

| VT Trans   |  | STATE OF VERMONT<br>AGENCY OF TRANSPORTATION<br>MATERIALS & RESEARCH SECTION<br>SUBSURFACE INFORMATION |      | BORING LOG                                      |                    | Boring No.: <b>B-103</b> |        |         |
|------------|--|--|------|---|--------------------|--------------------------|--------|---------|
|            |  | LUDLOW<br>BRF 025-1 (42)   |      | Page No.: 1 of 1                                |                    | Pin No.: 10J068          |        |         |
|            |  | Checked By: SMC  |      | Boring Crew: Geosearch, Inc. Fitchburg, MA, MJC |                    | Type: Casing Sampler     |        |         |
|            |  | Date Started: 1/26/12 Date Finished: 1/26/12   |      | Date  |                    | Groundwater Observations |        |         |
|            |  | VTSPG NAD83: N 326659.70 ft E 1588164.46 ft  |      | I.D.: 4 in 1.38 in                              |                    | Date Depth (ft) Notes    |        |         |
|            |  | Station: 102+82.42 Offset: 63.0 RT   |      | Hammer Wt: 300 140 lb.                          |                    | 01/26/12 10.0            |        |         |
|            |  | Ground Elevation: 992.0 ft   |      | Hammer Fall: 24 30 in.                          |                    |                          |        |         |
|            |  |  |      | Hammer/Rod Type: Auto/N                         |                    |                          |        |         |
|            |  |  |      | Rig: CME 75 C <sub>e</sub> = 1.3                |                    |                          |        |         |
| Depth (ft) | Strata (1)   | CLASSIFICATION OF MATERIALS (Description)  |      | Blow/ft (N Value)                               | Moisture Content % | Gravel %                 | Sand % | Fines % |
| 0-0.3      | Visual Class., Sandy Gravel, brn, Moist, Rec. = 0.3 ft | 21-55  | 13.8 |   |                    |                          |        |         |
| 0.3-0.5    | A-1-a, SaGr, gry, Moist, Rec. = 0.5 ft                 | 10   | 7.7  | 51.7  | 37.0               | 11.3                     |        |         |
| 0.5-0.7    | A-1-b, GrSa, brn, Moist, Rec. = 0.7 ft                 | 16-10  | 16.5 | 35.6  | 48.9               | 15.5                     |        |         |
| 0.7-0.4    | A-1-b, GrSa, brn, Moist, Rec. = 0.4 ft                 | 6-9  | 12.3 | 38.1  | 48.0               | 13.9                     |        |         |
| 10-0.8     | A-1-a, SaGr, brn, Wet, Rec. = 0.8 ft                   | 37-6   | 8.7  | 68.0  | 23.0               | 9.0                      |        |         |
| 10-1.0     | A-1-a, SaGr, brn, Wet, Rec. = 1.0 ft                   | 10   | 9.3  | 57.5  | 29.1               | 13.4                     |        |         |
| 10-14.5    | Cobble, 14.0 ft - 14.5 ft                              | 40-67  | 17.9 | 25.1  | 44.2               | 30.7                     |        |         |
| 14.5-0.9   | A-2-4, GrSiSa, brn, Wet, Rec. = 0.9 ft                 | 24-38  | 23.5 | 7.1   | 76.6               | 16.3                     |        |         |
| 0.9-1.7    | A-2-4, Sa, brn, Wet, Rec. = 1.7 ft                     | 9-13   | 20.3 | 15.3  | 68.1               | 16.6                     |        |         |
| 1.7-1.5    | A-2-4, Sa, brn, Wet, Rec. = 1.5 ft                     | 21-14  | 27.7 | 78.5  | 21.5               |                          |        |         |
| 1.5-1.8    | A-2-4, SiSa, brn, Wet, Rec. = 1.8 ft                   | 20-19  | 25.2 | 82.7  | 17.3               |                          |        |         |
| 1.8-1.6    | A-2-4, SiSa, brn, Wet, Rec. = 1.6 ft                   | 13-20  | 21.9 | 9.3   | 66.4               | 24.3                     |        |         |
| 1.6-1.4    | A-2-4, SiSa, brn, Wet, Rec. = 1.4 ft                   | 25-13  | 12.4 | 47.7  | 37.0               | 15.3                     |        |         |
| 1.4-38.0   | Cobble, 37.0 ft - 38.0 ft                              | 29-25  | 12.8 | 23.3  | 40.4               | 36.3                     |        |         |
| 38.0-1.4   | A-1-b, SaGr, brn, Wet, Rec. = 1.4 ft                   | 29-26  | 11.2 | 23.1  | 36.6               | 40.3                     |        |         |
| 1.4-1.7    | A-4, GrSiSa, gry, Wet, Rec. = 1.7 ft                   | 21-14  |      |   |                    |                          |        |         |
| 1.7-0.9    | A-4, GrSiSa, gry, Wet, Rec. = 0.9 ft                   | 25-33  |      |   |                    |                          |        |         |
| 0.9-50.2   | Hole stopped @ 50.2 ft                                 | 29-31  |      |   |                    |                          |        |         |
| 50.2-50.2  | Hole stopped @ 50.2 ft                                 | 27-73  |      |   |                    |                          |        |         |

Notes:

1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C<sub>e</sub> is the hammer energy correction factor. C<sub>e</sub> is an estimated value.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

| VT Trans   |   | STATE OF VERMONT<br>AGENCY OF TRANSPORTATION<br>MATERIALS & RESEARCH SECTION<br>SUBSURFACE INFORMATION |      | BORING LOG                                      |                    | Boring No.: <b>B-104</b> |        |         |
|------------|---|--|------|---|--------------------|--------------------------|--------|---------|
|            |   | LUDLOW<br>BRF 025-1 (42)   |      | Page No.: 1 of 1                                |                    | Pin No.: 10J068          |        |         |
|            |   | Checked By: SMC  |      | Boring Crew: Geosearch, Inc. Fitchburg, MA, MJC |                    | Type: Casing Sampler     |        |         |
|            |   | Date Started: 1/30/12 Date Finished: 1/30/12   |      | Date  |                    | Groundwater Observations |        |         |
|            |   | VTSPG NAD83: N 326788.52 ft E 1588166.51 ft  |      | I.D.: 4 in 1.38 in                              |                    | Date Depth (ft) Notes    |        |         |
|            |   | Station: 103+40.22 Offset: 51.3 LT   |      | Hammer Wt: 300 140 lb.                          |                    | 01/30/12 7.0             |        |         |
|            |   | Ground Elevation: 998.0 ft   |      | Hammer Fall: 24 30 in.                          |                    |                          |        |         |
|            |   |  |      | Hammer/Rod Type: Auto/N                         |                    |                          |        |         |
|            |   |  |      | Rig: CME 75 C <sub>e</sub> = 1.3                |                    |                          |        |         |
| Depth (ft) | Strata (1)  | CLASSIFICATION OF MATERIALS (Description)  |      | Blow/ft (N Value)                               | Moisture Content % | Gravel %                 | Sand % | Fines % |
| 0-0.7      | Asphalt, 0.0 ft - 0.7 ft  | 39-58  | 9.4  | 48.9  | 35.2               | 15.9                     |        |         |
| 0.7-1.8    | A-1-b, SaGr, brn, Moist, Rec. = 1.8 ft                            | 39-23  | 7.4  | 38.8  | 45.1               | 16.1                     |        |         |
| 1.8-1.2    | A-1-b, GrSa, brn, Moist, Rec. = 1.2 ft                            | 12-10  | 21.1 | 31.7  | 47.2               | 21.1                     |        |         |
| 1.2-0.3    | Visual Class., sandy gravel, red-brn, Moist, Rec. = 0.3 ft        | 4-7  | 14.7 |   |                    |                          |        |         |
| 0.3-0.9    | Cobble, 6.0 ft - 7.0 ft   | 20   | 19.7 | 42.6  | 22.7               | 34.7                     |        |         |
| 0.9-0.9    | A-2-4, SiGrSa, brn, Wet, Rec. = 0.9 ft                            | 50+  | 26.5 | 3.3   | 51.6               | 45.1                     |        |         |
| 10-0.4     | Visual Class., stone with silty sand, brn, Wet, Rec. = 0.4 ft     | 8-10   | 24.2 | 6.0   | 48.2               | 45.8                     |        |         |
| 0.4-14.0   | Gravel lodged in tip of sampler, Rec. = 0.1 ft, 12.0 ft - 14.0 ft | 4  | 25.7 | 6.8   | 62.6               | 30.6                     |        |         |
| 14.0-0.3   | Visual Class., silty sandy gravel, yel-brn, Wet, Rec. = 0.3 ft    | 6-7-5  | 21.4 | 7.1   | 66.5               | 26.4                     |        |         |
| 0.3-1.0    | A-2-4, SaSiGr, gry-brn, Wet, Rec. = 1.0 ft                        | 12   | 24.5 | 4.9   | 70.5               | 24.6                     |        |         |
| 1.0-1.7    | A-4, SiSa, brn, Wet, Rec. = 1.7 ft                                | 19-15  | 15.8 | 15.1  | 37.9               | 47.0                     |        |         |
| 1.7-1.9    | A-4, SiSa, brn, Wet, Rec. = 1.9 ft                                | 18-17  | 12.8 | 26.0  | 45.4               | 28.6                     |        |         |
| 1.9-1.5    | A-2-4, SiSa, brn, Wet, Rec. = 1.5 ft                              | 20-15  |      |   |                    |                          |        |         |
| 1.5-1.4    | A-2-4, SiSa, brn, Wet, Rec. = 1.4 ft                              | 15-19  |      |   |                    |                          |        |         |
| 1.4-1.3    | A-2-4, SiSa, brn, Wet, Rec. = 1.3 ft                              | 20-25  |      |   |                    |                          |        |         |
| 1.3-1.8    | A-4, SaSi, gry, Wet, Rec. = 1.8 ft                                | 36-36  |      |   |                    |                          |        |         |
| 1.8-43.0   | Cobble, 42.0 ft - 43.0 ft   | 40-36  |      |   |                    |                          |        |         |
| 43.0-1.3   | A-2-4, GrSiSa, gry, Wet, Rec. = 1.3 ft                            | 76   |      |   |                    |                          |        |         |
| 1.3-0.0    | Rec. = 0.0 ft, 49.0 ft - 49.0 ft                                  | 49-38  |      |   |                    |                          |        |         |
| 0.0-49.0   | Hole stopped @ 49.0 ft  | 42-61  |      |   |                    |                          |        |         |
| 49.0-50.0  |   | 80   |      |   |                    |                          |        |         |

Notes:

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|------------|---|--|------|---|---------------------|--------------------------|--------------------|----------|--------|---------|
|            |   | LUDLOW<br>BRF 025-1 (42)   |      | Page No.: 1 of 2                                |                     | Pin No.: 10J068          |                    |          |        |         |
|            |   | Checked By: SMC  |      | Boring Crew: Geosearch, Inc. Fitchburg, MA, MJC |                     | Type: Casing Sampler     |                    |          |        |         |
|            |   | Date Started: 1/20/12 Date Finished: 1/24/12   |      | Date  |                     | Groundwater Observations |                    |          |        |         |
|            |   | VTSPG NAD83: N 326766.01 ft E 1588208.60 ft  |      | I.D.: 4 in 1.38 in                              |                     | Date Depth (ft) Notes    |                    |          |        |         |
|            |   | Station: 103+72.35 Offset: 8.5 LT  |      | Hammer Wt: 300 140 lb.                          |                     | 01/23/12 10.0            |                    |          |        |         |
|            |   | Ground Elevation: 997.0 ft   |      | Hammer Fall: 24 30 in.                          |                     |                          |                    |          |        |         |
|            |   |  |      | Hammer/Rod Type: Auto/N                         |                     |                          |                    |          |        |         |
|            |   |  |      | Rig: CME 75 C <sub>e</sub> = 1.3                |                     |                          |                    |          |        |         |
| Depth (ft) | Strata (1)  | CLASSIFICATION OF MATERIALS (Description)  |      | Run (Cip. deg.)                                 | Core Rec. % (RCD %) | Blow/ft (N Value)        | Moisture Content % | Gravel % | Sand % | Fines % |
| 0-0.7      | Asphalt, 0.0 ft - 0.7 ft                                      | 25/2   |      |   |                     |                          |                    |          |        |         |
| 0.7-0.2    | Visual Class., Gravel with asphalt, gry, Moist, Rec. = 0.2 ft | 4-4-6  | 5.0  | 41.5  | 46.4                | 12.1                     |                    |          |        |         |
| 0.2-1.1    | A-1-b, GrSa with asphalt, brn, Moist, Rec. = 1.1 ft           | 10   | 2.7  | 0.6   | 91.5                | 7.9                      |                    |          |        |         |
| 1.1-1.3    | A-3, Sa, brn, Moist, Rec. = 1.3 ft                            | 4-4-5  | 3.1  | 2.7   | 88.8                | 8.5                      |                    |          |        |         |
| 1.3-1.5    | A-3, Sa, brn, Moist, Rec. = 1.5 ft                            | 9  | 14.6 | 6.9   | 75.3                | 17.8                     |                    |          |        |         |
| 1.5-0.8    | A-2-4, Sa, brn, MTW, Rec. = 0.8 ft                            | 4  | 22.6 | 0.1   | 88.0                | 11.9                     |                    |          |        |         |
| 0.8-13.5   | Cobbles, 11.0 ft - 13.5 ft                                    | 24-70/5  | 23.2 | 0.1   | 86.4                | 13.5                     |                    |          |        |         |
| 13.5-1.2   | A-2-4, Sa, brn, Wet, Rec. = 1.2 ft                            | 70+  | 31.7 |   |                     |                          |                    |          |        |         |
| 1.2-1.3    | A-2-4, Sa, brn, Wet, Rec. = 1.3 ft                            | 7  | 28.3 | 3.4   | 11.9                | 84.7                     |                    |          |        |         |
| 1.3-1.3    | A-4, Si, brn, Wet, Rec. = 1.3 ft                              | 10-9   | 22.6 |   |                     |                          |                    |          |        |         |
| 1.3-1.5    | A-4, Si, brn, Wet, Rec. = 1.5 ft                              | 10-10  | 28.3 | 3.4   | 11.9                | 84.7                     |                    |          |        |         |
| 1.5-1.6    | A-2-4, Sa, brn, Moist, Rec. = 1.6 ft                          | 15-15  | 22.6 |   |                     |                          |                    |          |        |         |
| 1.6-1.6    | A-2-4, Sa, brn, Moist, Rec. = 1.6 ft                          | 15-16  | 86.2 |   |                     |                          |                    |          |        |         |
| 1.6-13.8   | Cobbles and boulders, 28.0 ft - 33.0 ft                       | 19-16  |      |   |                     |                          |                    |          |        |         |
| 13.8-1.5   | A-4, SiSa, brn, Wet, Rec. = 1.5 ft                            | 38   | 60.8 |   |                     |                          |                    |          |        |         |
| 1.5-1.5    | A-4, SiSa, brn, Wet, Rec. = 1.5 ft                            | 16-18  | 14.0 | 24.8  | 47.8                | 27.4                     |                    |          |        |         |
| 1.5-1.4    | A-2-4, GrSiSa, gry-brn, Wet, Rec. = 1.4 ft                    | 19-22  | 13.0 | 28.4  | 38.6                | 33.0                     |                    |          |        |         |
| 1.4-1.7    | A-2-4, GrSiSa, gry, Wet, Rec. = 1.7 ft                        | 37   |      |   |                     |                          |                    |          |        |         |
| 1.7-49.0   | Cobbles, 47.0 ft - 49.0 ft                                    | 40-23  |      |   |                     |                          |                    |          |        |         |
| 49.0-52.0  | Rec. = 0.0 ft, 49.0 ft - 49.0 ft                              | 20-27  |      |   |                     |                          |                    |          |        |         |
| 52.0-52.0  | Cobbles, 49.1 ft - 52.0 ft                                    | 43   |      |   |                     |                          |                    |          |        |         |
| 52.0-50.0  |   | 72   |      |   |                     |                          |                    |          |        |         |

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EST. PILE PENETRATION

ABUT. NO. 2  
BOTTOM OF  
PILE CAP  
EL. 986.5

PROJECT NAME: LUDLOW  
PROJECT NUMBER: BRF 025-1(42)  
FILE NAME: z10J068borlogs.dgn  
PROJECT LEADER: A.P. GUYETTE  
DESIGNED BY: VTRANS  
BORING LOGS (2 OF 3)  
PLOT DATE: 8/23/2016  
DRAWN BY: E.F. LAWES  
CHECKED BY: A.P. GUYETTE  
SHEET 33 OF 73

