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Thermal Conductivity Test Results
Newland Elementary School
Newland, North Carolina

Earth Energy Engineering performed a thermal conductivity test at the Newland Elementary School in Newland, North Carolina on November 10, 1999. Testing was done by Bill Nagle with a Ewbank portable test unit.

The test borehole was 275 feet in depth and 6" in diameter. A 1" inch loop was installed and the borehole was backfilled with #8 stone. Static water level was not reported. The formations encountered were primarily hard flint with 17 feet of overburden.

The thermal conductivity **(k)** values for this borehole is **1.7 btu/degree F-hr-foot**. This is an average conductivity per foot for the borehole. This value represents the rate at which the borehole and rock will transfer heat. To accurately measure the thermal conductivity of the formation a borehole should be drilled and grout with a bentonite grout to prevent any flow of water through the borehole.

All test equipment, methods, procedures, calculations, and interpretation is done in accordance with the recommendations and guidelines of the International Ground Source Heat Pump Association.

Drill Log for Newland Elementary School

Hole # 1
West end of field

27 ft PVC casing inserted and removed

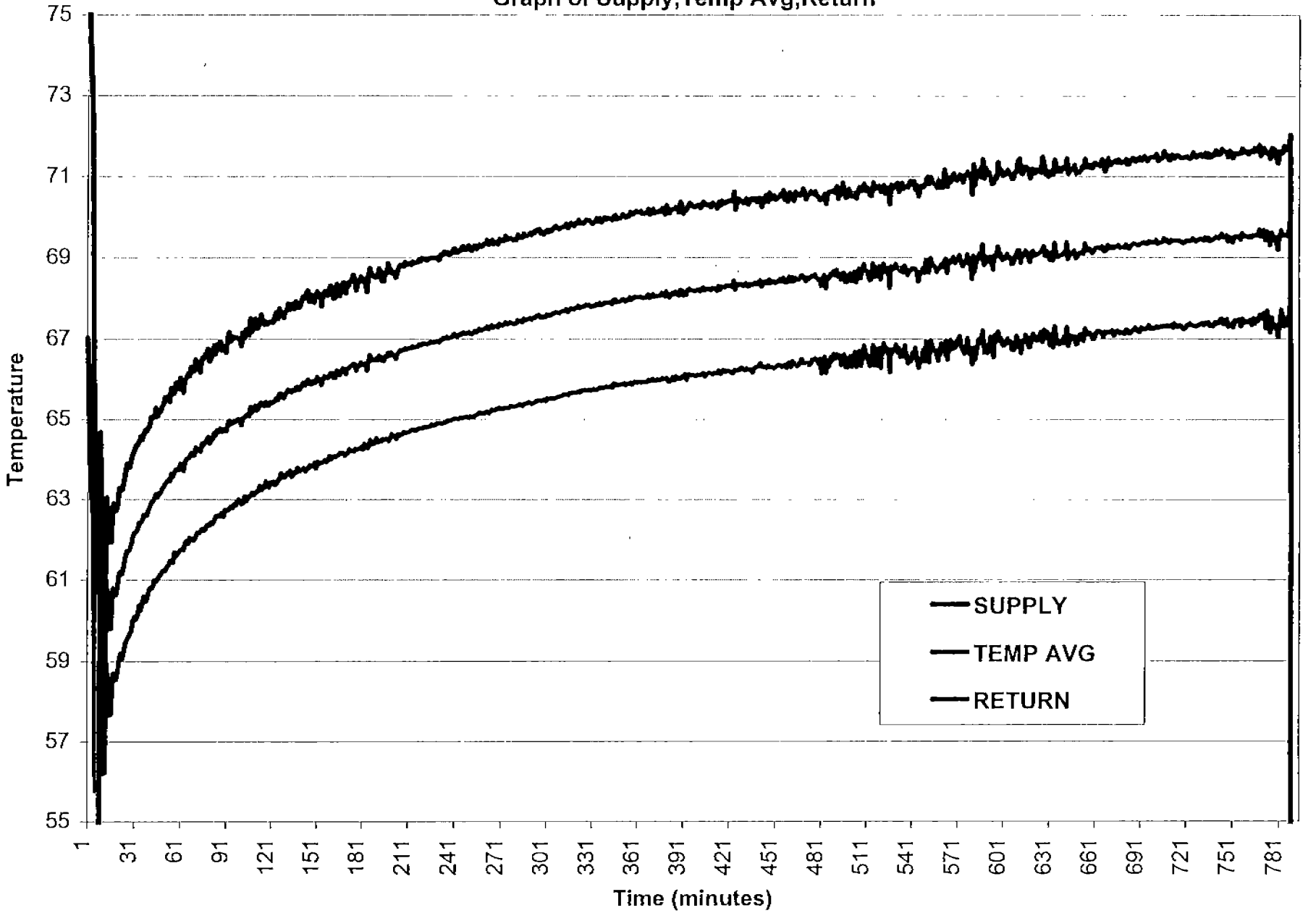
From ft	To ft	Material	GPM
0	17	Sandy clay	
17	48	Gray flinty rock soft	
48	52	Broken	40
52	285	Gray flinty rock hard (granite)	
		Total water make	40

Hole # 2
Eastern end at ball field

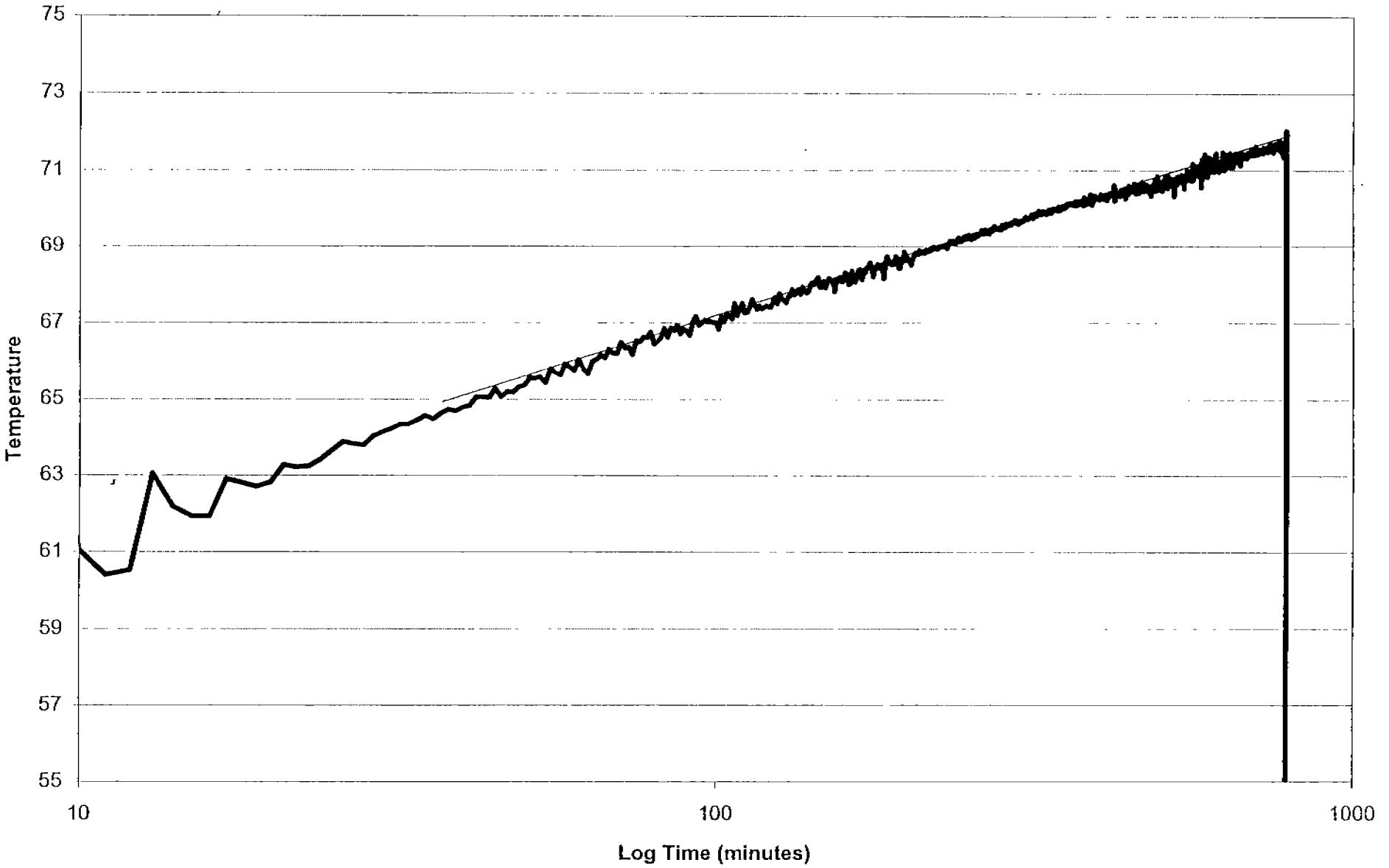
56 ft PVC casing inserted and removed

From ft	To ft	Material	GPM
0	2	Topsoil	
5	10	Rock layer	
10	28	Clay & gravel	
28	80	Sandstone	
80	81	Water	25
80	295	Gray flinty rock hard (granite)	
		Total water make	25

Newland Elementary School
Thermal Test
Graph of Supply,Temp Avg,Return



Newland Elementary School
Thermal Test
Graph of Log Time of Temp Avg



Newland Elementary School
Thermal Test
Graph of Wattage