



SAMPLE RECORD

SCANNED

Edwin W. Pauley
Sandoval #3
SE $\frac{1}{4}$ Sec. 4, T. 34S, R. 62W

<u>From To</u>	<u>Sand</u> %	<u>Shale</u> %	<u>Limestone</u> %	<u>Description</u>
0-30				No Sample recovered.
30-40	0	0	0	Black Basalt. Traces black shale and gray and brown sandstone.
40-50	0	20	0	Black shale, 80% black basalt Traces brown coarse sandstone.
50-60	0	100	0	Black slightly micaceous shale Traces brown, fine argillaceous sandstone.
60-70	0	100	0	Black shale as above.
70-80	0	100	0	As above.
80-90	0	100	0	As above.
90-100	0	100	0	As above.
100-110	0	100	0	As above.
110-120	0	100	0	As above. Traces light gray bentonitic shale.
120-130	0	100	0	As above.
130-140	0	100	0	As above.
140-150	0	90	0	As above. 10% light gray bentonite.
150-160	0	100	0	As above.
160-170	0	100	0	As above.
170-180	0	90	0	As above 10% light gray bentonite.
180-190	0	90	0	As above. 10% light gray bentonite. Traces pyrite.
190-200	0	90	0	As above. 10% light gray bentonite.
200-210	0	90	0	Black slightly micaceous shale. 10% light gray bentonite.
210-220	0	100	0	Black and dark gray shale, slightly bentonitic.
220-230	0	100	0	Black and dark gray shale, slightly micaceous and bentonitic.
230-240	0	100	0	As above.
240-250	0	100	0	As above.
250-260	0	100	0	As above.
260-270	0	100	0	As above.
270-280	0	100	0	Black and dark gray shale, traces of bentonite.
280-290	0	100	0	Black and dark gray shale, traces of bentonite and carbonaceous material.
290-300	0	100	0	As above.
300-310	0	100	0	As above.
310-320	0	100	0	As above

Sample Record Sandoval #3 (Continued)

<u>From To</u>	<u>Sand</u> %	<u>Shale</u> %	<u>Limestone</u> %	<u>Description</u>
320-330	0	100	0	Black and gray bentonitic shale, traces of coal.
330-340	0	100	0	Black bentonitic shale, traces of coal.
340-350	0	100	0	As above.
350-360	0	100	0	As above.
360-370	0	100	0	As above.
370-380	0	100	0	As above.
380-390	0	100	0	As above.
390-400	0	100	0	As above.
400-410	-	100	0	Black bentonitic shale.
410-420	0	100	0	Black bentonitic shale.
420-430	0	100	0	As above.
430-440	0	100	0	Dark gray to black pyritic shale.
440-450	0	100	0	Black shale.
450-460	0	100	0	As above. Traces gray siltstone.
460-490	0	100	0	45 minute circulating sample. Black shale, traces of fine gray siltstone.
490-500	0	100	0	Black slightly silty shale.
500-510	0	100	0	Black shale.
510-520	0	100	0	As above.
520-530	0	100	0	As above.
530-540	0	100	0	As above.
540-550	0	100	0	As above. Slightly silty.
550-560	0	100	0	As above.
570-580	0	100	0	As above.
580-590	0	100	0	As above.
590-600	0	100	0	As above.
600-610	0	100	0	As above.
610-620	0	100	0	As above.
620-630	0	100	0	As above.
630-640	0	100	0	As above.
640-650	0	100	0	As above.
650-660	0	100	0	As above.
660-670	0	100	0	Black shale. Slightly silty.
670-680	0	100	0	Black shale.
680-690	0	100	0	As above.
690-700	0	100	0	As above.
700-710	0	100	0	As above.
710-720	0	100	0	As above.
720-730	0	100	0	As above.
730-740	0	100	0	As above.
740-750	0	100	0	As above.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
		%	%	%	
750-760		0	100	0	Black shale.
760-770		0	100	0	Dark gray and black shale.
770-780		0	100	0	As above.
780-790		0	100	0	As above.
790-810		0	100	0	As above.
810-820		0	100	0	As above.
820-830		0	100	0	Dark gray and black shale, trace of silty shale.
830-840		0	100	0	Black shale.
840-850		0	100	0	As above. Trace of coal.
860-870		0	100	0	Black shale.
870-880		0	100	0	As above.
880-890		0	100	0	As above.
890-900		0	100	0	Black shale.
900-910		0	100	0	Dark gray and black shale, trace pyrite.
910-920		0	100	0	As above.
920-930		0	100	0	Black shale.
930-940		0	100	0	As above.
940-950		0	100	0	As above.
950-960		0	100	0	Gray to black shale.
960-970		0	100	0	Gray to black shale, traces of pyrite and calcite.
970-980		0	100	0	Gray to black calcareous shale, traces pyrite and calcite.
980-990		0	100	0	Black calcareous shale, pyritic.
990-1000		0	100	0	Black calcareous shale, pyritic.
1000-1010		0	100	0	Black calcareous shale, calcitic.
1010-1020		0	100	0	Black calcareous shale.
1020-1030		10	90	0	Black calcareous shale, fine to very fine, silty argillaceous sandstone.
1030-1040		30	70	0	As above.
1040-1050		80	20	0	Gray and dark gray sandstone and black shale.
1050-1060		90	10	0	Gray to dark gray, very fine to medium, silty, shaley, slightly calcareous sandstone.
1060-1070		70	30	0	As above.
1070-1080		40	60	0	As above.
1080-1090		30	70	0	Gray to dark gray, very fine to medium, silty, shaley, slightly calcareous sandstone.
1090-1100		60	40	0	As above.
1100-1110		30	70	0	As above.
1110-1120		30	70	0	As above. Traces pyrite.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
		%	%	%	
1120-1130		50	50	0	Gray to dark gray, very fine to medium, silty, shaley, slightly calcareous sandstone.
1130-1140		50	50	0	As above
1140-1150		30	70	0	Dark gray to black silty shale. Medium to dark gray, very fine sandstone and siltstone.
1150-1160		70	30	0	Dark gray to black silty shale, light to medium gray, very fine sandstone and siltstone.
1160-1170		50	50	0	Black silty shale, and shaley siltstone. Light gray to black calcareous sandstone.
1170-1180		30	70	0	Black silty shale, laminated with light to dark gray, very fine sandstone.
1180-1190		20	80	0	As above.
1190-1200		10	90	0	Gray and black calcareous shale, laminated with medium to fine, micaceous sandstone.
1200-1210		30	70	0	Black shale, stratified with fine to very fine sandstone and siltstone.
1210-1220		20	80	0	Black shale, light to dark gray, fine to very fine sandstone and siltstone.
1220-1230		40	60	0	Black silty shale, light to dark gray medium to fine, calcareous sandstone and siltstone; pyrite.
1230-1240		80	20	0	Black silty shale, light to dark gray, fine to very fine calcareous sandstone.
1240-1250		80	20	0	Black silty shale, light to dark gray, fine to very fine calcareous sandstone.
1250-1520		70	30	0	As above.
1520-1530		10	80	10	Medium gray, arenaceous, calcareous, shale; pyritic and calcitic.
1530-1540		0	100	0	As above
1540-1550		0	100	0	As above
1550-1560		0	90	10	Black calcareous, silty shale - much pyrite and calcite.
1560-1570		0	100	10	Black, calcareous shale - fossiliferous.
1570-1580		0	100	0	Black very calcareous shale.
1580-1590		0	100	0	As above. Trace calcite.
1590-1600					Gray to black, silty, calcareous shale; cherty.
1600-1610		0	100	0	Black, silty, calcareous shale - trace pyrite.
1610-1620		0	100	0	Light gray to black calcareous shale. Trace pyrite calcite.
1620-1630		20	80	0	As above. traces calcite and small concretions.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
		%	%	%	
1630-1640		0	100	0	As above.
1640-1650		0	90	10	Dark gray limestone - Dark gray to black calcareous shale.
1650-1660		0	70	30	Medium gray to black calcareous shale - gray limestone, calcite.
1660-1670		0	70	30	Medium gray to black calcareous shale tan limestone, trace calcite.
1670-1680		0	40	60	Gray and brown fossiliferous limestone; black silty shale.
1680-1690		0	30	70	Tan limestone, slightly sandy
1690-1700		0	80	20	Medium gray to black shale; traces of pyrite and calcite; tan limestone; traces of pyrite and calcite.
1700-1710		0	90	10	As above; tan to black limestone.
1710-1720		0	80	20	As above. 1% pyrite; white calcite crystals in limestone.
1720-1730		0	90	10	Medium gray to black calcareous shale; tan limestone.
1730-1740		0	100	0	Medium gray to black shale, trace pyrite and calcite.
1740-1750		Trace	100	Trace	As above; shale is silty, contains seashells, pyrite.
1750-1760		Trace	100	Trace	Medium gray to black silty shale.
1760-1770		0	100	0	Light gray to black silty shale pyrite.
1770-1790		0	100	Trace	As above - trace small concretions.
1790-1800		No Sample			
1800-1810		10	90	Trace	As above. white sand.
1810-1820		10	70	20	As above - white sandstone, dark gray limestone.
1820-1830		Trace	80	20	Black, silty shale - pyrite.
1830-1840		0	100	0	Black shale; some silty; pyritic.
1840-1850		0	100	Trace	As above.
1850-1860		0	100	Trace	As above.
1860-1870		0	100	0	Medium gray to black shale; pyrite.
1870-1880		0	90	10	Dark gray to black shale; bentonitic, and silty; interlaminated with limestone, pyritic.
1880-1890		0	100	Trace	Black sandy, very calcareous shale, bentonitic; gray to black limestone.
1890-1900		0	80	20	Black arenaceous shale, light gray to black limestone; trace pyrite.
1900-1910		Trace	70	30	As above. Trace Bentonite.
1910-1920		0	70	30	As above. Trace Bentonite.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
		%	%	%	
1920-1930		0	90	10	Black shale and gray to black limestone; trace pyrite.
1930	1940	0	100	0	Black calcareous shale, trace pyrite
1940-1950		0	90	10	Black calcareous, fissil shale.
1950-1960		0	90	10	As above.
1960-1970		0	90	10	As above. Very pyritic.
1970-1980		0	100	0	Black, very calcareous shale, 2% bentonite trace pyrite.
1980-1990		0	100	0	Black slightly calcareous, fissil, pyritic shale; micaceous.
1990-2000		0	100	0	As above.
2000-2010		0	100	0	As above. Micaceous.
2010-2020		0	100	0	As above. Micaceous.
2020-2030		0	100	0	As above. Micaceous.
2030-2040		0	100	0	As above. Slightly silty.
2040-2046		0	100	0	Black calcareous shale; light gray to brownish gray, very fine, silty quartz sandstone; grains frosted and unfrosted (50-50); sub-angular to semi-rounded.
2186-2190		50	50	0	Black shale; tan to white fine clayey sandstone.
2190-2200		30	70		Trace Black, arenaceous shale; white to tan fine to coarse, argillaceous sandstone; 2% bentonite.
2200-2210		40	60	0	Black fissil shale; coarse loosely consolidated, white sandstone; trace pyrite, 2% bentonite.
2210-2220		60	40	0	Gray and black sandy shale; white and red, coarse, friable sandstone.
2220-2230		40	60	0	Sandstone as above and well rounded; bluish gray bentonite.
2230-2240		30	70	0	Sandstone as above. Some reddish gray, buff.
2240-2250		30	70	0	Black and gray shale, white pink, brown, sandstone and siltstone; light blue bentonite.
2250-2260		50	50	0	Light gray to black shale; white, pink, buff, fine, sub-angular sandstone; traces calcite, bentonite, pyrite.
2260-2270		60	40	0	Pink, buff, fine to medium sandstone; much anhydrite, trace bentonite.
2270-2280		70	30	0	Gray, medium, sub-angular sandstone some reddish-gray siltstone, trace bentonite.
2280-2290		40	40	0	Bluish green, silty shale; white, pink blue-green, red, fine to medium, sub-angular sandstone; 20% anhydrite.

Sample Record Sandoval #3 (Continued)

<u>From To</u>	<u>Sand</u> %	<u>Shale</u> %	<u>Limestone</u> %	
2290-2300	50	40	0	Variegated shale and sandstone, 10% anhydrite.
2300-2310	40	60	0	As above.
2310-2320	70	20	10	Predominantly, red medium to very fine sandstone sub-angular, variegated, some siltstone
2320-2330	70	20	10	Blue green, red, pink, medium to very fine sandstone; trace pyrite, bentonite
2330-2340	60	20	20	Pink, blue-gray fine to medium argillaceous sandstone-sub-angular; some coarse; trace chert.
2340-2350	60	20	20	Variegated very fine to coarse, sub-angular sandstone; green blue arenaceous shale; blue-gray limestone.
2350-2360	60	30	10	Variegated sandstone, siltstone, shale and limestone: sandstone, is very fine to medium, sub-angular to sub-rounded predominantly blue-green; shale is sandy.
2360-2370	60	20	20	Very fine to coarse, variegated sandstone.
2370-2380	100	0	0	Chocolate brown, blue-green, gray-green, light blue, medium to very fine, micaceous sandstone.
2380-2390	100	0	0	Variegated sandstone and siltstone.
2390-2400	90	10	0	White and slight gray, coarse, sub-rounded, siliceous, hard, sandstone.
2400-2410	100	0	0	Gray and blue sandstone and siltstone.
2410-2420	100	0	0	As above.
2420-2430	100	0	0	Blue-green, fine sandstone and siltstone.
2430-2440	100	0	0	Variegated fine sandstone and siltstone.
2440-2450	100	0	0	As above.
2450-2460	100	0	0	Hard, siliceous, siltstone, and silty sandstone.
2460-2470	100	0	0	Pink, siliceous, platy sandstone; some siltstone.
2470-2480	100	0	0	Variegated sandstone and siltstone; trace calcite.
2480-2490	80	20	0	Green, sandy, shale: fine to medium, sub-angular, gypsiferous sandstone.
2490-2500	80	10	10	As above.
2500-2510	90	10	0	Pink, white, gray, slightly limey sandstone.
2510-2520	30	30	40	Gray and green shale: gray limestone: fine to medium, sub-angular, limestone bonded sandstone.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
2520-2530		30	20	50	Medium to dark gray limestone: light gray sandstone: brown green and gray shale.
2530-2540		50	40	10	Gray, limestone cemented sandstone: dark gray, calcareous shale.
2540-2550		0	20	80	Gray, marly, limestone: greenish gray calcareous shale.
2550-2560		0	10	90	Light to dark gray, pink, green, limestone: calcareous shale.
2560-2570		0	0	10	Light to gray and greenish gray, limestone: trace anhydrite, bentonite.
2570-2580		0	20	30	Light green clay: 50% pink and gray gypsum.
2580-2590		0	50	0	Green and gray shale: 50% gypsum.
2590-2600		50	10	10	30% anhydrite, variegated, argillaceous, calcareous sandstone.
2600-2610		70	10	0	20% anhydrite, calcareous shale; red-brown, gray, medium sandstone.
2610-2620		60	20	0	20% anhydrite: variegated gypsiferous sandstone, slightly argillaceous.
2620-2630		100	0	0	Frosted, sub-rounded, calcareous, gypsiferous sandstone.
2630-2640		100	0	0	As above.
2640-2650		80	20	0	Gray and dark brown shale: sandstone as above.
2650-2660		10	50	40	Salmon pink and reddish brown, fine to very fine sandstone: Dark brown silty shale: gray limestone.
2660-2670		30	50	20	Shale, sandstone and limestone as above.
2670-2680		80	10	10	Pink; fine to very fine, shaley sandstone trace coarse sandstone.
2680-2690		0	70	30	Dark brown very silty shale; Reddish-Brown and gray limestone.
2690-2700		0	100	0	Dark brown calcareous shale: Blue-gray shale streaks.
2700-2710		0	100	0	Dark brown silty and calcareous shale
2710-2720		0	100	0	As above.
2720-2730		0	100	0	Dark brown silty and calcareous shale, 5% blue-green shale.
2730-2740		0	100	0	As above.
2740-2750		20	80	Trace	Dark brown shale; 3% limestone.
2750-2760		50	40	10	Reddish brown siltstone and shaley sandstone; dark brown shale.

Sample Record Sandoval #3 Continued

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	
		%	%	%	
2760-2770		60	40	0	White, gray, pink, predominantly reddish brown, fine to very fine, sandstone and siltstone, very limey to slightly limey, trace coarse.
2770-2780		70	30	0	Salmon pink to reddish brown sandstone and siltstone; some shaley, all calcareous, trace white. Becomes dark chocolate brown as it grades to shale; generally fine to very fine but traces of coarse and medium. Traces of calcite and volcanic ash. Shale is mostly chocolate brown and very silty; traces purple-red and blue-gray; minute pyrite specks throughout all components of this sample.
2780-2790		70	30	0	Reddish brown, calcareous, and silty sandstone and siltstone: some blue-gray siltstone.
2790-2800		80	20	Trace	Pink to Reddish brown, fine to very fine, fairly hard sandstone - trace dolomite, limestone.
2800-2810		50	20	30	Pink and reddish brown, calcareous sandstone and siltstone: dark brown, gray-green, and blue-green shale: mottled red, gray, purple limestone.
2810-2820		40	30	30	Sandstone as above, some shaley; purple-red shale.
2820-2830		40	40	20	Reddish brown sandstone, some gray and blue-green quite calcareous and shaley; purple red shale, traces of blue-green and blue-gray - Trace Calcite.
2830-2840		20	80	Trace	Shale and sandstone as above.
2840-2850		No Sample			
2850-2860		No Sample			
2860-2870		20	80	0	Tan siltstone and sandstone; variegated shale; trace calcite.
2870-2880		80	20	0	Pink siliceous sandstone, small amounts of gray, white, yellow-green; blue and buff siltstone; traces calcite, pyrite.
2880-2890		80	20	0	Sandstone as above; reddish brown shale.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
		<u>%</u>	<u>%</u>	<u>%</u>	
2890-2910		80	20	0	Rust to reddish brown to purple red, sandstone and siltstone; also pink gray, lavender, green; fine to very fine.
2910-2920		90	10	0	Rust and reddish brown, micaceous sandstone and siltstone. Trace pyrite, bentonite.
2920-2930		100	0	Trace	Sandstone and siltstone as above.
2930-2940		100	Trace	0	As above.
2940-2950		100	0	0	As above. Trace Calcite.
2950-2960		90	10	0	Red, orange-red, rusty sandstone and siltstone; slightly micaceous, trace gray.
2960-2970		100	0	0	As above.
2970-2980		100	0	0	Orange-red and reddish brown siltstone; argillaceous; some very fine sandstone: 2% dolomite.
2980-2990		90	10	0	Siltstone as above, very shaley, micaceous.
2990-3000		80	20	0	As above.
3000-3010		80	20	0	As above.
3010-3020		80	20	0	As above.
3020-3030		100	0	0	Reddish brown, purple-red sandstone and siltstone, 3% purple-red shale; trace calcite, dolomite. White and light gray, hard siliceous sandstone.
3030-3040		60	40	0	Red and purple-red shale: white medium sandstone.
3040-3050		30	70	0	Shale and sandstone as above. 4% dolomite.
3050-3060		70	30	Trace	Reddish brown, lavender pyritic shale; clear, medium, sub-angular loosely consolidated sandstone.
3060-3070		80	20	0	Tan, medium, sub-angular, friable sandstone: 4% limestone.
3070-3080		80	20	0	Black, lavender, pyritic shale; pink and tan, medium sandstone that breaks around grains.
3080-3090		80	10	10	Sandstone as above slightly coarse; calcite.
3090-3100		100	0	0	Pink, tan, medium, angular-subangular argillaceous sandstone, micaceous, platy.
3100-3110		100	0	Trace	Sandstone as above.
3110-3120		100	0	0	Sandstone as above.
3120-3130		100	0	Trace	Sandstone as above.
3130-3140		100	0	0	Sandstone as above. Pyritic.
3160-3170		100	0	0	Sandstone as above.
3170-3180		100	0	0	Sandstone as above. Trace Gyp.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
		%	%	%	
3180-3190		100	0	0	Sandstone as above.
3190-3200		100	0	0	Sandstone as above, some gyp cement.
3200-3210		100	0	0	Sandstone as above, clean.
3210-3220		100	0	0	Sandstone as above, slightly gypsiferous trace clay.
3220-3230		100	0	0	Sandstone as above some rose colored.
3230-3240		100	0	0	Pink & brown, medium to fine, trashy sandstone.
3240-3250		90	10	0	Sandstone as above - trace white clay.
3250-3260		90	10	0	Tan, medium, sub-rounded argillaceous sandstone: red clay.
3260-3270		70	30	0	Sandstone as above; 10% siltstone red arenaceous clay.
3270-3280		80	20	0	Tan, medium subangular sandstone: Red clay, partly sandy.
3280-3290		80	20	0	Sandstone as above with some coarse red clay.
3290-3300		50	50	0	Tan, medium to coarse, sub-angular sandstone: chocolate clay, some blue-gray.
3300-3310		10	60	40	Pink, tan, medium to coarse sandstone orange and chocolate brown silty clay.
3310-3320		90	10	0	Light orange, medium to coarse, sub-angular to sub-rounded sandstone: very sandy red clay.
3320-3330		90	10	0	Pink, medium to very coarse, sub-rounded sandstone, some orange siltstone.
3330-3340		90	10	0	Pink, very coarse sandstone; 50% orange and red siltstone; red brown shale.
3340-3050		100	0	0	Orange and reddish brown, very sandy siltstone; micaceous; some very coarse friable sandstone.
3350-3360		100	0	0	Orange and reddish brown, silty sandstone, micaceous; some gray siltstone.
3360-3370		100	0	0	Orange and reddish brown sandstone and siltstone; sandstone is medium, sub-angular, with ferro-magnesium minerals.
3370-3380		90	10	0	Orange to reddish brown, medium, trashy sandstone, slightly micaceous, some gray siltstone; Reddish brown shale.
3380-3390		70	30	Trace	Orange, very fine, silty sandstone, gray siltstone; 2% red limestone: red-brown clay, gray spots.
3390-3400		80	20	Trace	Sandstone as above, very silty; clay has veinlets of limestone.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
		<u>%</u>	<u>%</u>	<u>%</u>	
3400-3410		40	40	20	Sandstone as above: Red-brown purple clay; purple dolomite.
3410-3420		80	10	10	Orange, medium to fine, silty, argillaceous arkosic sandstone; much siltstone: blue-green reddish-brown, purple clay: purple dolomite.
3420-3430		100	Trace	0	Orange and reddish-brown argillaceous sandstone and siltstone; trashy; some purple, coarse arkosic sandstone: trace shale.
3430-3440		90	10	Trace	Orange, orange-red, gray and purple arkosic sandstone; very fine, fine, medium and coarse; poorly sorted, very silty, some shaley: Chocolate-brown and blue-green shale: trace of gray dolomite; trace graywacke.
3440-3450		90	10	trace	Red, orange-red, and purple, fine sandstone; very hard, trace of coarse sandstone and purple clastics: green and red shale: trace pink dolomite.
3450-3460		90	10	0	Salmon pink and orange very silty, medium to fine sandstone; quite micaceous, thin laminations of very shaley siltstone; traces of gray and green siltstone; 10% purple, coarse clean arkose: red-brown and green shale: trace of gypsum.
3460-3470		90	10	0	Orange-red and reddish-brown, medium to fine, arkosic sandstone; 5% coarse angular, arkose; some blue-green, gray and pink sandstone and siltstone: green and gray shale.
3470-3480		90	10	0	Sandstone and shale as above. 10% clear quartzite.
3480-3490		80	20	0	Purple, coarse, slightly calcareous arkosic sandstone; reddish-brown siltstone and sandstone: brick red shale; fairly sandy.
3490-3500		90	10	trace	Pink and purple, coarse arkosic sandstone (60%); reddish-brown, sandy siltstone (30%) with gray spots.
3500-3510		100	0	0	Arkosic sandstone and siltstone as above.
3510-3520		100	0	0	30% orange to orange-red, medium, arkosic sandstone (feldspars well weathered); 20% purple, coarse arkose; 50% dark brown shaley siltstone.
3520-3530		100	trace	0	As above. 5% purple red shale.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
		%	%	%	
3530-3540		90	10	0	10% green shale; 20% purple arkosic sandstone, 70% orange, argillaceous, micaceous, fine, sandstone and siltstone; trace anhydrite.
3540-3550		80	20	0	20% arkose; 50% shaley siltstone and sandstone; 30% silty shale.
3550-3560		70	30	trace	Dark-brown silty shale; Orange and orange-red fine, argillaceous sandstone; trace coarse arkose.
3560-3570		70	20	10	As above.
3570-3580		70	20	10	As above.
3580-3590		90	10	trace	Orange and reddish-brown, coarse to very coarse, arkosic sandstone; reddish-brown, arenaceous shale.
3590-3600		90	10	trace	30% coarse arkose; 60% orange-red, fine, sandstone and siltstone; 10% dark brown, arenaceous shale; Trace of white and brown dolomite.
3600-3610		90	10	trace	As above, trace gray quartzite.
3610-3620		70	10	20	Gray cripto-crystalline dolomite; orange-red, dark brown, fine sandstone and siltstone; brown shale; 10% anhydrite.
3620-3630		90	10	trace	Orange-brown, medium to fine, calcareous and silty sandstone; brown, arenaceous shale; 2% gray dolomite.
3630-3640		80	20	trace	Orange brown, medium to fine, calcareous and argillaceous sandstone; brown very silty shale.
3640-3650		90	10	0	As above.
4489-4500		40	20	40	Lavender, dense, hard limestone; orange-red, fine shale, calcareous sandstone; chocolate brown shale.
4500-4510		40	30	30	Sandstone as above; red brown and purple shale; purple and lavender fine to coarse limestone.
4510-4520		70	20	10	Orange-red, medium to fine, micaceous and calcareous sandstone; dark green shale; gray and lavender finely crystalline limestone.
4520-4530		0	10	90	Orange and orange-red, finely crystalline, arenaceous limestone; trace purple.
4530-4540		0	20	80	Sandstone and limestone as above; shale is very sandy, blue-green and chocolate brown.
4540-4550		0	0	100	Orange-red orange-brown and gray, fine to very, very fine, fairly hard limestone; traces of green and white.

Sample Record Sandoval #3 (Continued)

<u>From To</u>	<u>Sand</u> %	<u>Shale</u> %	<u>Limestone</u> %	<u>Description</u>
4550-4560	0	0	100	Limestone as above; trace green shale.
4560-4570	0	0	100	Orange, sandy, tight limestone, traces of purple and lavender.
4570-4580	10	10	80	Orange and orange-red arenaceous limestone; trace coarse arkosic sandstone.
4580-4590	10	0	90	Generally, finely crystalline, pink, orange and brown, very sandy limestone; trace calcite.
4590-4600	20	10	70	Orange-red and brown, finely crystalline, tight, very sandy, slightly argillaceous limestone; micaceous. Trace coarse sandstone.
5600-4610	40	20	40	Orange, fine, very calcareous, slightly micaceous sandstone; orange and gray limestone; chocolate brown, fissil shale.
4610-4620	60	10	30	Pink and orange, medium to fine, very calcareous and micaceous sandstone; somewhat friable; orange-brown dense fine limestone.
4620-4630	80	trace	20	Sandstone as above: reddish-brown, arenaceous limestone, trace gray: Trace gray shale.
4630-4640	50	10	40	Sandstone and limestone as above.
4640-4650	20	10	70	Sandstone as above with trace of light green: limestone as above but only 20% arenaceous.
4650-4660	trace	10	90	Limestone as above.
4660-4670	40	50	10	Limestone as above, trace green: Orange and purple, medium to fine, very calcareous, arkosic sandstone.
4670-4680	40	20	40	Sandstone and limestone as above; trace of coarse sandstone.
4680-4690	20	20	60	Sand stone as above, trace coarse arkose: purple, orange and gray, fine to medium dolomite.
4690-4700	30	trace	70	Orange, orange-red, reddish brown, green and gray, finely crystalline, dense limestone: pink, medium to fine, very calcareous sandstone.
4700-4710	50	10	40	Limestone as above: Light red to salmon pink, medium to fine, slightly friable, very calcareous sandstone; trace coarse.
4710-4720	70	trace	30	50% orange, medium to fine, slightly friable, calcareous sandstone; 20% coarse arkosic sandstone: limestone as above.

Sample Record Sandoval #3 (Continued)

<u>From To</u>	<u>Sand</u> %	<u>Shale</u> %	<u>Limestone</u> %	<u>Description</u>
4720-4730	60	10	30	Orange and red limestone: 50% conglomerate, 10% medium to fine sandstone: purple shale.
4730-4740	70	trace	30	60% pink conglomerate; 10% purple coarse sandstone: gray, black, orange and red limestone.
4740-4750	60	10	30	As above with 40% conglomerate.
4750-4753	80	10	20	Limestone as above: 20% Medium to fine sandstone; 60% very coarse arkosic sandstone.
4753-4757	70	10	20	Orange and gray, finely crystalline limestone: 50% very coarse arkosic sandstone; orange, medium to fine, very calcareous sandstone.
4807-4810	70	trace	30	10% conglomerate; 20% coarse sandstone; 40% medium to fine dolomitic sandstone.
4810-4820	50	10	40	Sandstone and limestone as above: purple shale.
4820-4830	40	40	20	Orange and gray, arenaceous dolomite; calcitic: Coarse to fine, pink arkosic sandstone: brown shale.
4830-4840	50	30	10	Dolomite as above: Light gray, pink, and orange fine to very coarse, arkosic sandstone; trace green medium sandstone.
4840-4850	50	10	40	20% coarse, pink, arkosic conglomerate; 30% orange and reddish brown, medium to very fine, calcareous and micaceous sandstone: orange, pink, brown and gray, finely crystalline dolomite, of which 50% is arenaceous: brown shale.
4850-4860	60	10	30	Dolomite as above: 40% pink conglomerate; 20% orange and pink, medium to fine sandstone.
4860-4870	50	20	30	Brown shale: 20% conglomerate, 30% medium to fine, reddish brown sandstone: orange and gray finely crystalline limestone.
4870-4880	50	30	20	As above.
4880-4890	70	trace	30	Purple and lavender, fine limestone: 20% conglomerate; 20% medium to coarse, arkosic sandstone; 30% calcareous medium to very fine sandstone.
4890-4900	40	30	30	Purple and gray fine limestone: 20% calcareous conglomerate; 20% fine sandstone: purple and brown shale.
4900-4910	40	30	30	Gray, buff and green, fine limestone: reddish brown, arenaceous and calcareous shale: 30% gray and pink granite wash.

Sample Record Sandoval #3 (Continued)

<u>From</u>	<u>To</u>	<u>Sand</u>	<u>Shale</u>	<u>Limestone</u>	<u>Description</u>
		<u>%</u>	<u>%</u>	<u>%</u>	
4910-4912		50	30	20	Gray and buff limestone; reddish brown argillaceous limestone: 20% purple granite wash: red sandy shale.
4912-4920		60	30	10	Arkosic wash: red sandy shale.
4920-4930		50	50	0	Red, purple, and brown, slightly sandy shale: 20% arkosic wash; 30% fine argillaceous sandstone.
4930-4940		70	20	10	Red brown shale; trace green: 50% arkosic wash: gray and buff limestone.
4940-4950		70	20	10	Reddish-brown shale; green spots: 70% arkosic wash: limestone as above.
4950-4960		60	40	trace	Reddish-brown, fissil shale; partly sandy: 50% light to dark pink, arkosic wash; 10% fine, micaceous, argillaceous sandstone.
4960-4970		40	50	10	Shale as above: 30% arkosic wash; 10% medium to fine, micaceous sandstone.
4970-4980		50	50	trace	Shale as above; very sandy: 30% arkosic wash; 20% medium to fine, micaceous sandstone.
4980-4990		70	30	trace	Reddish-brown arenaceous shale: 60% pink, arkosic wash with mica very slightly weathered: orange, rose and purple argillaceous limestone.
4990-5000		60	30	10	50% purple and pink arkosic wash: reddish-brown shale; green spots: orange, lavender, light pink dolomite: trace yellow chert.
5000-5010		70	30	trace	50% very quartzitic arkosic wash; reddish-brown fissil shale with coarse quartz grains; grades to sandstone.
5010-5020		80	20	0	Pink and gray, very slightly weathered arkosic wash: reddish-brown, arenaceous shale with green spots: trace kaolinized feldspar.
5020-5028		60	0	0	Arkosic wash: 40% granite.