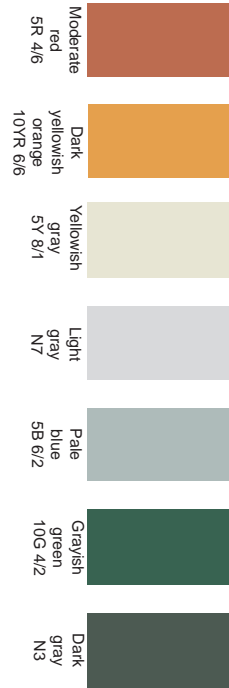
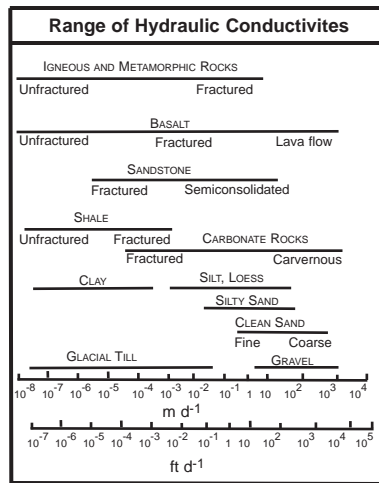
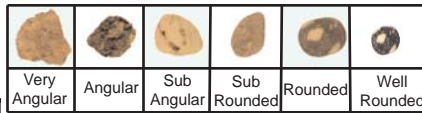


Classification of Granular Materials and Approximate Slot Size for Naturally Developed Wells					
Name	Millimeters	Inches	Sieve Size	Slot Size (inches)	Slot Size (mm)
Boulders	>300	>11.8	>12"	>0.100	>2.5
Cobbles	300 - 75	11.8 - 2.9	12" - 3"	>0.100	>2.5
Gravel - coarse	75 - 19	2.90 - .075	3" - 3/4"	>0.100	>2.5
Gravel - fine	19 - 4.8	.075 - 0.19	3/4" - 4	>0.100	>2.5
Sand - coarse	4.8 - 2.0	0.19 - 0.08	4 - 10	0.100	2.5
Sand - coarse to med	3.3 - 1.8	0.13 - 0.07	6 - 12	0.090	2.3
Sand - medium	2.2 - 1.3	0.09 - 0.05	8 - 16	0.070	1.8
Sand - medium	1.8 - 1.0	0.07 - 0.04	12 - 20	0.050	1.3
Sand - medium	1.3 - 0.5	0.05 - 0.02	16 - 30	0.030	0.8
Sand - fine	0.5 - 0.2	0.02 - 0.008	30 - 70	0.015	0.4
Sand - fine	0.2 - 0.08	0.008 - 0.003	30 - 200	0.007	0.2
Slits and Clays	<0.08	<0.003	<200	NA	NA

Grain size classification is based on USCS and slot selection is based on well construction using natural development and average grain sizes.

Screen Slot Gauge	
in/mm	in/mm
0.100	0.100
0.080	2.03
0.060	1.52
0.050	1.27
0.040	1.00
0.030	0.76
0.020	0.51
0.010	0.25

Sand / Slot Size Gauge						
Gauge	Name	Natural Development Slot		Filter Pack	Filter Pack Slot	
		Inches	mm	sieve	Inches	mm
	Gravel	0.125	3.2	3/8" - 3/4"	0.250	6.4
	Sand - Coarse	0.100	2.5	4 - 3/8"	0.160	4
		0.080	2	3 - 6	.0120	3.0
	Sand - Medium	0.060	1.5	4 - 8	0.090	2.3
		0.040	1	6 - 12	0.070	1.8
	Sand - Fine	0.020	0.5	10 - 20	0.040	1.0
		0.007	0.2	20 - 40	0.018	0.45



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Field Guide for Logging Water-Well Boreholes

Thomas M. Hanna, 2004

Descriptor	Log Entry	Field Test / Definition
Aquifer / Formation Name	Aquifer / Formation Name	Published name of aquifer / formation
Aquifer / Formation Category	Unconsolidated	Alluvial / unconsolidated materials (e.g., glacial, fluvial, soils, etc.)
	Bedrock	Bedrock / consolidated materials
Alluvial / Unconsolidated Type	Clay	Can be rolled into a rope ¼-in diameter
	Silt	Can not be rolled into a rope
	Sand with Clay / Silt	20% of formation is clay/silt
	Sand, fine-med	Fine (<0.5mm-2mm)
	Sand, med-coarse	Medium - Coarse (2.2-5mm)
	Sand and Gravel	20% or more of formation is sand
	Gravel	Fine (5-19mm), Coarse (19-75mm)
Bedrock Type / Unconsolidated	Siltstone/Shale	Consolidated Formations/Bedrock
	Sandstone	
	Limestone	
	Conglomerate	
	Coal	
	Granite	
	Volcanic	
	Basalt	
	Other	
Hardness	Very hard	Difficult to break with hammer
	Hard	Easy to break with Hammer / >30 blows/ft
	Dense / Stiff	Can break in hand / 10-30 blows/ft
	Loose	Unconsolidated / < 10 blows/ft
Color	Moderate Red	Color of washed samples
	Dark Yellowish Orange	
	Yellowish Gray (Tan)	
	Very Light Grey	
	Pale Blue	
	Greyish Green	
Water Content	Dry	Moisture absent
	Moist	Damp no visible water
	Wet	Visible water
	High Production	Fracture or zone of significant production
	Lost Circulation	Significant loss of drilling fluids
Other	Other Information	Any comments on drilling conditions or hydrogeology

Logging Procedure

- 1 Depth interval on log for the sample description.
- 2 Formation or aquifer name.
- 3 Alluvial/unconsolidated formation or bedrock formation.
- 4 Alluvial or bedrock type. If rock type is not present, select other type.
- 5 Rock hardness based on description. Typically unconsolidated alluvial formations are loose.
- 6 Color of washed samples.
- 7 Information for moisture content, fractures and water bearing zones.
- 8 Any other comments.

Example of Water-Well Borehole Log

Depth (from/ to in ft)	Formation /Aquifer	Bedrock / Unconsolidated	Type	Hardness	Color	Water Content	Other
0 - 20		Unconsolidated	Sand with Clay/Silt	Loose	Light Grey	Dry	Poorly sorted
20 - 40	Denver	Bedrock	Sandstone	Dense/Stiff	Yellowish Orange	Wet	Carbonate cement

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