1.8
2	60	883.30	912.80	941.30	969.70	998.00	1026.20	1054.30	1082.40	1110.30	1138.50	28.36	2.80×10^{-7}	2.42×10^{-2}	1.6
3	90	242.00	282.80	322.10	361.80	400.60	439.70	479.00				39.50	2.64×10^{-7}	2.28×10^{-2}	1.5
4	60	938.00	961.70	986.00	1010.30	1034.60	1058.90					24.18	2.38×10^{-7}	2.06×10^{-2}	1.4
5	30	83.00	95.45	108.10	121.05	134.30	147.60	160.80	174.10	187.40	200.70	13.08	2.46×10^{-7}	2.12×10^{-2}	1.4
												Average	2.70×10^{-7}	2.33×10^{-2}	1.5







Laminar
Lugeon: 1.55
Hydraulic Conductivity: 2.70E-7 m/s
Hydraulic Conductivity: 2.33E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.06 L/min system losses at 120 psi (during packer inflation); considered negligible in comparison to test flows. Reverse flow when going from steps 3 to 4 to 5; then downhole flow once stable pressure. Surface gauge pressure readings checked with transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

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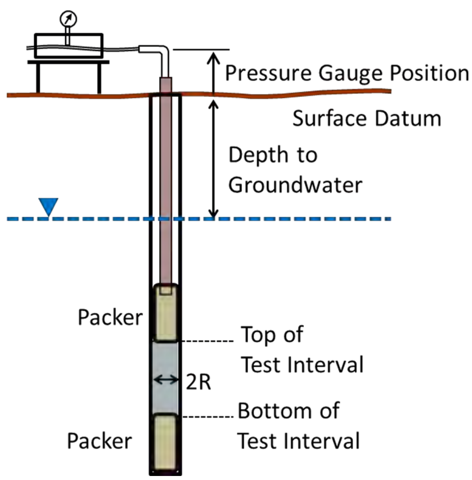
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

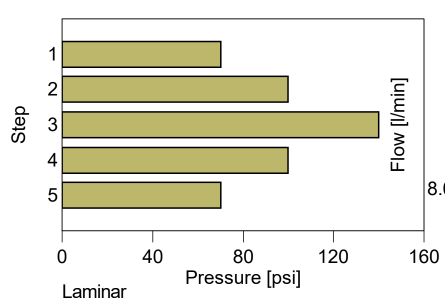
Client: Terrane Geoscience Inc.

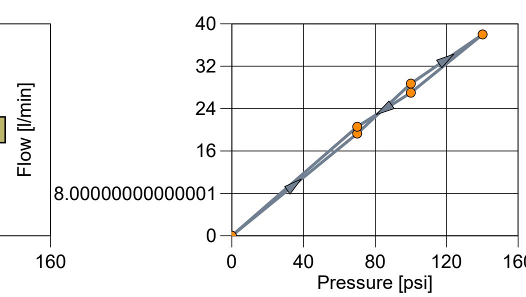
Location: Valentine Lake, NL	Lugeon Test: PT1	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/2/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

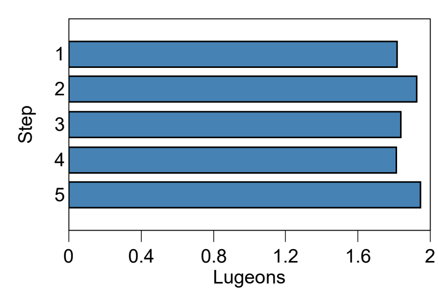


Top of Test Interval: 164.00 m
Bottom of Test Interval: 185.00 m
Length of Test Interval: 21.00 m
Gauge Position: 1.40 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 134.34 m
Vertical Bottom of Test Interval: 151.54 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	70	145.00	166.80	187.80	207.30	225.60	243.60	261.60	279.60			19.23	2.86×10^{-7}	2.47×10^{-2}	1.8
2	100	331.00	362.80	391.80	419.80	447.90	475.90	504.10	532.20			28.74	3.03×10^{-7}	2.62×10^{-2}	1.9
3	140	676.40	715.40	753.40	791.70	830.10	868.70	906.60	944.00	981.40	1018.80	38.04	2.89×10^{-7}	2.49×10^{-2}	1.8
4	100	72.00	98.50	125.40	152.40	179.50	206.60	233.80	261.00	288.20		27.03	2.85×10^{-7}	2.46×10^{-2}	1.8
5	70	314.00	332.80	352.75	373.10	393.80	414.70	435.70	456.85	478.10	499.40	20.60	3.06×10^{-7}	2.64×10^{-2}	1.9
												Average	2.93×10^{-7}	2.54×10^{-2}	1.9







Laminar
Lugeon: 1.868
Hydraulic Conductivity: 2.93E-7 m/s
Hydraulic Conductivity: 2.54E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.03 L/min system losses at 140 psi (during packer inflation); considered negligible in comparison to test flows. Reverse flow for a short period after opening valve after step 5. Surface gauge pressure readings checked with transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

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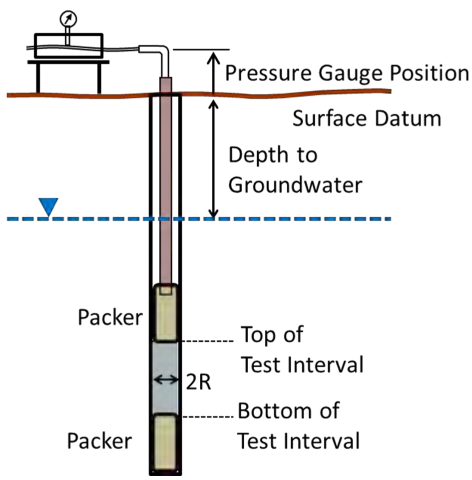
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

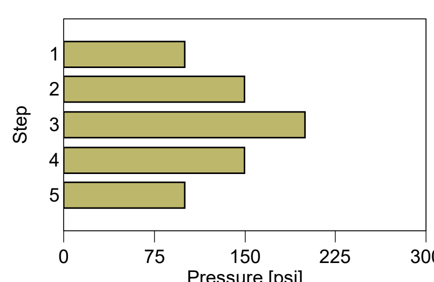
Client: Terrane Geoscience Inc.

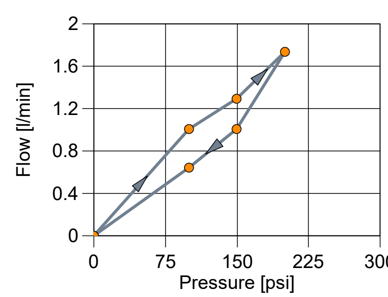
Location: Valentine Lake, NL	Lugeon Test: PT17	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

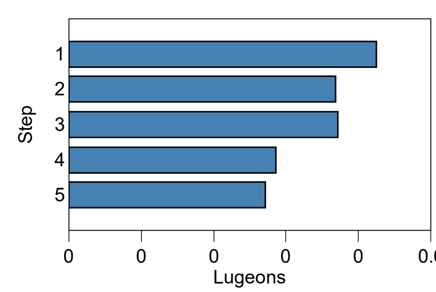


Top of Test Interval: 207.33 m
Bottom of Test Interval: 374.00 m
Length of Test Interval: 166.67 m
Gauge Position: 1.45 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 169.83 m
Vertical Bottom of Test Interval: 306.36 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	100	28.00	29.06	30.09	31.09	32.07	33.03					1.01	1.79×10^{-9}	1.55×10^{-4}	0.008
2	150	43.55	44.89	46.17	47.45	48.73						1.30	1.55×10^{-9}	1.34×10^{-4}	0.007
3	200	63.87	65.66	67.42	69.15	70.85	72.54					1.73	1.57×10^{-9}	1.35×10^{-4}	0.007
4	150	1.55	2.53	3.53	4.54	5.57						1.01	1.21×10^{-9}	1.04×10^{-4}	0.006
5	100	76.50	77.12	77.76	78.40	79.07						0.64	1.14×10^{-9}	9.88×10^{-5}	0.005
												Average	1.45×10^{-9}	1.25×10^{-4}	0.007







Void filling
Lugeon: 0.005
Hydraulic Conductivity: 1.14E-9 m/s
Hydraulic Conductivity: 9.88E-5 m/d

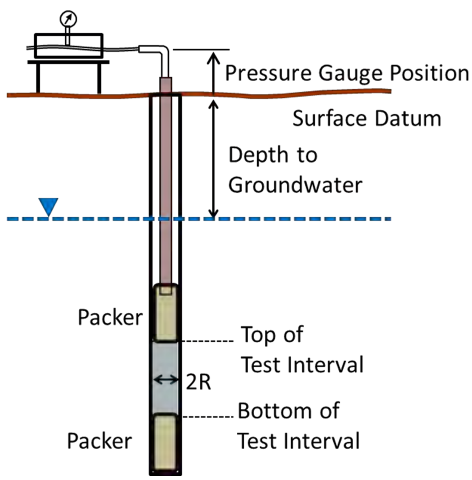
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.33 L/min system losses at 220 psi (during packer inflation); not accounted for in test flow data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 1.45E-09 m/s.

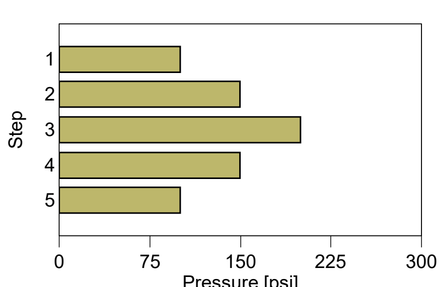
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

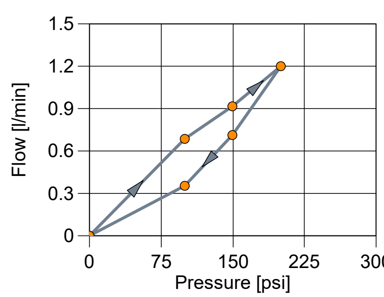
Location: Valentine Lake, NL	Lugeon Test: PT16	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

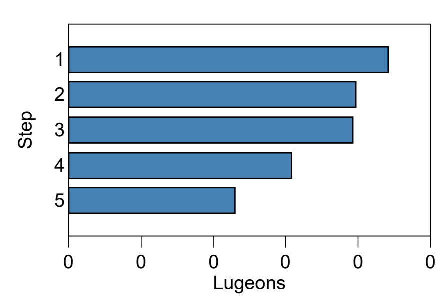


Top of Test Interval: 228.33 m
Bottom of Test Interval: 374.00 m
Length of Test Interval: 145.67 m
Gauge Position: 1.45 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 187.04 m
Vertical Bottom of Test Interval: 306.36 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	100	70.50	71.23	71.94	72.62	73.28	73.93					0.69	1.37×10^{-9}	1.19×10^{-4}	0.007
2	150	84.50	85.47	86.41	87.31	88.21	89.08					0.92	1.24×10^{-9}	1.07×10^{-4}	0.006
3	200	102.11	103.35	104.59	105.78	106.96	108.11					1.20	1.22×10^{-9}	1.05×10^{-4}	0.006
4	150	6.75	7.48	8.19	8.91	9.61	10.31	11.01				0.71	9.58×10^{-10}	8.28×10^{-5}	0.005
5	100	10.37	10.71	11.07	11.42	11.79	12.15					0.36	7.13×10^{-10}	6.16×10^{-5}	0.003
												Average	1.10×10^{-9}	9.51×10^{-5}	0.005







Void filling
Lugeon: 0.003
Hydraulic Conductivity: 7.13E-10 m/s
Hydraulic Conductivity: 6.16E-5 m/d

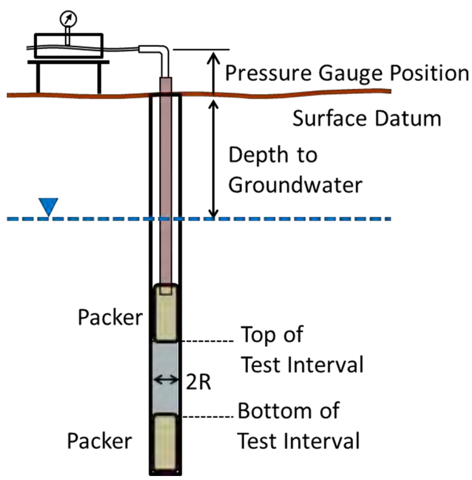
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.32 L/min system losses at 200 psi (during packer inflation); not accounted for in test flow data. Surface gauge pressure readings checked with transducer data.

Although pressure-flow step profile suggests a Void Filling classification, the hydraulic conductivity (K) values determined for step 1 used to calculate the representative K value for the test interval - K = 1.37E-9 m/s.

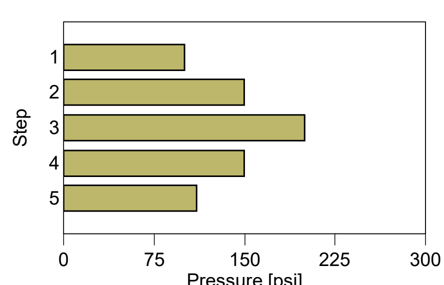
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

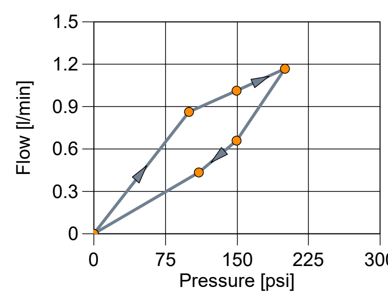
Location: Valentine Lake, NL	Lugeon Test: PT15	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

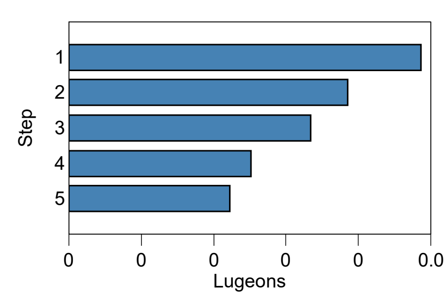


Top of Test Interval: 249.33 m
Bottom of Test Interval: 374.00 m
Length of Test Interval: 124.67 m
Gauge Position: 1.45 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 204.24 m
Vertical Bottom of Test Interval: 306.36 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	100	6.22	7.29	8.27	9.19	10.06	10.90	11.71	12.49	13.24	13.98	0.86	1.98×10^{-9}	1.71×10^{-4}	0.010
2	150	18.55	19.71	20.82	21.88	22.91	23.91	24.86	25.83	26.76	27.68	1.01	1.57×10^{-9}	1.35×10^{-4}	0.008
3	200	32.73	34.08	35.32	36.53	37.70	38.84	39.96	41.08	42.16	43.23	1.17	1.36×10^{-9}	1.17×10^{-4}	0.007
4	150	3.15	3.80	4.45	5.11	5.77	6.44	7.11	7.78			0.66	1.02×10^{-9}	8.83×10^{-5}	0.005
5	110	7.15	7.55	7.97	8.39	8.84	9.29	9.74				0.43	9.03×10^{-10}	7.80×10^{-5}	0.004
												Average	1.37×10^{-9}	1.18×10^{-4}	0.007







Void filling
Lugeon: 0.004
Hydraulic Conductivity: 9.03E-10 m/s
Hydraulic Conductivity: 7.80E-5 m/d

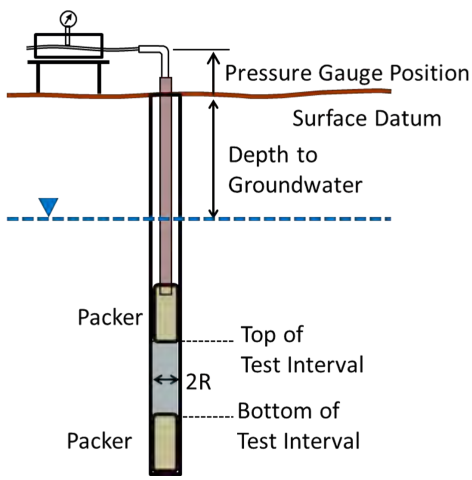
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.34 L/min system losses at 200 psi (during packer inflation); not accounted for in test flow data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 1.37E-9 m/s.

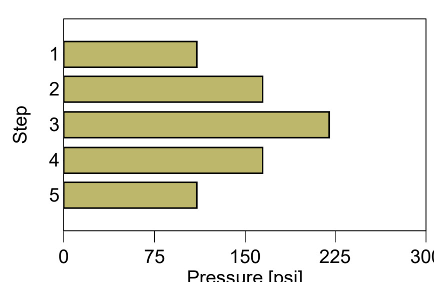
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

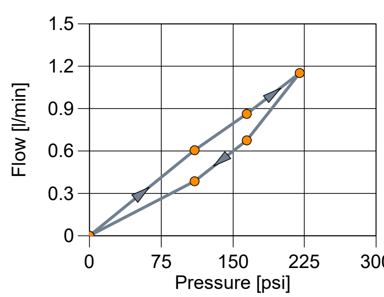
Location: Valentine Lake, NL	Lugeon Test: PT14	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

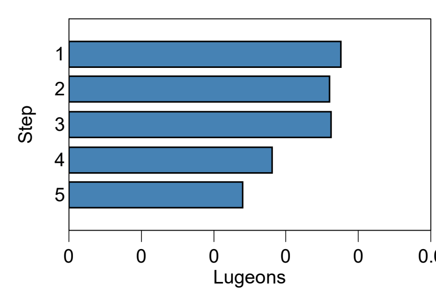


Top of Test Interval: 270.33 m
Bottom of Test Interval: 374.00 m
Length of Test Interval: 103.67 m
Gauge Position: 1.45 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 221.44 m
Vertical Bottom of Test Interval: 306.36 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	110	55.06	55.76	56.41	57.04	57.63	58.19	58.75	59.31			0.61	1.49×10^{-9}	1.29×10^{-4}	0.008
2	165	65.86	66.76	67.62	68.48	69.32						0.86	1.43×10^{-9}	1.24×10^{-4}	0.007
3	220	80.65	81.87	83.04	84.19	85.31	86.42					1.15	1.44×10^{-9}	1.24×10^{-4}	0.007
4	165	88.00	88.66	89.31	89.99	90.68	91.36	92.05	92.73			0.68	1.12×10^{-9}	9.65×10^{-5}	0.006
5	110	93.00	93.37	93.74	94.12	94.51	94.90	95.30	95.70	96.10		0.39	9.52×10^{-10}	8.23×10^{-5}	0.005
												Average	1.29×10^{-9}	1.11×10^{-4}	0.006







Void filling
Lugeon: 0.005
Hydraulic Conductivity: 9.52E-10 m/s
Hydraulic Conductivity: 8.23E-5 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing.

Although pressure-flow step profile suggests a Void Filling classification, the hydraulic conductivity (K) values determined for step 1 used to calculate the representative K value for the test interval - K = 1.49E-9 m/s.

GEMTEC
Consulting Engineers and Scientists

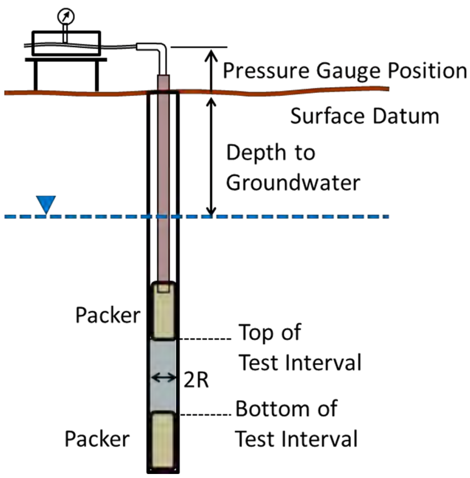
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

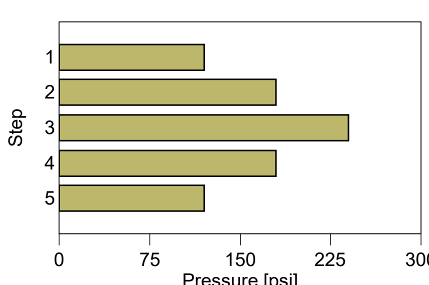
Client: Terrane Geoscience Inc.

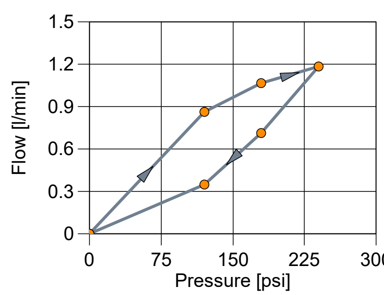
Location: Valentine Lake, NL	Lugeon Test: PT13	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

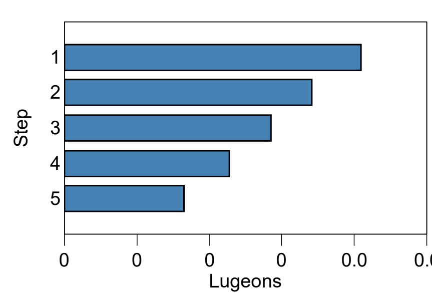


Top of Test Interval: 291.33 m
Bottom of Test Interval: 374.00 m
Length of Test Interval: 82.67 m
Gauge Position: 1.45 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 238.64 m
Vertical Bottom of Test Interval: 306.36 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	120	97.38	98.28	99.15	100.00	100.83						0.86	2.37×10^{-9}	2.05×10^{-4}	0.012
2	180	11.07	12.18	13.26	14.32	15.37	16.41					1.07	1.97×10^{-9}	1.70×10^{-4}	0.010
3	240	28.51	29.74	30.94	32.12	33.28	34.43					1.18	1.65×10^{-9}	1.42×10^{-4}	0.009
4	180	36.30	36.98	37.68	38.41	39.13	39.85	40.57				0.71	1.31×10^{-9}	1.14×10^{-4}	0.007
5	120	40.29	40.63	40.98	41.33	41.68						0.35	9.55×10^{-10}	8.25×10^{-5}	0.005
												Average	1.65×10^{-9}	1.43×10^{-4}	0.009







Void filling
Lugeon: 0.005
Hydraulic Conductivity: 9.55E-10 m/s
Hydraulic Conductivity: 8.25E-5 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

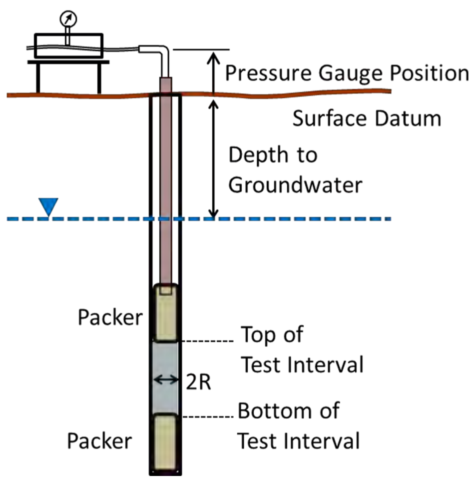
~0.19 L/min system losses at 240 psi (during packer inflation); not accounted for in test flow data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 1.65E-9 m/s.

Lugeon Test Analysis Report

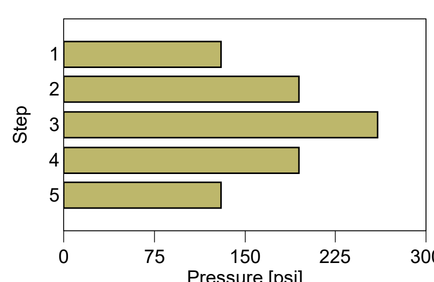
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

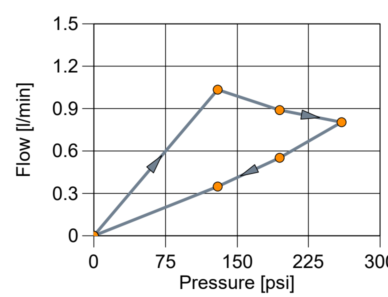
Location: Valentine Lake, NL	Lugeon Test: PT12	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/6/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

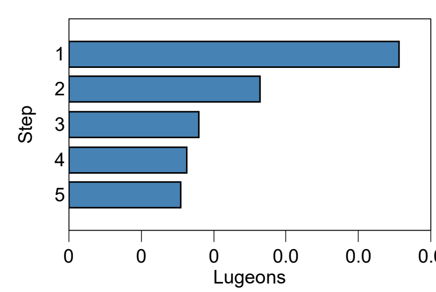


Top of Test Interval: 312.33 m
Bottom of Test Interval: 374.00 m
Length of Test Interval: 61.67 m
Gauge Position: 1.45 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 255.85 m
Vertical Bottom of Test Interval: 306.36 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	130	23.71	24.78	25.80	26.82	27.84						1.03	3.38×10^{-9}	2.92×10^{-4}	0.018
2	195	44.69	45.60	46.50	47.39	48.25						0.89	1.96×10^{-9}	1.69×10^{-4}	0.011
3	260	56.50	57.34	58.13	58.92	59.71						0.80	1.33×10^{-9}	1.15×10^{-4}	0.007
4	195	61.00	61.55	62.10	62.65							0.55	1.21×10^{-9}	1.04×10^{-4}	0.007
5	130	61.80	62.10	62.44	62.81	63.18	63.55					0.35	1.14×10^{-9}	9.89×10^{-5}	0.006
												Average	1.80×10^{-9}	1.56×10^{-4}	0.010







Void filling
Lugeon: 0.006
Hydraulic Conductivity: 1.14E-9 m/s
Hydraulic Conductivity: 9.89E-5 m/d

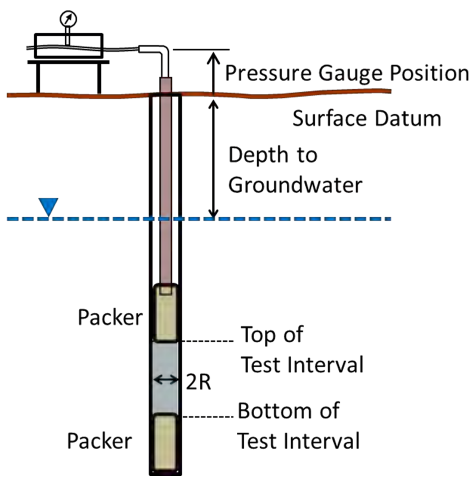
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.30 L/min system losses at 260 psi (during packer inflation); not accounted for in test flow data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 1.80E-9 m/s.

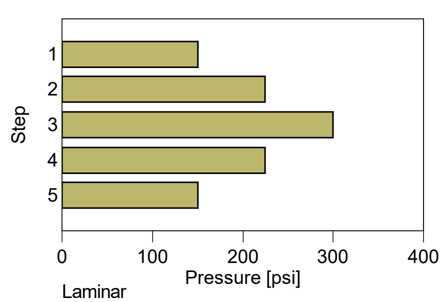
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

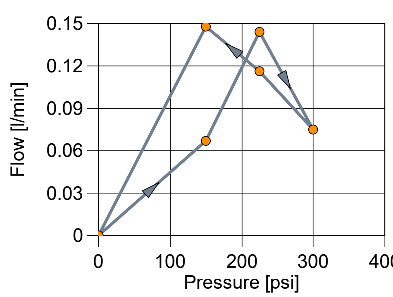
Location: Valentine Lake, NL	Lugeon Test: PT10	Tested bore: VL-GT-20-02
Test Conducted by: Terrane Geoscience Inc.		Test Date: 9/5/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

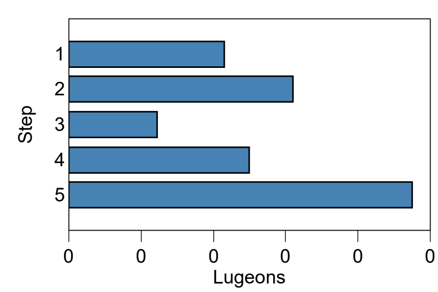


Top of Test Interval: 354.33 m
Bottom of Test Interval: 374.00 m
Length of Test Interval: 19.67 m
Gauge Position: 1.45 m
Depth to Groundwater: 0.75 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 290.25 m
Vertical Bottom of Test Interval: 306.36 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	150	496.56	496.73	496.86	496.97	497.03	497.03	497.03	497.03			0.07	5.03×10^{-10}	4.34×10^{-5}	0.003
2	225	497.97	498.12	498.27	498.41	498.55	498.69					0.14	7.23×10^{-10}	6.25×10^{-5}	0.005
3	300	499.75	499.81	499.89	499.97	500.05						0.08	2.84×10^{-10}	2.45×10^{-5}	0.002
4	225	500.95	501.07	501.18	501.30	501.41	501.53					0.12	5.83×10^{-10}	5.03×10^{-5}	0.004
5	150	499.37	499.51	499.67	499.81	499.97	500.11					0.15	1.11×10^{-9}	9.57×10^{-5}	0.007
												Average	6.40×10^{-10}	5.53×10^{-5}	0.004







Laminar
Lugeon: 0.004
Hydraulic Conductivity: 6.40E-10 m/s
Hydraulic Conductivity: 5.53E-5 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.43 L/min system losses at 300 psi (during packer inflation); not accounted for in test flow data. Surface gauge pressure readings checked with transducer data.

Irregular, non-linear pressure-flow profile. The hydraulic conductivity (K) value determined for step 3 used to calculate the representative K value for the test interval - K = 2.84E-10 m/s.

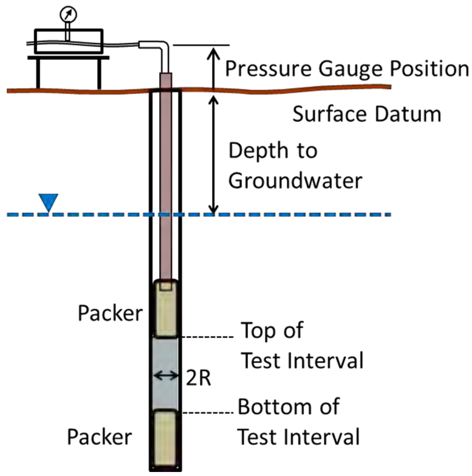
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

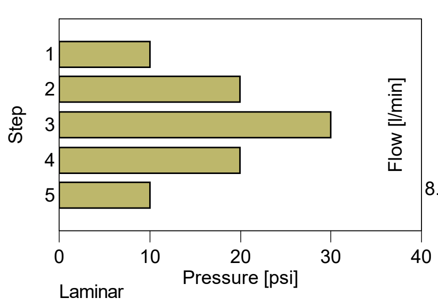
Client: Terrane Geoscience Inc.

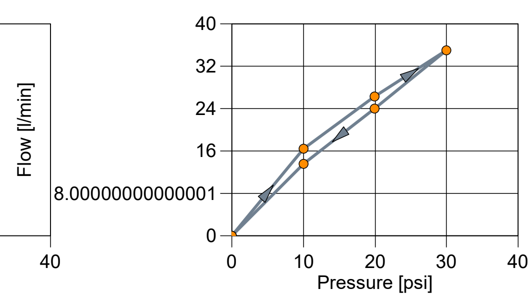
Location: Valentine Lake, NL	Lugeon Test: PT1	Tested bore: VL-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/9/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

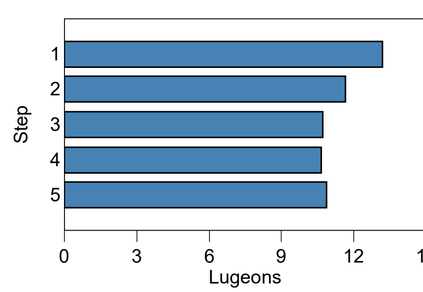


Top of Test Interval: 38.33 m
Bottom of Test Interval: 53.00 m
Length of Test Interval: 14.67 m
Gauge Position: 1.63 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 20° from vertical
Vertical Top of Test Interval: 36.02 m
Vertical Bottom of Test Interval: 49.80 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	10	806.00	823.50	840.50	857.10	873.55	889.90	906.00	922.10	938.10	954.00	16.44	1.95×10^{-6}	1.69×10^{-1}	13
2	20	23.00	50.50	77.00	103.50	129.25	155.00	180.75				26.29	1.72×10^{-6}	1.49×10^{-1}	12
3	30	272.00	307.50	342.50	377.50	412.00	447.00	482.00				35.00	1.58×10^{-6}	1.37×10^{-1}	11
4	20	516.00	539.50	563.75	588.00	612.25						24.06	1.58×10^{-6}	1.36×10^{-1}	11
5	10	632.00	644.10	657.00	670.30	684.00	697.75	711.75	725.65	739.60	753.70	13.52	1.60×10^{-6}	1.39×10^{-1}	11
												Average	1.69×10^{-6}	1.46×10^{-1}	11







Laminar
Lugeon: 11.413
Hydraulic Conductivity: 1.69E-6 m/s
Hydraulic Conductivity: 1.46E-1 m/d

Performed using a straddle double packer test assembly to isolate test interval.

No leaks were noticed during packer inflation or testing.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

GEMTEC
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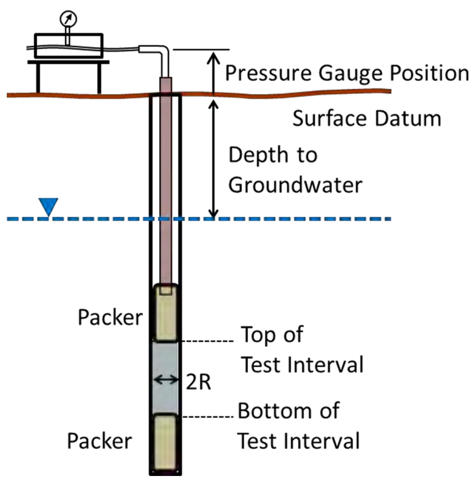
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

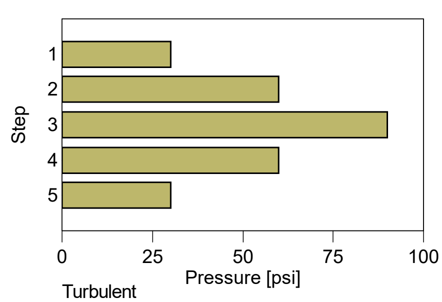
Client: Terrane Geoscience Inc.

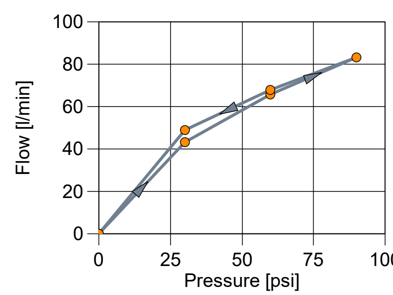
Location: Valentine Lake, NL	Lugeon Test: PT2	Tested bore: VL-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/11/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

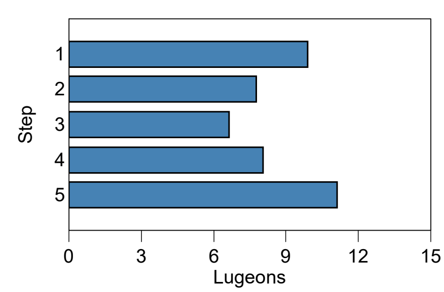


Top of Test Interval: 105.33 m
Bottom of Test Interval: 125.00 m
Length of Test Interval: 19.67 m
Gauge Position: 1.63 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 20° from vertical
Vertical Top of Test Interval: 98.98 m
Vertical Bottom of Test Interval: 117.46 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	30	5887.50	5930.50	5974.00	6017.50	6061.00						43.38	1.54×10^{-6}	1.33×10^{-1}	9.9
2	60	208.00	275.00	338.00	404.00	470.00	536.00					65.60	1.21×10^{-6}	1.04×10^{-1}	7.8
3	90	6635.00	6718.00	6802.00	6885.00	6967.00	7051.00	7134.00	7217.00	7300.00		83.13	1.03×10^{-6}	8.92×10^{-2}	6.6
4	60	382.00	450.00	518.00	586.00							68.00	1.25×10^{-6}	1.08×10^{-1}	8.0
5	30	7684.00	7732.00	7781.50	7830.00	7879.00	7927.50	7976.00	8025.00	8074.00	8123.00	48.78	1.73×10^{-6}	1.49×10^{-1}	11.1
												Average	1.35×10^{-6}	1.17×10^{-1}	8.7







Turbulent
Lugeon: 7.8
Hydraulic Conductivity: 1.21E-6 m/s
Hydraulic Conductivity: 1.04E-1 m/d

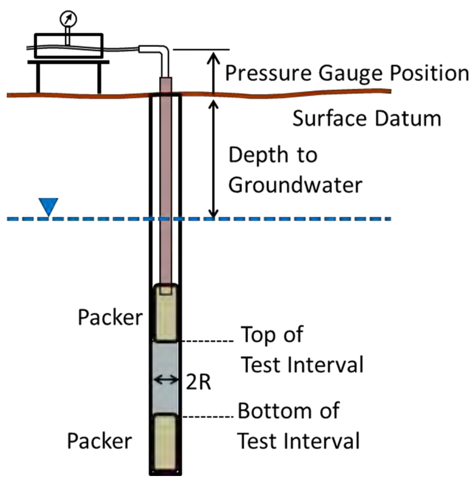
Performed using a straddle double packer test assembly to isolate test interval.

~0.03 L/min system losses at 100 psi (during packer inflation); considered negligible in comparison to test flows.

Hydraulic conductivity value for test interval derived based on flow classification: Turbulent (Step 2).

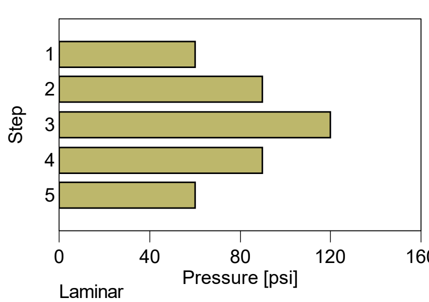
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

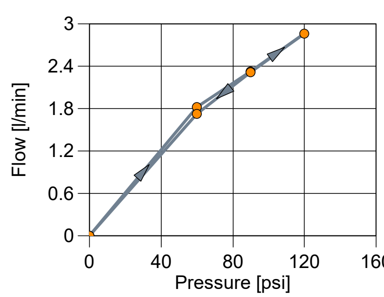
Location: Valentine Lake, NL	Lugeon Test: PT3	Tested bore: VL-GT-20-04
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/12/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

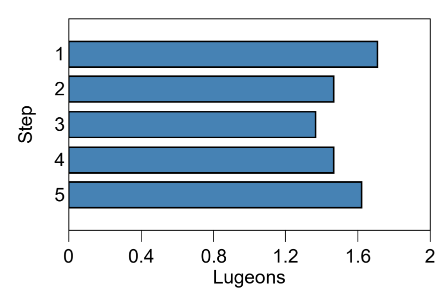


Top of Test Interval: 145.33 m
Bottom of Test Interval: 147.82 m
Length of Test Interval: 2.49 m
Gauge Position: 1.52 m
Depth to Groundwater: 0.00 m
Radius of Test Section: 0.05 m
Dip of bore: 20° from vertical
Vertical Top of Test Interval: 136.57 m
Vertical Bottom of Test Interval: 138.91 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	60	194.60	196.50	198.36	200.21	202.03	203.84	205.62	207.40	209.17		1.82	1.73×10^{-7}	1.50×10^{-2}	1.7
2	90	211.20	213.55	215.86	218.17	220.48						2.32	1.49×10^{-7}	1.29×10^{-2}	1.5
3	120	222.50	225.40	228.25	231.10	233.95						2.86	1.39×10^{-7}	1.20×10^{-2}	1.4
4	90	236.60	238.97	241.32	243.66	245.97	248.32	250.67	252.95	255.20	257.45	2.32	1.49×10^{-7}	1.29×10^{-2}	1.5
5	60	260.60	262.35	264.09	265.81	267.53	269.25					1.73	1.65×10^{-7}	1.42×10^{-2}	1.6
												Average	1.55×10^{-7}	1.34×10^{-2}	1.5







Laminar
Lugeon: 1.525
Hydraulic Conductivity: 1.55E-7 m/s
Hydraulic Conductivity: 1.34E-2 m/d

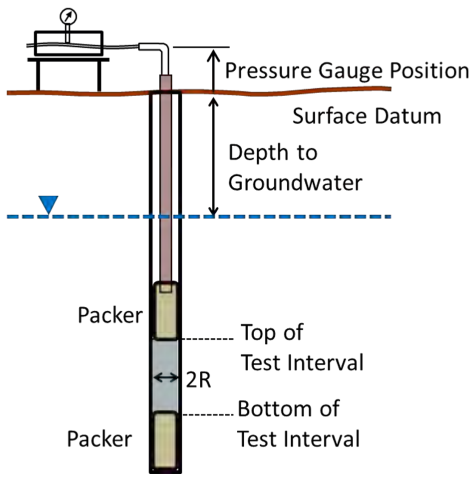
Performed using a straddle double packer test assembly to isolate test interval.

~0.05 L/min system losses at 120 psi (during packer inflation); considered negligible in comparison to test flows.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

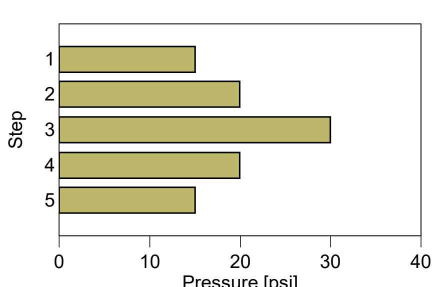
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

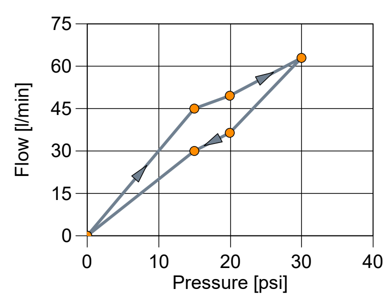
Location: Valentine Lake, NL	Lugeon Test: PT9	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/26/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

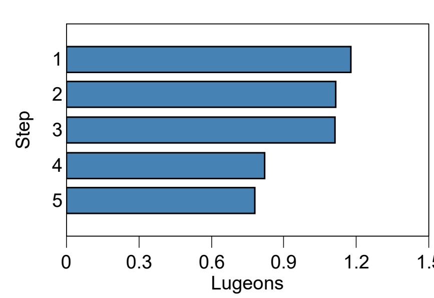


Top of Test Interval: 4.33 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 177.67 m
Gauge Position: 1.34 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 3.55 m
Vertical Bottom of Test Interval: 149.09 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	15	893.00	940.50	986.50	1030.50	1074.50	1118.50					45.10	2.50×10^{-7}	2.16×10^{-2}	1.2
2	20	330.00	379.50	429.00	478.50							49.50	2.37×10^{-7}	2.05×10^{-2}	1.1
3	30	730.00	793.00	856.00	919.00							63.00	2.36×10^{-7}	2.04×10^{-2}	1.1
4	20	160.00	196.50	232.50	269.00	305.50	342.00					36.40	1.74×10^{-7}	1.51×10^{-2}	0.8
5	15	500.00	529.50	559.50	589.50	619.50						29.88	1.66×10^{-7}	1.43×10^{-2}	0.8
												Average	2.13×10^{-7}	1.84×10^{-2}	1.0







Void filling
Lugeon: 0.780
Hydraulic Conductivity: 1.66E-7 m/s
Hydraulic Conductivity: 1.43E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.
~0.18 L/min system losses at 90 psi (during packer inflation); considered negligible in comparison to test flows. Test pressures higher than determined Pmax required to induce flow. Test pressure-flow profile does not suggest dilation. Difficulty maintaining constant pressure during steps. Following testing and bladder removal, hole flowing. Possible artesian pressures in the test interval.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1, 2, and 3 used to calculate the representative K value for the test interval - K = 2.50E-07 m/s.

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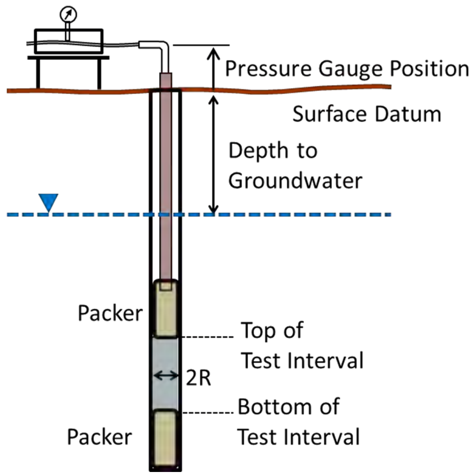
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

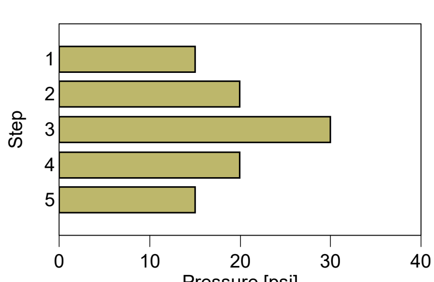
Client: Terrane Geoscience Inc.

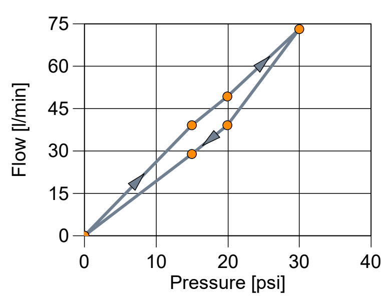
Location: Valentine Lake, NL	Lugeon Test: PT8	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/26/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

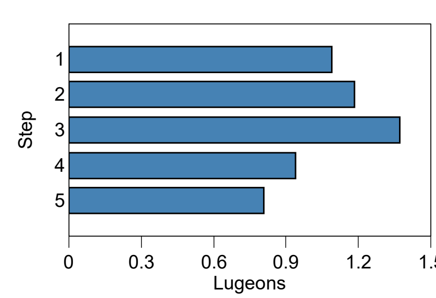


Top of Test Interval: 15.33 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 166.67 m
Gauge Position: 1.34 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 12.56 m
Vertical Bottom of Test Interval: 149.09 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	15	300.00	340.50	379.50	419.50	457.50	496.50	535.50	574.50			39.21	2.30×10^{-7}	1.99×10^{-2}	1.1
2	20	600.00	650.50	700.00	749.00	798.00	847.00					49.40	2.50×10^{-7}	2.16×10^{-2}	1.2
3	30	900.00	973.00	1046.00	1119.00							73.00	2.90×10^{-7}	2.50×10^{-2}	1.4
4	20	200.00	239.50	278.50	317.50	356.50						39.13	1.98×10^{-7}	1.71×10^{-2}	0.9
5	15	450.00	479.00	508.00	537.00							29.00	1.70×10^{-7}	1.47×10^{-2}	0.8
												Average	2.28×10^{-7}	1.97×10^{-2}	1.1







Dilation
Lugeon: 1.091
Hydraulic Conductivity: 2.30E-7 m/s
Hydraulic Conductivity: 1.99E-2 m/d

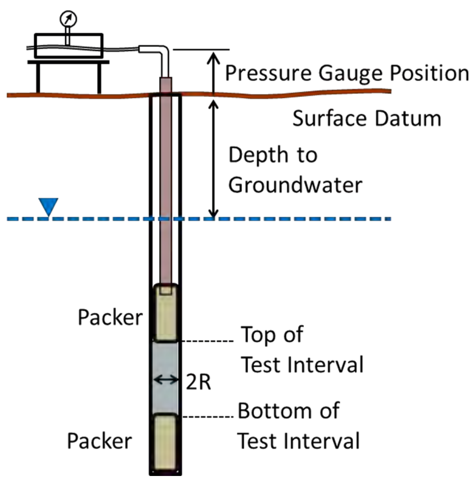
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Test pressures higher than determined Pmax required to induce flow. Test pressure-flow profile suggests some potential dilation that may result in enhanced hydraulic conductivity value determined for this test interval.

Hydraulic conductivity value for test interval derived based on flow classification: Dilation (step 1).

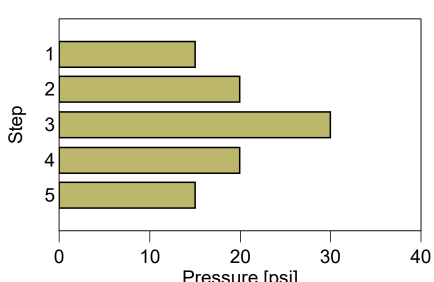
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

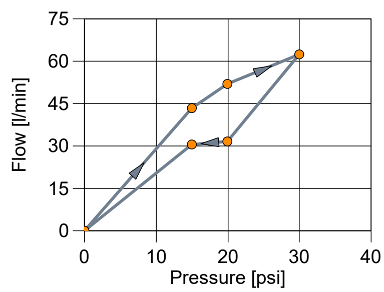
Location: Valentine Lake, NL	Lugeon Test: PT7	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/26/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

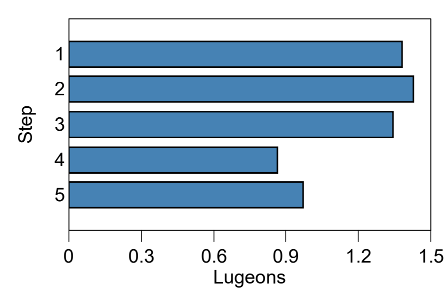


Top of Test Interval: 36.33 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 145.67 m
Gauge Position: 1.34 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 29.76 m
Vertical Bottom of Test Interval: 149.09 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	15	435.50	479.50	523.50	566.50	609.50	652.50					43.40	2.87×10^{-7}	2.48×10^{-2}	1.4
2	20	700.00	752.00	804.00	856.00							52.00	2.96×10^{-7}	2.56×10^{-2}	1.4
3	30	900.00	966.00	1031.00	1095.00	1158.00	1220.00	1280.00	1340.00	1400.00		62.50	2.79×10^{-7}	2.41×10^{-2}	1.3
4	20	430.00	461.50	493.00	524.50							31.50	1.79×10^{-7}	1.55×10^{-2}	0.9
5	15	660.00	690.50	721.00	751.50							30.50	2.02×10^{-7}	1.74×10^{-2}	1.0
												Average	2.49×10^{-7}	2.15×10^{-2}	1.2







Void filling
Lugeon: 0.971
Hydraulic Conductivity: 2.02E-7 m/s
Hydraulic Conductivity: 1.74E-2 m/d

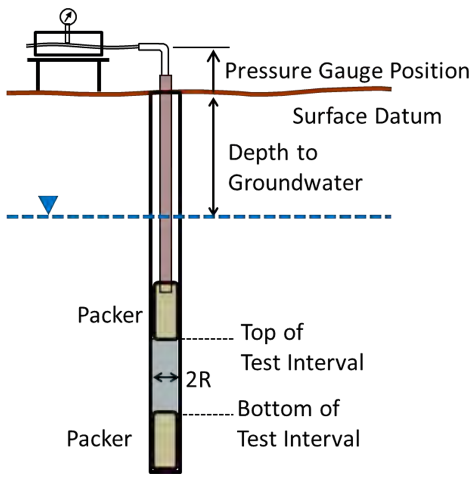
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Difficulty maintaining constant pressure during steps. Following testing, and bladder removal hole flowing. Possible artesian pressures in the test interval.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 2.49E-7 m/s.

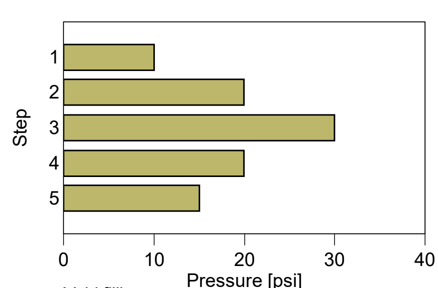
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

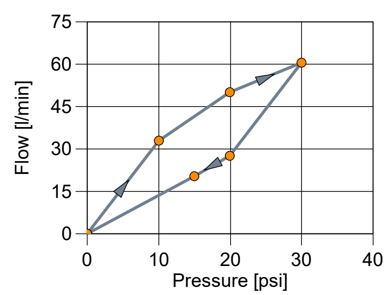
Location: Valentine Lake, NL	Lugeon Test: PT6	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/26/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

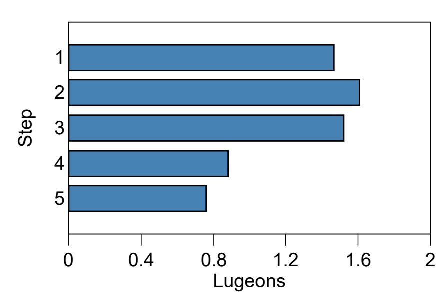


Top of Test Interval: 57.33 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 124.67 m
Gauge Position: 1.34 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 46.96 m
Vertical Bottom of Test Interval: 149.09 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	10	750.00	786.00	821.50	856.50	890.50	924.00	956.00	986.50	1017.00	1047.50	33.06	2.98×10^{-7}	2.57×10^{-2}	1.5
2	20	100.00	150.50	200.50	250.50	300.50						50.13	3.27×10^{-7}	2.83×10^{-2}	1.6
3	30	350.00	413.50	475.00	536.00	596.00	655.00	714.00	773.00			60.43	3.09×10^{-7}	2.67×10^{-2}	1.5
4	20	800.00	827.50	855.00	882.50							27.50	1.79×10^{-7}	1.55×10^{-2}	0.9
5	15	35.00	55.60	75.90	96.20	116.50						20.38	1.54×10^{-7}	1.33×10^{-2}	0.8
												Average	2.54×10^{-7}	2.19×10^{-2}	1.2







Void filling
Lugeon: 0.758
Hydraulic Conductivity: 1.54E-7 m/s
Hydraulic Conductivity: 1.33E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Surface gauge pressure readings checked with transducer data. Difficulty maintaining constant pressure during steps. Following step 5, ~20 L/min backflow with pump off; dissipated once bladder was deflated. Possible artesian pressures in the test interval.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 2.54E-7 m/s.

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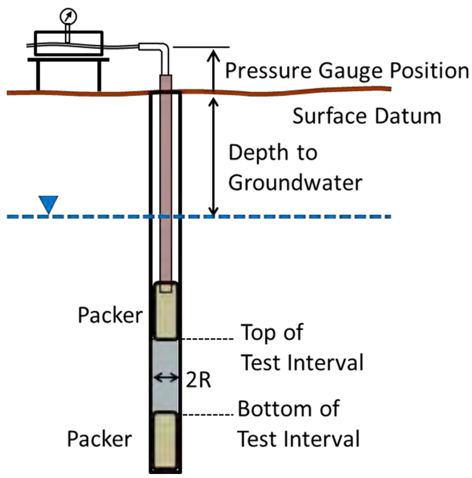
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

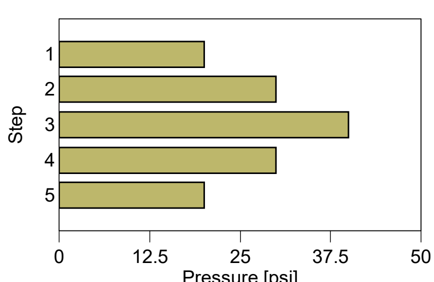
Client: Terrane Geoscience Inc.

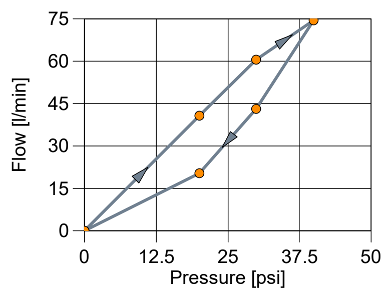
Location: Valentine Lake, NL	Lugeon Test: PT5	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/26/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

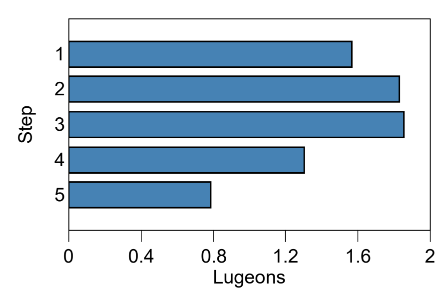


Top of Test Interval: 78.33 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 103.67 m
Gauge Position: 1.34 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 64.16 m
Vertical Bottom of Test Interval: 149.09 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	20	310.00	351.00	391.50	432.00	472.50						40.63	3.11×10^{-7}	2.69×10^{-2}	1.6
2	30	510.00	570.50	631.00	691.50							60.50	3.63×10^{-7}	3.14×10^{-2}	1.8
3	40	750.00	824.50	899.00	973.50							74.50	3.68×10^{-7}	3.18×10^{-2}	1.9
4	30	50.00	93.00	136.50	179.50	222.50	265.50					43.10	2.59×10^{-7}	2.24×10^{-2}	1.3
5	20	90.00	109.80	128.80	148.20	167.90	187.30	209.30	230.30	251.80	273.30	20.37	1.56×10^{-7}	1.35×10^{-2}	0.8
												Average	2.92×10^{-7}	2.52×10^{-2}	1.5







Void filling
Lugeon: 0.8
Hydraulic Conductivity: 1.56E-7 m/s
Hydraulic Conductivity: 1.35E-2 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

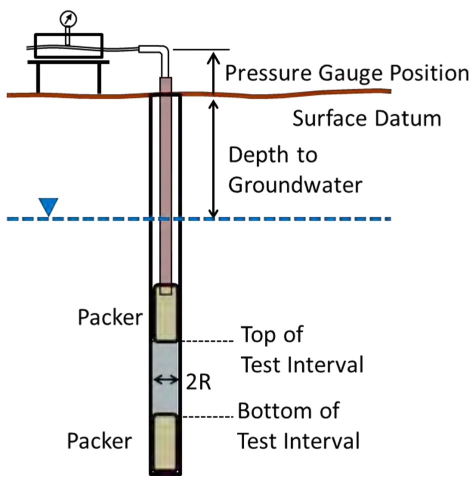
~0.04 L/min system losses at 80 psi (during packer inflation); considered negligible in comparison to test flows. Difficulty maintaining constant pressure during steps. Possible artesian pressures in the test interval. Surface gauge pressure readings checked with transducer data.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 2.92E-7 m/s.

GEMTEC Consulting Engineers and Scientists

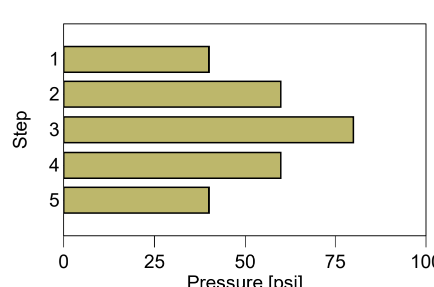
Lugeon Test Analysis Report
Project: Valentine Gold Feasibility Geotechnical Investigation
Number: 80047.03
Client: Terrane Geoscience Inc.

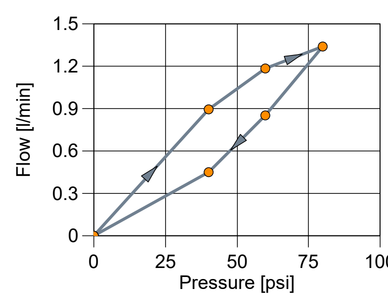
Location: Valentine Lake, NL	Lugeon Test: PT4	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/26/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

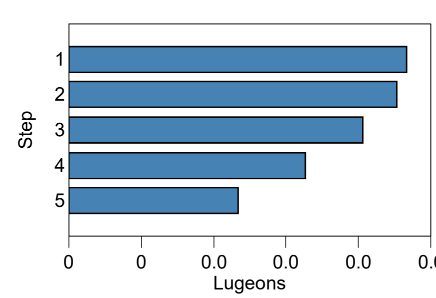


Top of Test Interval: 99.33 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 82.67 m
Gauge Position: 1.34 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 81.37 m
Vertical Bottom of Test Interval: 149.09 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	40	39.00	39.95	40.88	41.78	42.67	43.54	44.41	45.28			0.90	5.39×10^{-9}	4.66×10^{-4}	0.03
2	60	54.22	55.44	56.65	57.83	58.99	60.13					1.18	5.24×10^{-9}	4.53×10^{-4}	0.03
3	80	75.73	77.12	78.41	79.74	81.10	82.42	83.76				1.34	4.70×10^{-9}	4.06×10^{-4}	0.02
4	60	86.50	87.36	88.23	89.11	89.93	90.80	91.69	92.53	93.34	94.18	0.85	3.78×10^{-9}	3.27×10^{-4}	0.02
5	40	94.80	95.20	95.63	96.09	96.54	97.01	97.48	97.95			0.45	2.70×10^{-9}	2.34×10^{-4}	0.01
												Average	4.36×10^{-9}	3.77×10^{-4}	0.02







Void filling
Lugeon: 0.014
Hydraulic Conductivity: 2.70E-9 m/s
Hydraulic Conductivity: 2.34E-4 m/d

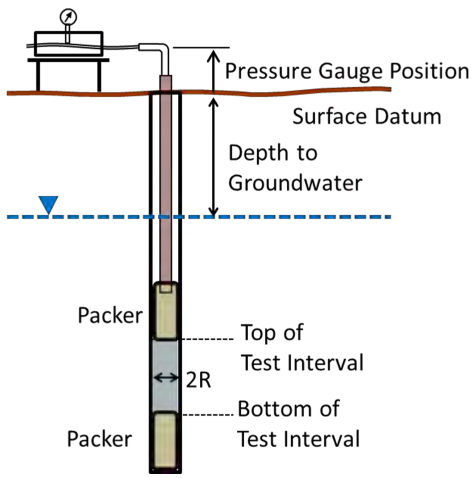
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.05 L/min system losses at 90 psi (during packer inflation); not accounted for in test flow data. Slightly slowing flows during steps 1, 2, and 3, and increasing flows observed in steps 4 and 5. Pressure adjustments required during testing. Surface gauge pressure readings checked with transducer data. Possible artesian pressures in the test interval.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 4.36E-09 m/s.

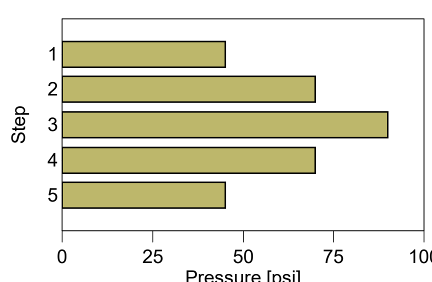
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

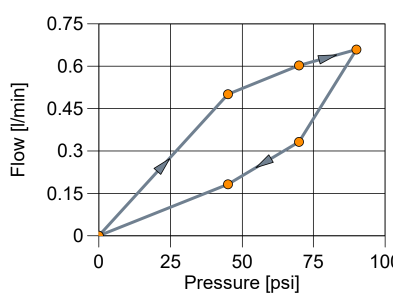
Location: Valentine Lake, NL	Lugeon Test: PT3	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/26/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

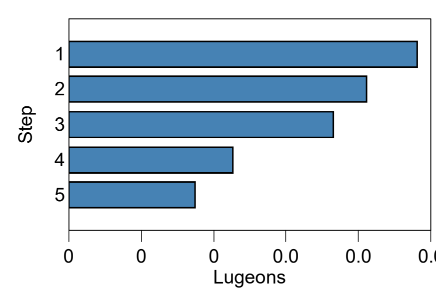


Top of Test Interval: 120.33 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 61.67 m
Gauge Position: 1.34 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 98.57 m
Vertical Bottom of Test Interval: 149.09 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	45	100.92	101.47	102.00	102.50	102.98	103.43					0.50	3.57×10^{-9}	3.08×10^{-4}	0.019
2	70	7.61	8.26	8.89	9.50	10.10	10.69	11.26	11.83			0.60	3.04×10^{-9}	2.63×10^{-4}	0.016
3	90	17.85	18.56	19.26	19.92	20.55	21.15					0.66	2.70×10^{-9}	2.34×10^{-4}	0.015
4	70	21.30	21.55	21.91	22.27	22.63						0.33	1.68×10^{-9}	1.45×10^{-4}	0.009
5	45	21.61	21.77	21.95	22.14	22.33	22.52					0.18	1.29×10^{-9}	1.12×10^{-4}	0.007
												Average	2.46×10^{-9}	2.12×10^{-4}	0.013







Void filling
Lugeon: 0.007
Hydraulic Conductivity: 1.29E-9 m/s
Hydraulic Conductivity: 1.12E-4 m/d

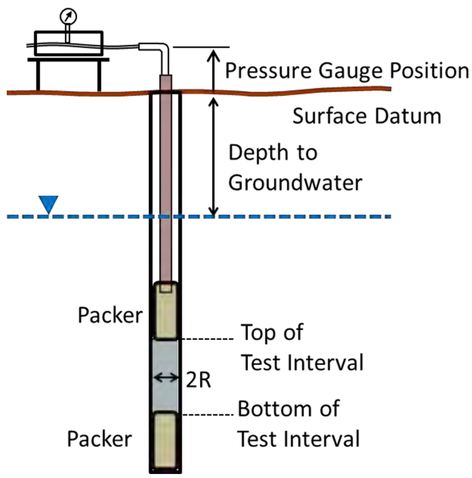
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.08 L/min system losses at 90 psi (during packer inflation); not accounted for in test flow data. Slowing flows observed in steps 1, 2, 3, and backflow at start of step 5; suggest potential artesian pressures in the test interval.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 2.46E-9 m/s.

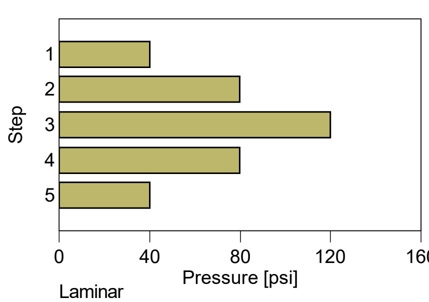
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

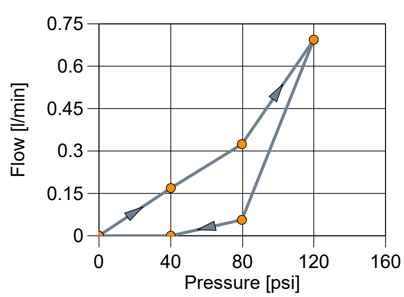
Location: Valentine Lake, NL	Lugeon Test: PT2	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/26/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

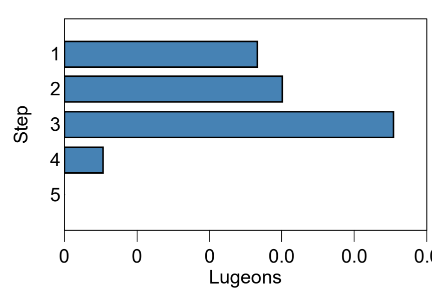


Top of Test Interval: 141.33 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 40.67 m
Gauge Position: 1.34 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 115.77 m
Vertical Bottom of Test Interval: 149.09 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	40	78.14	78.31	78.49	78.66	78.83	78.99	79.15	79.32	79.48	79.65	0.17	1.85×10^{-9}	1.60×10^{-4}	0.011
2	80	83.04	83.43	83.77	84.08	84.41	84.72	85.00	85.29	85.62	85.96	0.32	2.10×10^{-9}	1.81×10^{-4}	0.012
3	120	88.04	88.67	89.27	89.90	90.61	91.33	92.11	92.82	93.58	94.28	0.69	3.16×10^{-9}	2.73×10^{-4}	0.018
4	80	94.97	94.98	95.05	95.12	95.20						0.06	3.71×10^{-10}	3.21×10^{-5}	0.002
5	40														
												Average	1.87×10^{-9}	1.62×10^{-4}	0.011







Laminar
Lugeon: 0.011
Hydraulic Conductivity: 1.87E-9 m/s
Hydraulic Conductivity: 1.62E-4 m/d

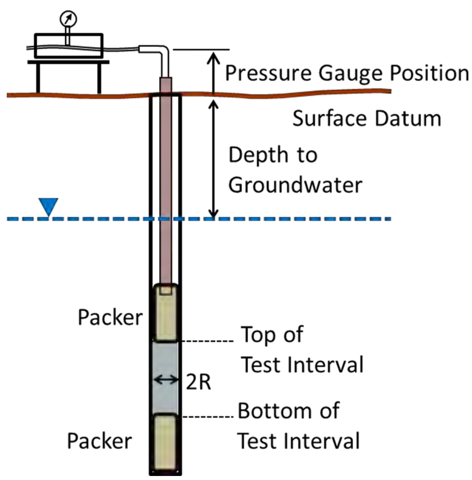
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Backflow when decreasing pressure from step 3 to step 4 to step 5. Backflow in step 5; hydraulic conductively not determined for this step.

The arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1, 3, 3 and 4 used to calculate the representative K value for the test interval - K = 1.87E-09 m/s.

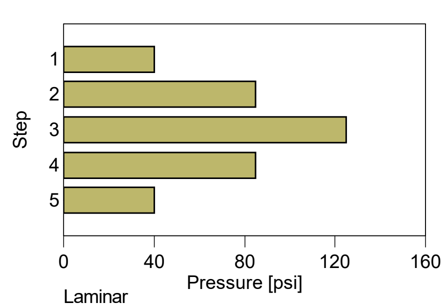
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

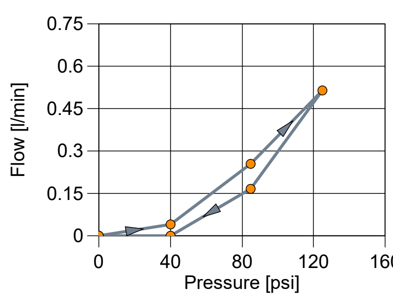
Location: Valentine Lake, NL	Lugeon Test: PT1	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/26/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

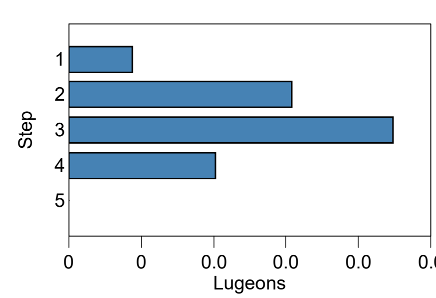


Top of Test Interval: 162.33 m
Bottom of Test Interval: 182.00 m
Length of Test Interval: 19.67 m
Gauge Position: 1.34 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 132.97 m
Vertical Bottom of Test Interval: 149.09 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	40	62.27	62.29	62.34	62.39	62.43	62.47	62.51				0.04	8.15×10^{-10}	7.04×10^{-5}	0.005
2	85	63.21	63.56	63.82	64.05	64.29	64.52	64.76	65.00	65.24		0.25	2.87×10^{-9}	2.48×10^{-4}	0.018
3	125	73.40	73.90	74.39	74.90	75.43	75.96	76.48	76.99	77.52		0.51	4.18×10^{-9}	3.61×10^{-4}	0.027
4	85	76.42	76.69	76.87	77.00	77.14	77.28	77.42				0.17	1.89×10^{-9}	1.63×10^{-4}	0.012
5	40														
												Average	2.44×10^{-9}	2.11×10^{-4}	0.016







Laminar
Lugeon: 0.028
Hydraulic Conductivity: 4.34E-9 m/s
Hydraulic Conductivity: 3.75E-4 m/d

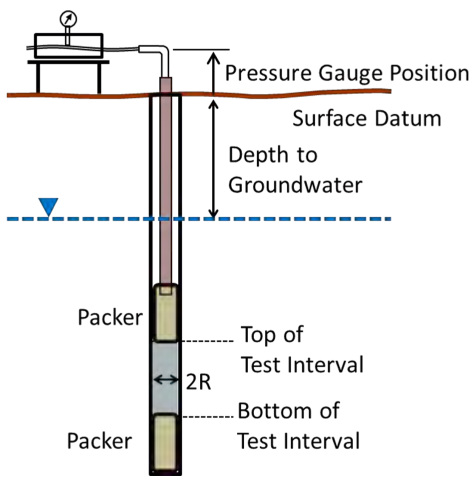
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Surface gauge pressure readings checked with transducer data. Backflow when decreasing pressure from step 3 to step 4 to step 5. Backflow in step 5; hydraulic conductively not determined for this step.

The arithmetic mean (average) of the hydraulic conductivity (K) values determined for steps 1, 3, 3 and 4 used to calculate the representative K value for the test interval - K = 2.44E-09 m/s.

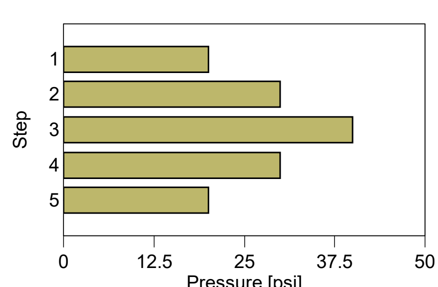
Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

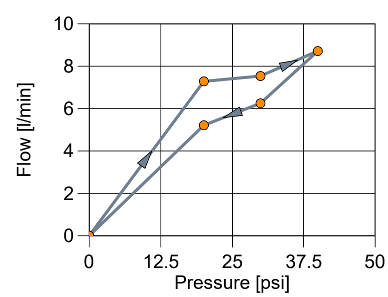
Location: Valentine Lake, NL	Lugeon Test: PT17	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/30/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

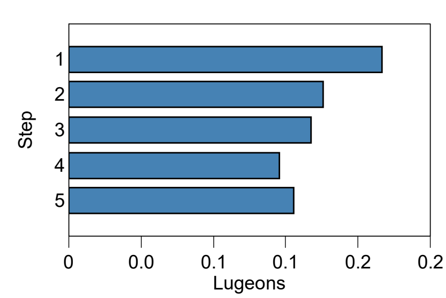


Top of Test Interval: 182.00 m
Bottom of Test Interval: 350.00 m
Length of Test Interval: 168.00 m
Gauge Position: 1.32 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 149.09 m
Vertical Bottom of Test Interval: 286.70 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	20	748.00	755.70	763.10	770.35	777.40	784.40					7.28	3.66×10^{-8}	3.16×10^{-3}	0.17
2	30	897.10	904.75	912.40	919.95	927.40	934.80					7.54	2.97×10^{-8}	2.57×10^{-3}	0.14
3	40	1014.55	1023.35	1032.20	1040.90	1049.70	1058.40	1067.15	1075.80	1084.40		8.73	2.83×10^{-8}	2.45×10^{-3}	0.13
4	30	76.00	82.47	88.80	95.02	101.20	107.35	113.50	119.65			6.24	2.46×10^{-8}	2.12×10^{-3}	0.12
5	20	108.85	114.75	120.20	125.50	130.40	135.30	140.20				5.22	2.63×10^{-8}	2.27×10^{-3}	0.12
												Average	2.91×10^{-8}	2.52×10^{-3}	0.14







Void filling
Lugeon: 0.124
Hydraulic Conductivity: 2.63E-8 m/s
Hydraulic Conductivity: 2.27E-3 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

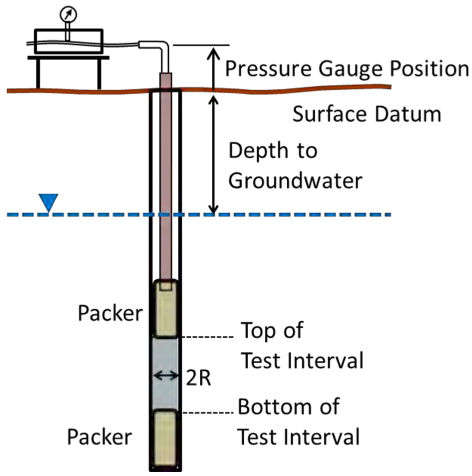
~0.25 L/min system losses at 150 psi (during packer inflation); considered negligible in comparison to test flows. Pressure adjustments required during steps 2, 3, and 5. Backflow when decreasing from P3 to P4 to P5, suggesting artesian conditions in the test interval.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for step 1 used to calculate the representative K value for the test interval - K = 3.66E-08 m/s.

GEMTEC
Consulting Engineers and Scientists

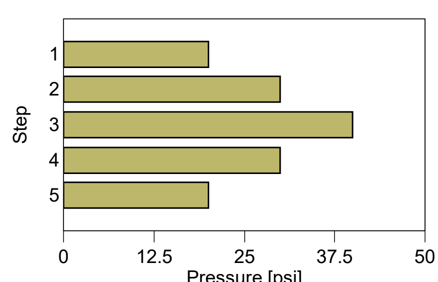
Lugeon Test Analysis Report	
Project:	Valentine Gold Feasibility Geotechnical Investigation
Number:	80047.03
Client:	Terrane Geoscience Inc.

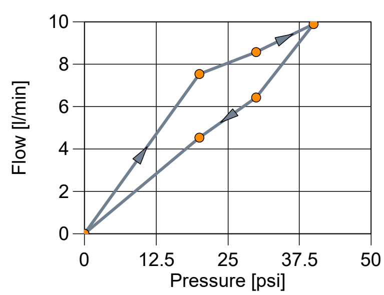
Location: Valentine Lake, NL	Lugeon Test: PT16	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/30/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

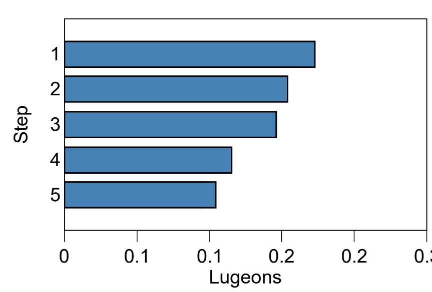


Top of Test Interval: 204.33 m
Bottom of Test Interval: 350.00 m
Length of Test Interval: 145.67 m
Gauge Position: 1.32 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 167.38 m
Vertical Bottom of Test Interval: 286.70 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	20	254.70	262.40	270.00	277.60	285.15	292.75	300.17	307.55			7.55	4.30×10^{-8}	3.72×10^{-3}	0.21
2	30	425.20	434.25	442.60	450.99	459.50						8.58	3.83×10^{-8}	3.31×10^{-3}	0.18
3	40	520.85	530.70	540.60	550.50	560.40	570.30					9.89	3.63×10^{-8}	3.14×10^{-3}	0.18
4	30	557.00	563.35	569.65	576.05	582.40	588.90	595.40	601.90	608.40		6.42	2.87×10^{-8}	2.48×10^{-3}	0.14
5	20	606.20	610.50	614.87	619.35	623.80	628.40	633.05	637.75	642.43	647.15	4.55	2.59×10^{-8}	2.24×10^{-3}	0.12
												Average	3.45×10^{-8}	2.98×10^{-3}	0.17







Void filling
Lugeon: 0.125
Hydraulic Conductivity: 2.59E-8 m/s
Hydraulic Conductivity: 2.24E-3 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.25 L/min system losses at 180 psi (during packer inflation); considered negligible in comparison to test flows. Pressure adjustments required during steps 1, 2, 3, and 5. At the end of the test with value opened measured ~5 - 10 PSI with backflow, suggesting artesian conditions in the test interval.

Although pressure-flow step profile suggests a Void Filling classification, the arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 3.45E-8 m/s.

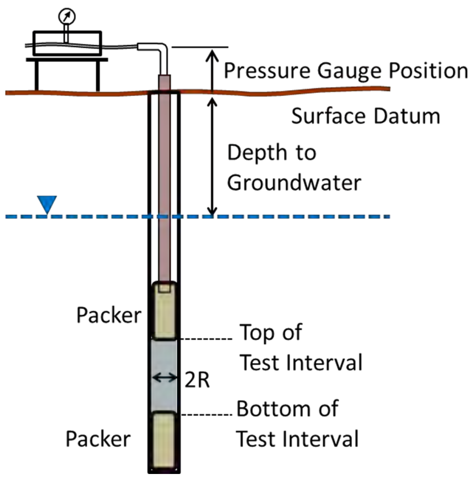
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

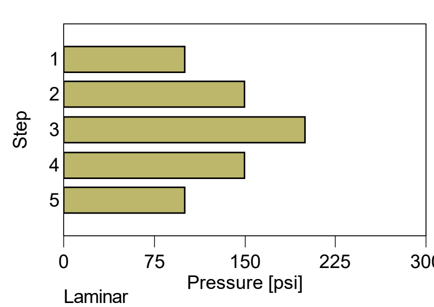
Client: Terrane Geoscience Inc.

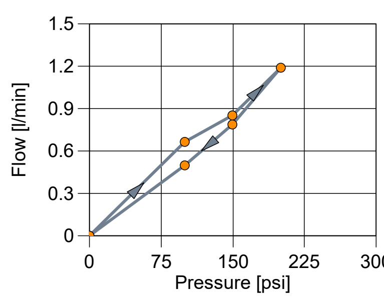
Location: Valentine Lake, NL	Lugeon Test: PT14	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/30/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

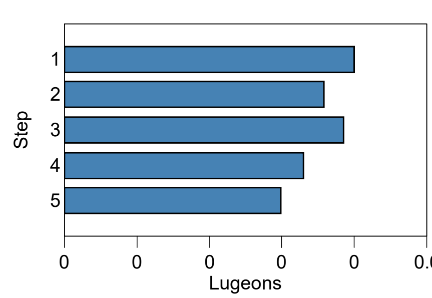


Top of Test Interval: 246.33 m
Bottom of Test Interval: 350.00 m
Length of Test Interval: 103.67 m
Gauge Position: 1.32 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 201.78 m
Vertical Bottom of Test Interval: 286.70 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	100	64.11	64.80	65.47	66.12	66.78	67.43					0.66	1.59×10^{-9}	1.37×10^{-4}	0.008
2	150	81.04	81.92	82.79	83.64	84.47	85.30					0.85	1.42×10^{-9}	1.23×10^{-4}	0.007
3	200	95.62	96.86	98.05	99.21	100.36	101.55	102.78	103.98	105.15		1.19	1.53×10^{-9}	1.32×10^{-4}	0.008
4	150	7.68	8.45	9.24	10.03	10.82						0.79	1.31×10^{-9}	1.13×10^{-4}	0.007
5	100	10.00	10.51	11.01	11.50	11.99	12.48					0.50	1.19×10^{-9}	1.02×10^{-4}	0.006
												Average	1.41×10^{-9}	1.22×10^{-4}	0.007







Laminar
Lugeon: 0.007
Hydraulic Conductivity: 1.41E-9 m/s
Hydraulic Conductivity: 1.22E-4 m/d

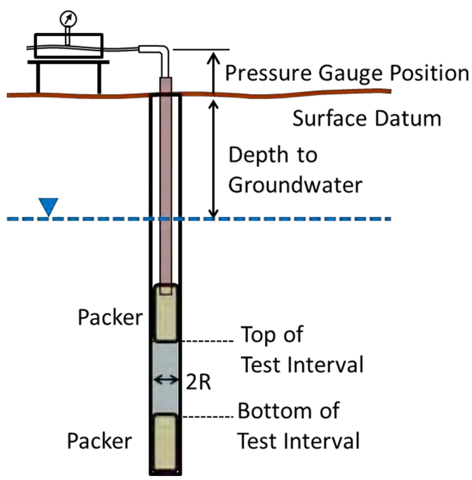
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.16 L/min system losses at 200 psi (during packer inflation); not accounted for in test flow data. Test flows within the same range as leak flows during steps. Potential for enhanced hydraulic conductivity value determined for this test interval. Pressure adjustments required during steps 1, 2, 3, and 4. Pattern of decreasing flow during steps 1, 2 and 3, then increasing flow during steps 4, and 5. Potential artesian pressures affecting step-flow response. Surface gauge pressure readings checked with transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

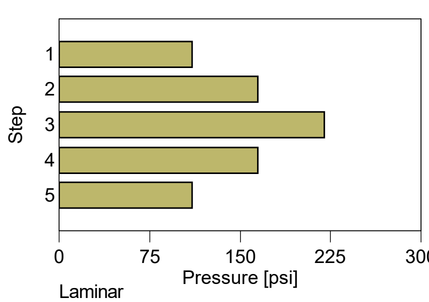
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

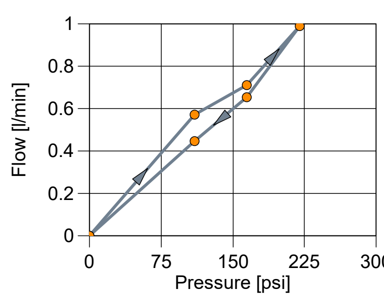
Location: Valentine Lake, NL	Lugeon Test: PT13	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/29/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

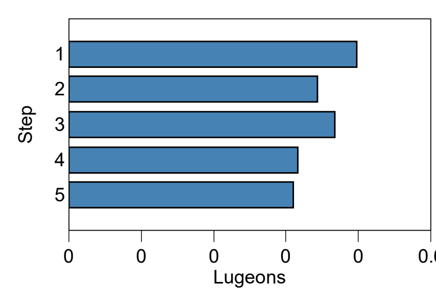


Top of Test Interval: 267.33 m
Bottom of Test Interval: 350.00 m
Length of Test Interval: 82.67 m
Gauge Position: 1.32 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 218.98 m
Vertical Bottom of Test Interval: 286.70 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	110	16.30	16.91	17.50	18.09	18.65	19.20	19.76	20.31			0.57	1.53×10^{-9}	1.33×10^{-4}	0.008
2	165	29.54	30.22	30.94	31.66	32.38						0.71	1.32×10^{-9}	1.14×10^{-4}	0.007
3	220	43.33	44.32	45.31	46.30							0.99	1.42×10^{-9}	1.22×10^{-4}	0.007
4	165	45.83	46.46	47.12	47.78	48.44						0.65	1.22×10^{-9}	1.05×10^{-4}	0.006
5	110	46.84	47.26	47.69	48.15	48.61	49.07					0.45	1.19×10^{-9}	1.03×10^{-4}	0.006
												Average	1.34×10^{-9}	1.16×10^{-4}	0.007







Laminar
Lugeon: 0.007
Hydraulic Conductivity: 1.34E-9 m/s
Hydraulic Conductivity: 1.16E-4 m/d

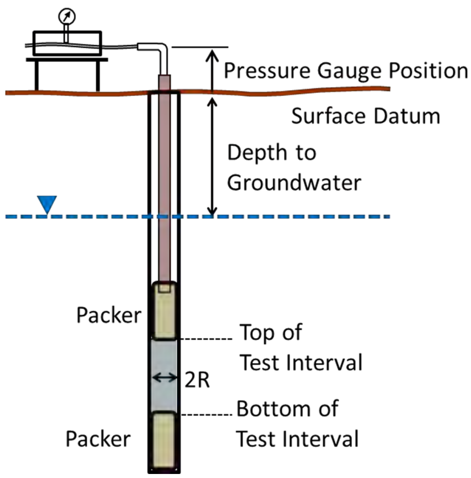
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.05 L/min system losses at 220 psi (during packer inflation); not accounted for in test flow data. Pressure adjustments required during steps 2 and 3. Surface gauge pressure readings checked with transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

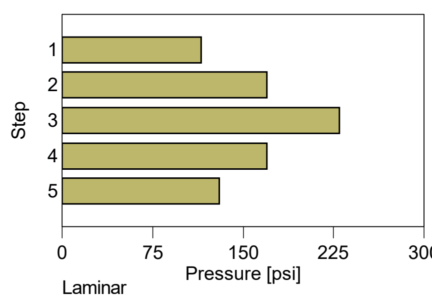
Lugeon Test Analysis Report
Project: Valentine Gold Feasibility Geotechnical Investigation
Number: 80047.03
Client: Terrane Geoscience Inc.

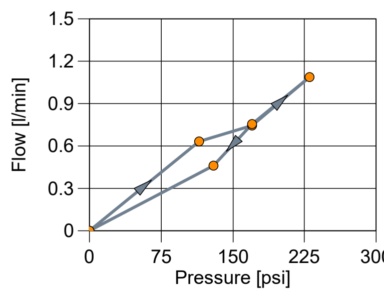
Location: Valentine Lake, NL	Lugeon Test: PT12	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/29/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

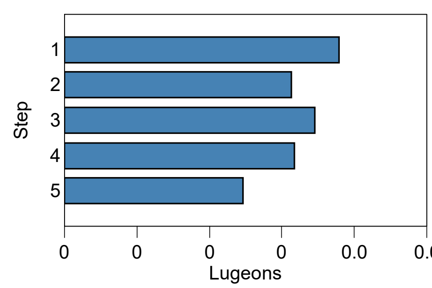


Top of Test Interval: 288.33 m
Bottom of Test Interval: 350.00 m
Length of Test Interval: 61.67 m
Gauge Position: 1.32 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 236.19 m
Vertical Bottom of Test Interval: 286.70 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	115	662.42	663.12	663.79	664.43	665.05	665.66	666.26	666.86			0.63	2.10×10^{-9}	1.82×10^{-4}	0.011
2	170	76.06	76.84	77.59	78.33	79.06	79.80	80.53				0.74	1.74×10^{-9}	1.50×10^{-4}	0.009
3	230	693.13	694.22	695.29	696.38	697.47	698.56					1.09	1.92×10^{-9}	1.66×10^{-4}	0.010
4	170	99.36	100.09	100.86	101.62	102.37	103.13	103.89				0.76	1.77×10^{-9}	1.53×10^{-4}	0.010
5	130	1.00	1.46	1.92	2.38							0.46	1.37×10^{-9}	1.18×10^{-4}	0.007
												Average	1.78×10^{-9}	1.54×10^{-4}	0.010







Laminar
Lugeon: 0.010
Hydraulic Conductivity: 1.78E-9 m/s
Hydraulic Conductivity: 1.54E-4 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Pressure adjustments required during steps 1 and 4.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

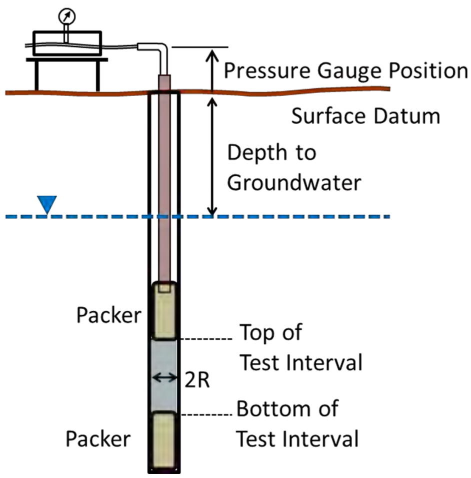
Lugeon Test Analysis Report

Project: Valentine Gold Feasibility Geotechnical Investigation

Number: 80047.03

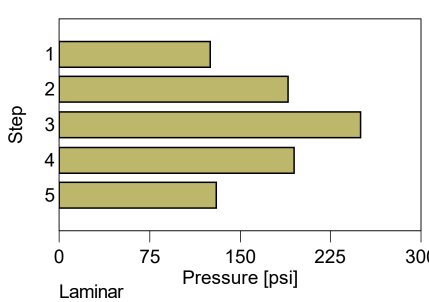
Client: Terrane Geoscience Inc.

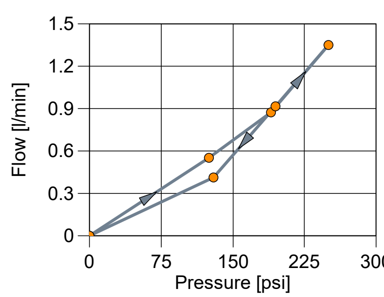
Location: Valentine Lake, NL	Lugeon Test: PT11	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/29/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

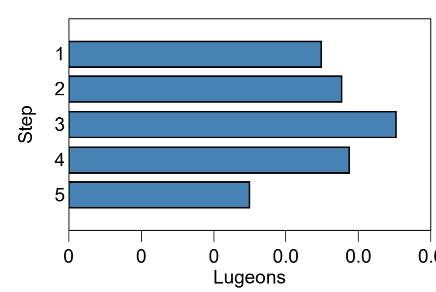


Top of Test Interval: 309.33 m
Bottom of Test Interval: 350.00 m
Length of Test Interval: 40.67 m
Gauge Position: 1.32 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 253.39 m
Vertical Bottom of Test Interval: 286.70 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	125	603.13	603.69	604.24	604.79	605.34						0.55	2.43×10^{-9}	2.10×10^{-4}	0.014
2	190	617.67	618.58	619.45	620.29	621.16						0.87	2.63×10^{-9}	2.27×10^{-4}	0.015
3	250	630.00	631.34	632.65	633.92	635.23	636.64	638.10				1.35	3.15×10^{-9}	2.72×10^{-4}	0.018
4	195	643.00	643.95	644.89	645.82	646.74	647.65	648.57	649.46	650.37	651.25	0.92	2.70×10^{-9}	2.33×10^{-4}	0.015
5	130	648.50	648.91	649.32	649.73							0.41	1.74×10^{-9}	1.51×10^{-4}	0.010
												Average	2.53×10^{-9}	2.19×10^{-4}	0.015







Laminar
Lugeon: 0.015
Hydraulic Conductivity: 2.53E-9 m/s
Hydraulic Conductivity: 2.19E-4 m/d

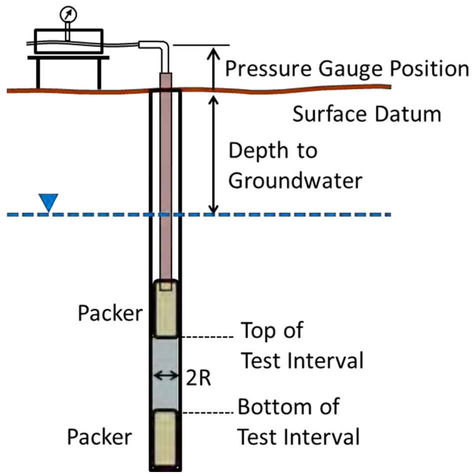
Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

No leaks were noticed during packer inflation or testing. Surface gauge pressure readings checked with transducer data.

Hydraulic conductivity value for test interval derived based on flow classification: Laminar (average for all steps).

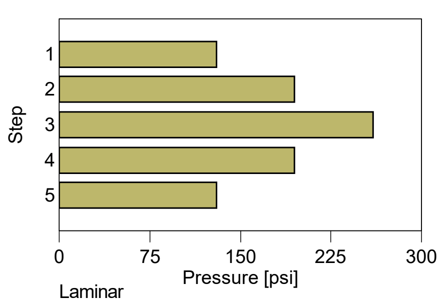
GEMTEC Consulting Engineers and Scientists	**Lugeon Test Analysis Report**
	Project: Valentine Gold Feasibility Geotechnical Investigation
	Number: 80047.03
	Client: Terrane Geoscience Inc.

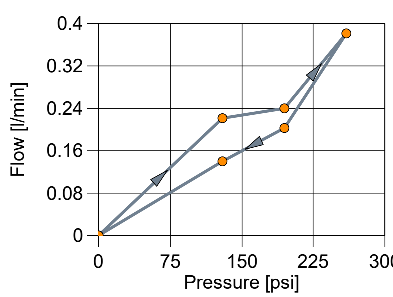
Location: Valentine Lake, NL	Lugeon Test: PT10	Tested bore: VL-GT-20-05
Test Conducted by: Terrane Geoscience Inc.		Test Date: 8/29/2020
Analysis Performed by: C. Anstey-Moore		Analysis Date: 10/26/2020
Lithology:		

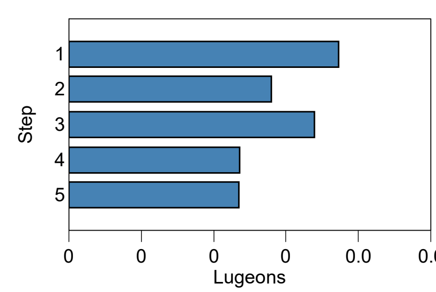


Top of Test Interval: 330.33 m
Bottom of Test Interval: 350.00 m
Length of Test Interval: 19.67 m
Gauge Position: 1.32 m
Depth to Groundwater: 10.10 m
Radius of Test Section: 0.05 m
Dip of bore: 35° from vertical
Vertical Top of Test Interval: 270.59 m
Vertical Bottom of Test Interval: 286.70 m

Step	Pressure [psi]	Flow Meter Readings [l]										Average Flow Rate [l/min]	Hydraulic Conductivity		
		1	2	3	4	5	6	7	8	9	10		[m/s]	[m/d]	Lugeon
1	130	570.70	570.96	571.21	571.45	571.63	571.83	572.03				0.22	1.74×10^{-9}	1.50×10^{-4}	0.011
2	195	572.80	573.11	573.37	573.63	573.87	574.09	574.30	574.51	574.72		0.24	1.30×10^{-9}	1.12×10^{-4}	0.008
3	260	575.40	575.71	576.01	576.89	577.15	577.42	577.69				0.38	1.58×10^{-9}	1.37×10^{-4}	0.010
4	195	577.00	577.21	577.41	577.61	577.81						0.20	1.10×10^{-9}	9.49×10^{-5}	0.007
5	130	577.50	577.64	577.78	577.92							0.14	1.10×10^{-9}	9.48×10^{-5}	0.007
												Average	1.36×10^{-9}	1.18×10^{-4}	0.009







Laminar
Lugeon: 0.009
Hydraulic Conductivity: 1.36E-9 m/s
Hydraulic Conductivity: 1.18E-4 m/d

Performed using a single packer test assembly as the borehole was advanced, with the bottom of the test interval bounded by the bottom of the drilled section of the borehole.

~0.17 L/min system losses at 260 psi (during packer inflation); not accounted for in test flow data. Test flows within the same range as leak flows during steps steps. Potential for enhanced hydraulic conductivity value determined for this test interval.

Irregular, non-linear pressure-flow profile. The arithmetic mean (average) of the hydraulic conductivity (K) values determined for all steps used to calculate the representative K value for the test interval - K = 1.36E-9 m/s.