

County	Lake	Field	Lease	Thomas Creek	Well No.	I
No.	From	To	Rec.	Description	Show	
1	4179	4186	7 ft. 5"	- greenish-brown tuffaceous sandstone with crystals of tabular, clear feldspar up to 5 mm in length, and fairly well-sorted, fine to medium sand size, volcanic fragments, angular to sub-rounded. Massive. Largest grains $\frac{1}{4}$ " in length.	N.S.	
			6'7"	Well-indurated, massive, fine-grained, gray-green trachytic andesite. 90% matrix and 10% crystals. Crystals include euhedral and broken fragments of hornblende and plagioclase. High angle to vertical fractures. Fractures and initial vugs filled with calcite. One foot of highly-brecciated interval cemented with calcite from 181-82.	N.S.	
2	6248	6263	15 ft. 13'	- Dark reddish-brown volcanic mudstone and siltstone. There are zone 2" to 5" thick of angular to subangular fragments of green siliceous tuff up to $\frac{3}{4}$ " in length. Hornblende and probably olivine can be recognized in the green siliceous tuff fragments. Fractures range from 30° to vertical and are slickensided and/or filled with calcite up to $\frac{1}{8}$ " in thickness. Fair dip of 5°.	N.S.	
			1'9"	dark gray volcanic siltstone. Zone is highly fractured and all fractures are filled with calcite up to $\frac{3}{8}$ " in thickness. Fractures in the upper 3" and lower 6" are coated with dark red-brown clay.	N.S.	
			3"	dark reddish-brown volcanic siltstone as top 13'	N.S.	
3	7058	7094	3 ft. 3'	- dark gray-green and black siliceous tuff breccia with multi-colored angular and sub-angular volcanic fragments. Fragments include siliceous tuffaceous sediments and pyroclastics and fine-grained flows. There are local thin veinlets of quartz up to $\frac{1}{8}$ " in thickness. There are five loose cobbles of highly siliceous light-green tuff or dacite. Massive.	N.S.	

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Core Record

County	Lake	Field	Lease	Thomas Creek	Well No.	I
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4	7652	7677	5 ft. 5'	- dark greenish-gray to black indurated tuff with predominantly light green and black, angular to sub-angular fragments. There are a few rounded rock fragments, light green with black crystals (hornblende andesite?), up to 2' in length. Thin veinlets of calcite, up to $\frac{1}{4}$ " thick, cut the core horizontally to vertically. Massive.	N.S.	
5	8637	8652	5 ft. 5'	- volcanic conglomerate, predominantly gray-green in color. Angular to rounded clasts range from silt size to $\frac{1}{2}$ " in diameter. The entire rock is relatively fresh; clasts show little alteration. Fresh crystals of olivine, 1 to 3 mm in length, are found in many clasts as well as throughout the matrix. Clasts include olivine basalt, andesite, flattened drab mudstone ($\frac{1}{4}$ - $\frac{3}{4}$ "), and assorted green and red fine-grained volcanics. Clasts over $\frac{1}{4}$ " make up about 25-30% of total core. There is one prominent red silicified patch about 1' from the core top. There are 3 calcite-filled fractures ranging from 30° to 75°. Core is very well-indurated and tight. Flattened pebbles and one mudstone parting suggest flat dip.	N.S.	
6	9757	9772	7 ft. 7'	- volcanic conglomerate, predominantly gray-green in color, with streaks of dark red-brown tuff breccia matrix. Angular to sub-rounded clasts range from silt-size to $\frac{7}{8}$ " plus in diameter. Clasts are predominantly of porphyritic andesite and dacite (?) with phenocrysts of milk-white plagioclase and green hornblende and pyroxene. Colors of the clasts include light and dark gray, light and dark green, light and dark red, brown, and black. Clasts over $\frac{1}{2}$ " make up 60% of the core. One high angle fracture (60°) cuts the core five feet from the top and is coated with a thick layer of calcite. Core is very well-indurated and tight. Massive.	N.S.	

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7	10,345	10,363	5 ft. 5'	- volcanic conglomerate, predominantly gray-green in color. The matrix is of fine to medium grained tuffaceous sandstone. Included in the matrix are angular to sub-rounded milk-white plagioclase crystals, fragments of red, green and gray volcanic rocks, light green pyroxene, and olivine. Clasts range to 4" in diameter and are predominantly of porphyritic andesite and dacite (?). Colors of the clasts include light and dark gray, green, brown, and red. Clasts over 1" make up about 15% of the core. There are a few minor calcite veinlets up to $\frac{1}{8}$ " in thickness locally through the core. Core is very well-indurated and tight. Massive.	N.S.	
8	10,840	10,856	12 ft. $4\frac{1}{2}$ '	-black, light purple-gray, light gray, green, and red volcanic stone with clasts of altered fine-grained volcanic rocks. Clasts average approximately $\frac{1}{8}$ " in diameter and range from silt-size to $\frac{1}{2}$ " in diameter. The clasts, which make up about 15% of the interval, are altered. Clasts become increasingly larger toward the base. Fracture is hackley to conchoidal. The mudstone is cut by very thin local calcite veinlets. There is a trace of lignite in the black mudstone. Horizontal shaly parting.	N.S.	
			$7\frac{1}{2}$ '	dark greenish-gray volcanic conglomerate. The matrix is of fine-grained gray mudstone grading downward into a fine to medium grained green volcanic sandstone. Clasts range from silt-size to 4" plus in diameter and make up about 60 to 70% of the interval. Clasts include black aphanitic and amygdaloidal basalt, and gray, red, and green andesite pebbles. Clasts range from sub-angular to rounded. There are a few very thin local calcite veinlets. Hard and tight. Massive.	N.S.	
9	11,111	11,126	10 ft. $\frac{1}{2}$ '	-cobble of dense black basalt with green, red, and white siliceous material filling some minute vesicles.	N.S.	
			4'	dark red volcanic siltstone and mudstone with clasts of volcanic rock from silt-size to 3" in diameter. Average size of the clasts less than $\frac{1}{8}$ " and the matrix makes	N.S.	

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9 Cont.				up over 90% of the interval. One 3" clast only and is volcanic sandstone made of sub-angular to rounded, red, green, and gray volcanic grains. The interval is cut by numerous very thin calcite veinlets. Massive.	N.S.	
			1'6"	dark reddish purple volcanic mudstone very crumbly. Cut by numerous very thin calcite veinlets. Slickensided (possible chlorite) on many irregular parting surfaces.	N.S.	
			4'	gray-green indurated tuff breccia. Matrix of light green tuff. Clasts range from silt-size to 4" plus and are predominantly dark green. There are some red, gray, and purple clasts. Clasts are angular to sub-rounded and are predominantly andesite. Altered greenish-black amphibole crystals, up to $\frac{1}{3}$ " in width, are found throughout the entire interval. Interval is cut by many thin calcite veinlets. Massive. Hard and tight.	N.S.	
10	11,366	11,380	5 ft. 5'	- dk. greenish-gray, aphanitic, hard, basalt with a 3 inch piece of fault breccia is composed of about 90% angular to sub-rounded pieces of milk white feldspar and clear quartz. 10% of this piece is made up of dark gray silty to clay-like volcanic matrix and small rounded volcanic pebbles up to $\frac{1}{16}$ " in diameter. The basalt is transected in many directions by calcite veinlets up to $\frac{1}{8}$ " in thickness. Calcite has filled many of the vesicles. Pyrite is disseminated throughout the basalt. No other minerals can be recognized.	N.S.	
11	11,801	11,811	NR	17 pieces - andesite. Pieces range from 1" to $3\frac{1}{2}$ " in length and were wedged in the bottom of the catcher. The andesite is dk. gray-green, massive, and siliceous (altered?). No minerals can be recognized. Under the microscope, the rock is basically medium green in color with dark green inclusions. The inclusions might have been hornblende or some other mafics, now altered. There are a few small masses of the original mineral (?) in the center of some of the dark green inclusions. Very hard and tight.	N.S.	

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12	11,879	11,887	4 ft. 4'	- andesite or basalt. The color dry is medium gray. The color wet is gray-green in the top two feet grading downward to dark gray and tan-gray in the bottom 6". Large crystals of pyroxene and amphibole, up to $\frac{3}{8}$ " in length, are common in the upper 2 feet. In the lower 2 feet, large crystals $\frac{1}{2}$ to $\frac{1}{4}$ " in length, are rare. The average size of the mafics throughout the core is approximately $\frac{1}{16}$ " in length. Many of the mafics have been altered to chlorite. High angle fractures (greater than 60°) have cut through all the large pieces of the core and the fracture surfaces are coated with emerald green chlorite, in part slickensided, and minor calcite. Chlorite has filled many of the vesicles or depressions left by alteration of the mafics. The bottom 4" piece has been cut by five very thin calcite veinlets. Massive, hard and tight.	N.S.	