

Top ft	Base ft	Description
2014-11-12		
Core in Sleeves		
203.7	204	Uniform Mancos Shale in sleeve (UMSis)
204.2	208.7	UMSis
208.7	218.2	UMSis
218.2	218.7	UMSis
218.7	226.7	UMSis
Box 1		
226.7	227.95	Finely laminated gray Mancos Shale (flgMS)
227.95	228.0	Unconsolidated dark brown clay (Udbc) – easily penetrated with an iron nail
228.0	228.4	flgMS
228.4	228.7	Udbc
228.7	235.3	flgMS
235.3	235.7	Semi-consolidated light gray clay
Box 2		
235.7	246	flgMS
Box 3		
246	255	flgMS
Box 4		
255	264.2	flgMS
Box 5		
264.2	267	flgMS
266.8	267.6	Light gray friable shale
267.6	278.2	flgMS
278.2	278.4	Light gray soft clay
278.4	273.7	flgMS
2014-11-13		
Box 6		
273.7	279.6	flgMS with small (<2 mm) anhedral subrounded pyrites and serpentine pyrites 0.5 mm wide up to 0.9 mm long
279.6	280.6	Ditto with sub-vertical through-going crack filled with calcite. Crack starts abruptly and dies out with depth. Initial crack width ~0.3 mm.
280.6	283.3	Ditto without crack. Serpentine pyrite up to 1 mm width and 20 mm long in hairpin shape.
283.3	284	Ditto with crack starting to cut into side of core at about 7 degrees from vertical. Crack same width as before and filled with calcite. Reached about center of core at end of core.
Box 7		
284	290.7	Ditto without crack
290.7	290.8	Consolidated clay
290.8	291	flgMS with pyrite with 45 degree healed fracture possibly with some dip-slip offset
291	292	flgMS with pyrite
292	292.28	Fracture through core at 40 degrees to vertical with dip slip slickensides
292.28	292.3	Fracture zone with clay
292.3	292.5	flgMS with pyrite
292.5	292.55	Fracture zone with clay
292.6	292.7	flgMS

2014-11-14		
Box 8		
292.7	302.1	Box labeled 292.7 to 305.5 but not consistent with length of core in box (see also Box 9). FlgMS – very homogenous. A few small pyrite but also a few irregular multigrained (fine-grained) masses of pyrite up to 5 mm by 4 mm.
Box 9		
302.1	311.5	Box labeled 305.5 to 311.5 but not consistent with length of core in box (see also Box 8). FlgMS – very homogeneous. Little pyrite but one large irregular mass of fine-grained pyrite at end of break in core ~ 35mm x 18mm x 10 mm.
Box 10		
311.5	321	FlgMS – very homogeneous. Very finely disseminated pyrite only visible as “glitter” on ends of core where broken on lamellae. A few thin serpentine masses of pyrite. At ~316.3 two thick (3-4 mm multigrained pyrite masses parallel to bedding. Part of thinner example at ~320.7.
Box 11		
321	330.5	FlgMS – very homogeneous. Sub-horizontal calcite filled crack penetrating ~10% through core at ~323.7. ~45 deg° fracture at 327.7 partially healed with calcite, but split apart when core was recovered. Same, but horizontal at ~328.3. Same, horizontal, with more fracture damage at ~218.45. ~45° fracture with calcite but re-broken and partially rehealed again with calcite. Appears to be less disseminated pyrite in this box and no visible aggregated masses of pyrite.
Box 12		
330.5	339.5	FlgMS – very homogeneous. Thin layer of multigrained pyrite at ~344.6. 0.4 mm layer of multigrained pyrite at ~335.5.
Box 13		
339.5	349	Marker for 348.5 is inconsistent with position in core in box assuming orientation of core is the same as in other boxes. This marker should be approximately 0.9 feet toward the other end of the length of the core to be consistent unless the core is oriented opposite to other boxes. This marker is ignored here. FlgMS – very homogeneous. Fossil bivalve ~10 mm across at break in core at 340.45. Near vertical fracture at edge of core, healed with calcite at bottom, open at top from 342.3 to 343. ~45° fracture healed with calcite and re-broken at ~344.3. Multiply broken, rehealed and re-broken zone from 346.4 (reacts with HCl). Thin fine-grained sand layers start to become common between laminae, 0.5 to 1.5 mm thick; can generally only be traced a few 10s of mm around core. In places irregular sand lenses are formed, up to 20 mm thick and visible though core, often with internal deformation (do not react with HCl), deformation interlaminar.
2014-11-15		
Box 14		
349	355.5	FlgMS – very homogeneous. Small lenses of f. g. sand, typically ~1 mm thick x 10 mm long.
355.5	356	Gradation from shale with ~50% sand. Sand fairly distributed with some layering and deformation.
356		Serious mis-match of ends of cores but no drilling damage – depth at which water reported by drillers.
356	356.1	Transition from 50% sand to 80%+ sand
356.1		Irregular break in core – good match but gaps that would transmit water.
356.1	356.8	Change in color of outside of core to v light gray. High-angle fracture in core exposes well-cemented sandstone with “quartzite” appearance – no visible porosity. Few % of angular to sub-rounded grains of obsidian up to 3 mm dia. Some pyrite and silt deformed interlayering.
356.8	357.7	Core missing?
357.7	359.7	Heterogeneous mixture of fine-grained light gray sand with dark-gray silt. Sand forms lenticular to oval or irregular masses and thin layers while silt forms matrix. Vertical fracture from 358.0 to 358.4

		exposes irregular obsidian fragments up to 5 mm across and pyrite.
Box 15		
359.7	362.75	Heterogeneous mixture of fine-grained light gray sand with dark-gray silt. Sand forms lenticular to oval or irregular masses and thin layers while silt forms matrix. Proportions of sand and silt vary with depth. Sub-vertical fracture from 360.5 to 361 with fracture surface coated with small (~0.2-0.3 mm) pyrite cubes).
362.75	363.9	Mostly well cemented light-gray sandstone with minor dark-gray siltstone. Very permeable fracture at 364.4.
363.9	364.1	Heterogeneous mixture of fine-grained light gray sand with dark-gray silt with more sand than silt. Very permeable fracture at 363.65.
364.1	368.7	Well-cemented sandstone with "quartzite" appearance – no visible porosity (Wcsst). Thin layers of pyrite on high angle fractures. VERY permeable fractures in depth range 386.2 to 386.8.
Box 16		
368.7	378.4	Wcsst. More silty from 372.7 to 373.1 and from 374.4 to 377.2. Small pyrite cube on high-angle fractures. Nine irregular, sub-horizontal, very permeable fractures spread at uneven intervals along length of core. From 374.4 to 378.4 fossils visible in edge of core up to 20 mm long: there appeared to be some qtz overgrowth on the fossils and I could not make any identification.
Box 17		
378.4	387.7	Light-gray fine-grained sand mixed with coarse dark-gray silt. From 378.4 to 379.1 sand is in irregular masses from 25 mm thick layers to 50 mm thick fragments in silt matrix. Below 379.1 sand and silt are mostly interlayered to mixed. Small pyrite cubes are found on near-vertical fractures. Approx. Ten irregular, sub-horizontal, very permeable fractures spread at uneven intervals along length of core.
Box 18		
387.7	397.5	Mostly dark gray, coarse siltstone/fine-grained sandstone. Amount of light-gray sand variable along length of core – sometimes thin laminar layers, sometimes irregular masses, sometimes lenses or sigmoidal lenses, up to 50 mm in length. % light gray sand generally increases with depth. Three irregular, sub-horizontal, permeable fractures.
Box 19		
397.5	406.6	Mottled dark gray/light gray coarse siltstone/fine-grained sandstone. Some diffuse horizontal banding and light gray lamellae but most light-gray sands are sub-horizontal masses from 1 mm to 15 mm thick and from 5 mm to completely penetrating the core. Seven irregular, sub-horizontal, permeable fractures. Small pyrite cubes are found on near-vertical fractures.
Box 20		
406.6	416.2	Mottled dark gray/light gray coarse siltstone/fine-grained sandstone. In much of core light-gray sand dominates in sub-rounded masses in minimal dark-gray matrix. Dark gray becomes dominant below 412.3. Small pyrite cubes are found on near-vertical fractures. Two irregular, sub-horizontal, permeable fractures. Vertical crack in core from 412.8 to 413.8 has visible open permeability.
Box 21		
416.2	423	Mottled dark gray/light gray coarse siltstone/fine-grained sandstone. Roughly equal proportions of light & dark gray for first 2 feet. Mostly dark for next 4 feet, but light in more concentrated zones. From 422.45 to 423 (just before clay) mostly dark.
423	423.3	Light cream/gray consolidated clay layer – easily softened with water.
423.3	426.1	Sub-vertical fracture from 423.3 to 424.5 with calcite (reacts with HCL) aragonite needles (no reaction with HCl) and small pyrite cubes on surface. Becomes lighter in color with depth. One irregular, sub-horizontal, very permeable fracture at 425.1.
Box 22		

426.1	435.7	Mottled dark gray/light gray coarse siltstone/fine-grained sandstone. Mostly lighter gray but mixing gives overall mid-gray color. Generally little lamination or layering. Probably heavily bioturbated as larger sedimentary structures are not apparent. Sub-vertical fracture between 426.1 and 427.1 has calcite and some small pyrite cubes on surface. One irregular, sub-horizontal, very permeable fracture at 435.4.
Box 23		
435.7	444.5	Medium gray mottled siltstone 435.7-437.3. At 437.3, a 1" fractured shale, soft with slickenside; a second similar break with slickenside surface [?] at 439 ft. Dark shale from 439.5 to 443. Mottled light gray siltstone from 443-444.5
Box 24		
444.5	455	Medium gray mottled siltstone grading to a light gray mottled siltstone for 444.5-448.7. Dark gray thin layered siltstone 448.7-451.3 grading to a lighter gray mottled siltstone to 455.
Box 25		
455	463.7	Dark to medium gray siltstone grading to a medium gray mottled siltstone
Box 26		
463.7	472.5	Medium gray mottled siltstone; 471.7-472.2 Light gray thinly layered with vertical fractures with pyrite coating and nodules  Medium gray mottled siltstone, vertical fracture in light gray, thinly layered siltstone, 471.8 to 472.3 ft. Fracture contains coating of euhedral pyrite
Box 27		
472.5	482.7	Medium gray mottled siltstone 472.5-476.5 ft; lighter gray layered siltstone with black polished glassy surface on fracture at 476.7 ft. Medium gray mottled siltstone 478 ft to 482.7
Box 28		
482.7	491.7	Medium gray mottled siltstone with layers of light gray thinly layered siltstone. Horizontal fracture with polished surface at 491.7.
Box 29		
491.7	501	Medium gray grading to light gray thinly layered siltstone, sub-horizontal breaks at darker gray layers. Fracture at 499.8 ft with polished glassy surface in dark gray layer.
Box 30		
501	510.7	Light gray thinly layered siltstone, sub-vertical fracture at 501.6-502.4 ft with disseminated pyrite cubes and aragonite needles. At 502.5 ft, a horizontal fracture in dark gray shale (?) layer, 10 mm thickness, with polished surface. Second sub-vertical fracture from 508-508.9 with layer of pyrite cubes 2 cm thick and disseminated pyrite cubes throughout surface of fracture. Also chalcopyrite and aragonite and black mineral (bornite?) on surface of fracture
Box 31		
510.7	520.7	Thinly layered siltstone with pyrite zone in vertical fracture from 510-513; 513-515.1 thinly layered dark shale; 515.1 to 520.7 light gray thin layered siltstone
Box 32		
520.7	530	Light gray thinly layered siltstone with sub-vertical and horizontal fracturing. Horizontal fracturing occurred on dark softer thin shale intervals throughout core from 520.7-528.5 ft. Some fracture show polished surface. Others contain disseminated minor pyrite. Medium gray thin layered siltstone from 528.4-530 ft.
Box 33		
530	539	Medium gray to light gray thinly layered siltstone. Major sub-horizontal fracturing from 530 to 533 ft.
Box 34		

539	549	Light gray thinly layered siltstone/fine grain sandstone.
Box 35		
549	558	Light gray thinly layered siltstone grading to darker mottled siltstone at 555'
Box 36		
558	567.8	Medium to dark fine grain sandstone 558-560; light gray fine-grained sandstone 560'-563.5 with sharp break to a dark gray fine-grained sandstone grading to a medium gray fine-grained sandstone
Box 37		
567.8	577.4	Medium gray, mottled loosely cemented, medium-grained fractured sandstone 567.8-569.8, grading to a greenish soft soapstone at 570.5. Light gray siltstone from 570.8 to 577.4.
Box 38		
577.4	587.0	Medium gray siltstone, thinly layered and sub-horizontal fracturing from 580-587 ft.
Box 39		
587	596.7	Medium gray thinly layered siltstone, sub-rounded sandstone pebble 1.79 cm x 0.7 cm at 591.3 ft, coarse sand/gravel conglomerate zone at 576-576.5.
Box 40		
596.7	606.1	Alternating layers of fine sand, coarse sand and small 2 mm – 1 cm sub-rounded gravel from 596.7 to 601 ft. Light gray fine sandstone from 601-606.1.
Box 41		
606.1	615.1	Medium gray fine-grained sandstone, fracture zone from 607-607.8. Some fracture surfaces polished (shale-like surface).
Box 42		
615.1	624.7	Medium gray fine-grained sandstone, highly fractured zone 617.7-619.7, sub-vertical and horizontal fracturing, some thin calcite filling in fractures
Box 43		
624.7	634	Medium gray fine-grained sandstone. Fractured zone from 625.5-627.7
Box 44		
634.0	643.8	Light gray medium-grained sandstone, very uniform.
Box 45		
643.8	653.6	Light gray medium-grained sandstone, very uniform.
Box 46		
653.6	663.4	Light gray medium-grained sandstone 653.6-659.8 ft; coarse-grained sandstone/conglomerate 659.8-663.4. Conglomerate pebbles rounded to sub-rounded from 2 mm to 1.5 cm diameter.
Box 47		
663.4	673.15	Light gray medium-grained sandstone, conglomerate zone 671.4-672.4. Conglomerate pebbles sub-rounded 2 mm – 5 mm diameter. Poorly cemented fracture at 666.4 ft.
Box 48		
673.15	682.7	Light gray medium-grained sandstone 673.15-677.2 and 680-682.7. Conglomerate 677.2-680. Sub-angular gravels in conglomerate 2 mm – 1.5 cm diameter. Gravel consists of light brown to pink quartz; chert pebbles and non-carbonaceous dark gray shale-like pebbles.
Box 49		
682.7	691.4	Light gray medium-grained sandstone 682.7-684.4, grading to a greenish fine-grained well-cemented sandstone 684.4-686.1. Hard fine-grained greenish sandstone approaching a chert 686.1-691.0. 691.0-691.4 brownish fine-grained well-cemented sandstone, small calcite-filled fractures present.
Box 50		
691.4	700.5	Reddish brown fine-grained, well-cemented siltstone with mottled green fine-grained sandstone inclusions 691.4-697.7. Sharp contact from reddish brown siltstone to green/gray siltstone at 697.7.

		Fractured broken zone with thin calcite filling in fracture at 698.3-698.9. Also thin calcite filling in angle fracture at 700.3.
Box 51		
700.5	710.0	Green/gray siltstone, well-cemented 700.5-704.8, changing to red-brown siltstone from 704.8 to 709.8. Then back to green/gray siltstone 709.8-710.0.
Box 52		
710.0	718.7	Green/gray siltstone, well-cemented 710.0-715.1; changing to green poorly-cemented siltstone 715.1-718.7. Fractured zone at 710.8-713.8.
Box 53		
718.7	728.1	Light gray siltstone with [illegible] of poorly-cemented silt 718.9, 721.2, 725.3; 725.6-726.4 zone of unconsolidated clay interbedded with poorly-consolidated siltstone.
Box 54		
728.1	737.7	Light gray siltstone with layers of poorly-cemented siltstone and clay; unconsolidated clay zone 728.9-729.4, and 735.5-736.0.
Box 55		
737.7	746.7	Light gray siltstone grading to a fine-grained sandstone.
Box 56		
746.7	756.7	Light gray sandstone 756.7-850.1 [?], short transition to a coarse-grained gray sandstone/conglomerate with grain size <1 mm- 5mm from 850.1-854.0 [?]; soft green to brown gray siltstone 754.0-755.5. Hard gray siltstone, highly-fractured 755.5-756.
Box 57		
756.7	764.9	Soft greenish gray siltstone 756.7-757.6, sharp transition to hard gray sandstone with darker gray thin layering to 764.9.
Box 58		
764.9	774.6	Hard medium-grained sandstone with darker gray thin layering breaks across bedding layers.
Box 59		
774.6	784	Hard medium-grained light gray sandstone with dark gray layering . Soft gray layers 1 to 2 cm thick at 775.9, 782.2 and 782.7 consisting of soft foliated siltstone, possibly fault gouge?
Box 60		
784	793.7	Hard medium-grained sandstone, conglomerate layer from 788.7-789.9, conglomerate pebbles <1 mm – 1.5 cm, rounded to sub-angular
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Box 61		
793.7	793.8	Light gray medium-grained sandstone w/ sub-angular, hard, fine-grained black pebbles 2 mm – 4 mm in diameter and soft green claystone inclusion 5 mm in diameter. Also very fine grains of pyrite around 793.8'.
793.8	793.9	Sub-horizontal fracture w/ very fine grains of pyrite on surface.
793.9	796.3	Light gray medium-grained sandstone w/ intermittent 1 mm – 5 mm medium gray bands.
796.3	796.4	Very soft medium gray foliated silt/clay bounded by fractures at top and bottom. (Fault gouge?)
796.4	797.4	Light gray medium-grained sandstone w/ intermittent 1 mm – 3 mm medium gray bands
797.4	797.5	Fractured zone of sandstone as above with some soft clay on surface of fractures.
797.5	798.1	Sandstone as above but with fine black grains. Single fine vertical fracture throughout.
798.1	798.8	Sandstone as above.
798.8	799.4	Sandstone as above w/ few angular black grains 2 mm – 6mm in diameter. Single fine vertical fracture throughout.
799.4	799.5	Sandstone as above. Horizontal fracture at 799.5'.

799.5	800.2	Sandstone as above.
800.2	800.5	Sandstone as above, but w/ 2 cm – 3 cm inclusions of very fine grained pyrite. Horizontal fracture at 800.5'.
800.5	800.6	Sandstone as above, but without pyrite nodules. Sub-horizontal fracture with ~3 mm diameter soft green claystone inclusion.
800.6	800.9	Sandstone above (no pyrite or green claystone) but several sub-angular black grains, 2 mm – 5 mm in diameter. Sub-horizontal fracture at 800.9'.
800.9	801.0	Sandstone as above with increasing black granular content. Sub-horizontal fracture at 801.0'.
801.0	802.7	Light gray medium-grained sandstone w/ intermittent 1 mm – 5 mm medium gray bands and significant quantities of light gray to black conglomerate pebbles, 1 mm – 7 mm in diameter, decreasing in frequency with depth. Also a singular fine-grained 5 mm diameter pyrite nodule at 801.1'. Sub-horizontal fracture at 802.7'.
802.7	802.9	Light gray medium-grained sandstone w/ intermittent 1 mm medium gray bands and few medium gray to black sub-angular conglomerate grains 1 mm – 3 mm in diameter.
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Box 62		
802.9	803.7	Light gray medium-grained sandstone w/ intermittent 1 mm - 3 mm gray-green bands, some white to black sub-angular to sub-rounded conglomerate grains 2 mm – 5 mm in diameter, fine-grained pyrite nodules 2 mm – 1 cm in diameter, sub-rounded green claystone inclusions 2 mm – 6 mm in diameter. Horizontal fracture at 803.7'.
803.7	804.2	Sandstone as above w/ increased frequency of pyrite nodules of similar size to above. Sub-horizontal fracture at 804.2'.
804.2	804.7	Sandstone as above w/ increased thickness (1 mm – 1 cm) of gray-green bands. Sub-horizontal fracture at 804.7'.
804.7	804.9	Sandstone as above but w/ no visible pyrite or green claystone. Sub-horizontal fracture at 804.9'.
804.9	805.0	Sandstone as above but w/ numerous disseminated fine-grained pyrite nodules 1 mm – 3 mm in diameter. Sub-horizontal fracture at 805.0'.
805.0	806.1	Medium gray medium-grained sandstone w/ frequent 2 mm – 5 mm dark gray bands increasing in frequency with depth, light gray to black sub-rounded to sub-angular conglomerate grains 1 mm – 7 mm in diameter, fine-grained sub-rounded pyrite nodules 2 mm – 1 cm in diameter often associated with soft green sub-rounded claystone inclusions 0.5 cm – 3 cm in diameter. The green claystone inclusions appear to decrease with depth. Sub-horizontal fracture at 806.1' with few singular fine grains of pyrite disseminated on surface.
806.1	806.6	Sandstone and conglomerate grains as above w/ fine-grained sub-rounded pyrite nodules 1 mm – 4 cm in diameter, some of the larger pyrite nodules being associated with soft green claystone inclusions 2 mm – 2.5 cm in diameter. Sub-horizontal fracture at 806.6' with single sub-rounded fine-grained pyrite nodule 2 mm x 3 mm visible on surface.
806.6	807.0	Sandstone and conglomerate grains as above w/ fine- to medium-grained sub-rounded pyrite nodules 1 mm – 2 cm in diameter, no visible green claystone. Sub-horizontal fracture at 807.2'.
807.1	808.5	Sandstone and conglomerate grains as above w/ fine disseminated pyrite grains <1 mm. Horizontal fracture at 808.6'.
808.5	808.7	As above. Horizontal fracture at 808.7'.
808.7	809.3	Light gray medium-grained sandstone w/ regular 1 mm – 3mm medium to dark gray bands, medium to dark gray conglomerate grains 1 mm – 3 mm in diameter.
809.3	809.8	Medium gray medium-grained sandstone w/ high percentage of medium gray to black sub-angular conglomerate grains 1 mm – 4 mm in diameter.
809.8	810.1	Light gray medium-grained sandstone w/ 1 mm – 3 mm medium to dark gray bands. Sub-horizontal

		fracture at 810.1'.
810.1	810.7	As above. Sub-horizontal fracture at 810.7' w/ fine disseminated pyrite grains on surface.
810.7	810.75	Soft light gray foliated silt/clay, bounded by fractures at top and bottom. (Possible fault gouge?)
810.75	811.1	Light gray medium-grained sandstone w/ 1 mm – 3 mm medium gray bands, sub-angular dark gray conglomerate grains 1 mm – 3 mm in diameter. Sub-vertical fracture runs length.
811.1	811.7	Sandstone as above w/ conglomerate grains up to 1 cm. Horizontal fracture at 811.7'.
811.7	812.0	Sandstone as above w/ no visible conglomerate grains.
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Box 63		"812.0-821.7" Measured: 812.0-821.4
812.0	813.0	Sandstone as above w/ 1 mm – 1 cm medium gray bands, few disseminated pyrite grains 1 mm – 3 mm, few dark gray sub-rounded conglomerate grains 2 mm – 4 mm in diameter.
813.0	813.5	Light gray medium-grained sandstone w/ 1 mm – 2mm medium gray bands, medium gray sub-rounded to sub-angular conglomerate grains 2 mm – 4mm in diameter, few disseminated pyrite grains, substantial percentage sub-rounded 4 mm – 1.5 cm diameter soft gray-green clay/siltstone nodules.
813.5	814.0	Light gray medium-grained sandstone w/ sparse 1 mm – 2 mm medium gray bands, few medium to dark gray sub-rounded to sub-angular conglomerate grains 1 mm – 6mm in diameter. Horizontal fracture at 814.0'.
814.0	814.5	Light gray medium-grained sandstone w/ more frequent medium to dark gray bands 1 mm – 5 mm in diameter, few dark gray sub-angular to sub-rounded conglomerate grains 1 mm – 6mm in diameter, few sub-rounded to angular 3 mm – 2 cm diameter soft gray-green to dark gray clay/siltstone nodules, few fine disseminated pyrite grains.
814.5	815.0	Light gray conglomerated medium-coarse-grained sandstone w/ sub-rounded to sub-angular light to dark gray conglomerate grains consisting mostly of soft to hard gray-green to dark gray clay/siltstone nodules 1 mm – 3 cm in diameter, few disseminated fine grains of pyrite. Sub-vertical fracture runs length, terminating in horizontal partial fracture (i.e. doesn't cross core) at 815.4'. Significant dark gray clay/siltstone nodules w/ disseminated fine pyrite grains on surface of and surrounding horizontal fracture at 815.4'.
815.0	815.1	Soft light gray clay/siltstone w/ some foliation. Sub-horizontal fracture at 815.6'.
815.1	815.5	Light gray medium-grained sandstone, very uniform. Sub-horizontal fracture at 815.5'.
815.5	816.1	Sandstone as above w/ few sub-angular gray-green 1 mm – 4 mm diameter clay/siltstone nodules around 815.7'. Sub-horizontal fracture at 816.1'.
816.1	816.45	Sandstone as above w/ few sub-angular gray-green 1 mm – 6 mm diameter semi-soft clay/siltstone nodules around 816.4',
816.45	816.5	Light gray conglomerated sandstone w/ angular to sub-angular medium to dark gray 1 mm – 6 mm diameter conglomerate grains mostly of semi soft clay/siltstone. Sub-horizontal fracture at 816.5'.
816.5	816.7	Medium gray soft clay/siltstone.
816.7	816.85	Clay/siltstone as above w/ horizontal fracture beginning at 816.7', turning sub-vertical ~halfway across core, and then turning horizontal again at 816.85' cutting across remainder of core.
816.85	816.9	Clay/siltstone as above. Sub-horizontal fracture at 816.9'.
816.9	817.0	Clay/siltstone as above. Sub-horizontal fracture at 817.0'.
817.0	817.5	Clay/siltstone as above. Horizontal fracture at 817.5' (likely artificial).
817.5	817.65	Clay/siltstone as above.
817.65	818.05	Clay/siltstone as above w/ off-center sub-vertical fracture spanning length. Horizontal fracture at 818.05
818.05	818.3	Very soft somewhat foliated clay/siltstone w/ numerous minor to major horizontal fractures.
818.3	818.4	Soft medium gray clay/siltstone w/ numerous hairline horizontal fractures. Major horizontal fracture



		at 818.4'.
818.4	818.5	Clay/siltstone as above w/ numerous hairline horizontal fractures. Major horizontal fracture at 818.5'
818.5	818.95	Clay/siltstone as above w/ numerous hairline horizontal fractures. Major horizontal fracture at 818.95'
818.95	819.4	Clay/siltstone as above w/ several minor filled off-center sub-vertical fractures spanning length. Major horizontal fracture at 819.4' (likely artificial).
819.4	819.5	Clay/siltstone as above w/ numerous hairline horizontal fractures. Major sub-horizontal fracture at 819.5'.
819.5	820.2	Clay/siltstone as above w/ numerous minor filled centered to off-center sub-vertical fractures spanning most of length. Major sub-horizontal fracture at 820.2'.
820.2	821.4	Clay/siltstone as above w/ several minor filled centered to off-center sub-vertical fractures spanning majority of length; also few intermittent hairline horizontal fractures.
Box 64		"821.7-831.0" Measured: 821.4'-830.5'
821.4	821.9	Soft medium gray clay/siltstone transitioning to harder medium gray very fine sand/siltstone. Sub-horizontal fracture at 821.9'.
821.9	822.8	Hard medium gray very fine sand/siltstone, very uniform.
822.8	823.4	Silt/sandstone as above w/ fine quartz-filled sub-vertical fracture spanning length. Also hairline quartz-filled sub-horizontal fracture at 823.3'. Major sub-horizontal fracture at 823.4' w/ quartz deposition on top and bottom surfaces.
823.4	824.1	Silt/sandstone as above w/ fine quartz-filled sub-vertical fracture spanning 823.4'-823.8' (continuation of sub-vertical fracture above). Fine quartz-filled vertical fracture spans 823.4'-824.1'. Numerous hairline quartz-filled sub-horizontal to horizontal fractures. Major sub-horizontal fracture at 824.1' w/ quartz deposition on top and bottom surfaces.
824.1	824.6	Silt/sandstone as above w/ fine quartz-filled vertical fracture spanning 842.1'-824.5', sub-vertical and horizontal quartz-filled splay fractures. Major sub-horizontal fracture at 824.6'.
824.6	824.8	Soft medium gray silt/claystone. Horizontal fracture at 824.8'.
824.8	824.95	Silt/claystone as above. Horizontal fracture at 824.95'.
824.95	825.2	Silt/claystone as above. Several hairline horizontal fractures. Horizontal fracture at 825.2'.
825.2	825.8	Silt/claystone as above. Several hairline horizontal fractures. Sub-horizontal fracture at 825.8'
825.8	825.9	Silt/claystone as above. Single hairline sub-horizontal fracture. Major sub-horizontal fracture at 825.9' w/ minor quartz-deposition on top and bottom.
825.9	826.3	Hard light gray very fine sand/siltstone. Off-center quartz-filled sub-vertical fracture spans length.
826.3	826.45	Sand/siltstone as above, very uniform.
826.45	826.9	Sand/siltstone as above. Off-center quartz-filled sub-vertical fracture spans length. Sub-horizontal fracture at 826.9' w/ quartz-deposition on top and bottom.
826.9	827.4	Sand/siltstone as above. Quartz-filled sub-vertical fracture spans length (continuation of sub-vertical fracture from above). Several fine quartz-filled sub-horizontal fractures. Sub-horizontal fracture at 827.4' w/ quartz-deposition on top and bottom.
827.4	827.9	Sand/siltstone as above. Quartz-filled sub-vertical fracture spans length (continuation of sub-vertical fracture from above). Several fine and medium (1 mm – 2 mm) quartz-filled sub-horizontal fractures. ^-shaped ~horizontal fracture at 827.9' w/ quartz-deposition on top and bottom.
827.9	828.2	Sand/siltstone as above. Off-center quartz-filled sub-vertical fracture spans length (continuation of sub-vertical fracture from above). Additional off-center vertical fracture w/ quartz-deposition (outside broken off). Several fine to medium (1 mm – 2 mm) quartz-filled horizontal to sub-horizontal fractures. Major sub-horizontal fracture at 828.2' w/ quartz-deposition on top and bottom.
828.2	828.7	Sand/siltstone as above. 2.5 cm x 1 cm quartz fill visible on surface. Several 1 mm – 2 mm quartz-

		filled sub-horizontal fractures (some splay). Horizontal fracture at 828.7' w/ quartz-deposition on top and bottom.
828.7	829.7	Sand/siltstone as above. 1 mm quartz-filled sub-horizontal fractures near top. Several fine quartz-filled vertical and sub-vertical fractures near bottom (some splay). Open sub-horizontal fracture at 829.7'.
829.7	830.0	Soft medium gray silt/claystone. Several fine sub-horizontal fractures toward bottom. Open sub-horizontal fracture at 830.0'.
830.0	830.2	Silt/claystone as above. Few hairline horizontal fractures. Open horizontal fracture at 830.2'.
830.2	830.5	Slightly harder silt/claystone as above, very uniform.
11-25-14		
Box 65		"831.0-840.7" Measured: 830.5'-840.1'
830.5	832.1	Dark gray semi-soft silt/claystone w/ lengths of harder material including fine to medium sand grains. Few hairline horizontal and vertical to sub-vertical fractures. Horizontal fracture at 832.1' w/ sandy-silt and quartz-deposition on bottom surface.
832.1	832.2	Dark gray semi-soft silt/claystone. Horizontal fracture at 832.2' w/ minimal and localized quartz-deposition on surface.
832.2	832.3	Dark gray semi-soft silt/claystone. Horizontal fracture at 832.3' w/ minimal and localized quartz-deposition on surface.
832.3	832.5	Dark gray semi-soft silt/claystone. Horizontal fracture at 832.5' (likely artificial) w/ chips on side of core nearby (likely from hammer blow).
832.5	833.1	Dark gray semi-soft silt/claystone w/ fine to medium sand grains. Horizontal fracture at 833.1', no signs of mineral deposition on surfaces.
833.1	833.5	Dark gray semi-soft silt/claystone w/ fine to medium sand grains transitioning to harder medium gray very fine-grained sandstone. Hairline horizontal fracture at 833.2' (no visible mineralization).
833.5	833.9	Medium gray very fine-grained sandstone. Several fine off-center sub-vertical filled fractures toward bottom. Sub-horizontal fracture at 833.9', quartzose on surfaces.
833.9	834.4	Medium gray very fine-grained sandstone. Several hairline horizontal fractures throughout. Horizontal fracture at 834.4, quartz-deposition on bottom surface.
834.4	835.4	Medium gray very fine-grained sandstone. Numerous quartz-filled fine vertical to sub-vertical fractures in upper half. Several quartz-filled fine horizontal to sub-horizontal fractures throughout. Major sub-horizontal fracture at 835.4', quartz on bottom surface, top and bottom surfaces do not align (fit together).
835.4	835.6	Medium soft medium gray silt/claystone that shortly goes out-of-gauge. Off-center quartz-filled sub-vertical fracture in upper half. Horizontal fracture at 835.6' w/ very smooth surfaces, top and bottom surfaces do not align.
835.6	836.1	Medium soft medium gray uniform silt/claystone, wavy and out-of-gauge. Sub-horizontal fracture at 836.1, minor quartz deposition on bottom surface.
836.1	836.5	Medium soft medium gray uniform silt/claystone, wavy and out-of gauge. Sub-horizontal fracture at 836.5' w/ quart-deposition on top and bottom, significant platy breakage between top and bottom, top and bottom surfaces do not align.
836.5	837.7	Hard medium gray fine-grained sandstone (in gauge) transitioning to medium soft medium gray very fine-grained sandstone. Numerous quartz-filled fine sub-horizontal to vertical fractures throughout upper hard sandstone. Several hairline horizontal to sub-horizontal fractures throughout lower medium soft very-fine sandstone.
837.7	837.8	Medium soft medium gray very fine-grained sandstone. Major fracture starts horizontal at 837.7', dips sub-vertical off-center and returns to horizontal at 837.8', w/ quartzose surface.
837.8	838.0	Medium soft medium gray very fine-grained sandstone. Several hairline horizontal to sub-horizontal

		fractures throughout. Major fracture at 838.0, "cherty" surfaces on top and bottom, top and bottom do not align (core block in between).
Core Block	838.7	Total length of core recovered between 838.7 and 828.7 =
838.7	838.8	Medium soft medium gray very fine-grained sandstone. Sub-horizontal fracture at 838.8', significant break-out between top and bottom, no obvious mineralization. (Note: Section of core box is overstuffed, especially with core block in place).
838.8	839.1	Medium soft medium gray very fine-grained sandstone (out-of-gauge). Significantly fractured w/ 3 major horizontal to sub-horizontal fractures, no obvious mineralization on fracture surfaces.
839.1	840.1	Hard medium gray medium- to fine-grained sandstone. 1-mm calcite-filled sub-vertical fracture starts at 839.3' and spans length. Numerous quartz- or calcite-filled vertical to sub-vertical fractures throughout. Sub-horizontal fracture at 840.1' with quartz-deposition on top and bottom surfaces.
840.1	840.15	Hard medium gray fine-grained sandstone. 1-mm calcite-filled sub-vertical fracture spans length (continuation from above). Sub-horizontal fracture at 840.15' with "frosty" quartz-deposition on top and bottom surfaces.
840.15	840.7	Hard light gray fine-grained sandstone. 1-mm calcite-filled sub-vertical fracture spans length (continuation from above) w/ core break-out in last 0.05' exposing clear crystalline calcite w/ visible cleavage. Numerous other vertical to sub-vertical quartz- or calcite-filled fractures throughout. Several exposed sub-angular brownish smoky quartz nodules on core surface, 1 mm – 5 mm in diameter. Horizontal fracture at 840.0 w/ quartzose surface on top.
11-26-14		
Box 66		"840.7-849.7"
840.7	841.1	Hard light gray fine-grained sandstone. 1-mm calcite-filled sub-vertical fracture begins at 840.7' and goes past core barrel 840.9' (continuation from above) w/ core-break out (broken side in box, also fits break-out above) exposing clear crystalline calcite w/ visible cleavage. Sub-horizontal fracture at 841.1' w/ some quartz on surface.
841.1	841.3	Uniform hard light gray fine-grained sandstone. Horizontal fracture at 841.3' w/ some quartz on surface.
841.3	840.8	Hard light gray fine-grained sandstone. Several filled sub-vertical to vertical fractures throughout. Few hairline horizontal to sub-vertical fractures throughout.
840.8	840.9	Hard medium gray fine-grained sandstone. Sub-horizontal fracture begins at 840.8', dips sub-vertical ~halfway across core then turns sub-horizontal around 840.9', minor crystalline quartz deposition visible on sub-vertical surface.
840.9	842.5	Hard medium gray fine-grained sandstone. Horizontal fracture at 842.5', very smooth surface, no obvious mineralization (likely artificial – end of box section).
842.5	843.6	Hard medium gray fine- to medium-grained sandstone transitioning to soft medium gray mudstone near bottom. Few filled fine sub-vertical to vertical fractures throughout. Two (2) horizontal to sub-horizontal fractures at 843.6, with some minor granular quartz visible on bottom surface of lower horizontal fracture.
843.6	843.7	Hard medium gray fine-grained sandstone. Numerous sub-vertical to vertical fractures throughout w/ substantial breakout in lower half, granular quartz visible on exposed fracture surfaces. Horizontal fracture at 843.7' w/ some granular quartz visible on top and bottom surfaces (end of core run – unknown why only 5 ft?).
Core Block	843.7	Total length of core recovery between 838.7'-843.7': 5.0'
843.7	844.2	Hard medium gray fine-grained sandstone transitioning to a softer medium gray very fine-grained sandstone. Few fine filled sub-vertical to vertical fractures in sandstone. Horizontal fracture at 844.2' w/ no visible mineralization (likely artificial – end of box section)
844.2	844.7	Medium soft medium gray very fine-grained sandstone. Few hairline horizontal fractures. Horizontal

		fracture at 844.7' w/ smooth surfaces and no obvious mineralization.
844.7	844.8	Medium soft medium gray very fine- to fine-grained sandstone.
844.8	845.8	Hard light to medium gray fine-grained sandstone. Horizontal fracture at 845.8' w/ smooth surface and no visible mineralization.
845.8	846.1	Hard medium gray fine-grained sandstone. Few filled fine sub-vertical to vertical fractures. Sub-horizontal fracture at 846.1' w/ granular quartz on surface (likely artificial – end of box section).
846.1	846.5	Medium gray fine-grained sandstone. Few filled fine horizontal to vertical fracture throughout. Horizontal fracture at 846.5' w/ granular quartz surface.
846.5	847.2	Hard medium gray fine-grained sandstone transitioning to softer medium gray fine-grained sandstone. Few filled fine sub-vertical fractures. 1 mm – 3 mm off-center calcite-filled sub-vertical fracture begins around 847.1, intersects sub-horizontal fracture at 847.2'; sub-horizontal fracture shows exposed calcite-vein and few other minor quartz crystals.
847.2	847.9	Hard medium gray fine-grained sandstone. Numerous calcite- and quartz-filled sub-vertical to vertical fractures (including continuation of notable fracture from above) from <1 mm – 2 mm thick. Break-out of sub-vertical fracture in lower half (both sides in box) exposes quartz and calcite mineralization along fracture. Sub-horizontal fracture at 847.9' w/ granular and crystalline quartz on portion of top and bottom surfaces (end of box section).
847.9	848.4	Hard medium gray fine-grained sandstone. Numerous filled fine sub-vertical to vertical fractures. Sub-horizontal fracture at 848.4' w/ some granular quartz and crystalline calcite on surface.
848.4	848.9	Hard medium gray fine-grained sandstone. Numerous 1 mm – 3 mm sub-horizontal to sub-vertical quartz veins throughout. Sub-horizontal fracture at 848.9' w/ quartz mineralization on surfaces.
848.9	849.6	Hard medium gray fine-grained sandstone transitioning to softer very fine-grained sand/mudstone around 848.5'. Numerous <1mm – 2 mm sub-vertical to vertical quartz veins throughout. Sub-horizontal fracture at 849.6' w/ smooth surface and no visible signs of mineralization.
849.6	849.9	Medium soft medium gray very fine-sand/mudstone, wavy and out-of-gauge. Horizontal fracture at 849.9' w/ no visible mineralization (likely artificial – end of Box 66).
Box 67		"849.7-859"
849.9	850.0	Medium soft medium gray very fine-sand/mudstone. Horizontal fracture at 850.0' w/ smooth surface and no visible mineralization.
850.0	850.8	Medium soft medium gray fine-sandstone w/ out-of-gauge soft mudstone near 850.8'. Horizontal fracture at 850.8' w/ smooth surface and no visible mineralization.
850.8	851.5	Alternating medium soft dark gray mudstone and harder light gray very-fine sandstone w/ bands 0.5 cm to 1.5 cm thick, wavy and out-of-gauge. Few fine sub-vertical fractures throughout. (Incidentally induced) horizontal fracture at 851.5' w/ smooth surface and no visible mineralization.
851.5	851.75	Alternating mudstone and sandstone as above. Horizontal fracture at 851.75' w/ smooth surface and no obvious mineralization, possible signs of hammer blow (likely artificial – end of box section).
851.75	851.8	Medium soft dark gray mudstone, out-of-gauge. Sub-horizontal fracture at 851.8' w/ smooth surface and no obvious mineralization.
851.8	852.8	Medium soft dark gray mudstone (out-of-gauge) quickly transitioning to (in-gauge) hard alternating medium gray fine sandstone and light gray medium-sandstone. Numerous filled sub-vertical to vertical fractures. Sub-horizontal fracture at 852.8' w/ granular quartz visible on top and bottom surfaces.
852.8	853.3	Light to medium gray fine- to medium-sandstone w/ few <1 mm – 2 mm dark gray bands. Sub-horizontal fracture at 853.3' w/ granular quartz visible on top and bottom surfaces.
853.3	853.6	Light gray fine-sandstone. Filled sub-vertical fracture. Horizontal fracture at 853.6' w/ rough edge (likely artificial – end of box section and core block)
Core Block	853.7	Total length of core recovery between 843.7'-853.7': 9.9'

853.7	853.9	Medium hard light gray fine-sandstone w/ some medium gray banding.
853.9	855.0	Alternating hard medium gray fine-sandstone and softer dark gray very fine-sandstone w/ slightly out-of-gauge section in middle and several 1 mm – 2 mm lighter bands. Numerous filled fine sub-horizontal to vertical fractures throughout. Horizontal fracture at 855.0' w/ granular quartz on surfaces.
855.0	855.6	Medium gray fine- to medium-sandstone w/ <1 mm – 2mm lighter bands. Numerous fine sub-vertical to vertical fractures, including substantial sub-vertical calcite vein toward bottom. Sub-horizontal fracture at 855.6' w/ granular and “frosty” quartz and some calcite mineralization on surfaces (end of box section).
855.6	856.2	Medium/light gray fine-sandstone. Thick sub-vertical calcite vein near top (continuation from above). Few other fine sub-vertical fractures. Sub-horizontal fracture at 856.2' w/ significant quartz precipitation on bottom surface and some minor calcite.
856.2	856.25	Medium/light gray fine-sandstone. 1.5 mm quartz-filled sub-horizontal fracture. Horizontal fracture at 856.25 w/ smooth surface and no visible mineralization.
856.25	856.55	Medium/light gray fine-sandstone. Few fine quartz-/calcite-filled sub-horizontal fracture. Sub-horizontal fracture at 856.55' w/ granular and “frosty” quartz and minor calcite on top and bottom surfaces.
856.55	857.6	Medium/light gray fine-sandstone. Few fine sub-vertical to vertical fractures, some calcite-filled. Sub-horizontal fracture at 857.6' w/ granular quartz and minor exposed calcite (from intersecting veins) on surfaces.
857.6	857.9	Medium/light gray fine-sandstone. Few fine sub-vertical fractures, some calcite-filled. Sub-horizontal fracture at 857.9' w/ granular and “frosty” quartz and some minor calcite on surfaces. (end of box section – section is over-filled)
857.9	858.9	Medium/light gray fine-sandstone. Few filled sub-vertical fractures. Horizontal fracture at 858.9' w/ rough surface and granular quartz on upper and lower surfaces (separation likely induced – core block)
Core Block	858.7	Total length of core recovery between 853.7'-858.7': 5.2'?
858.7	859.1	Medium gray fine-sandstone. Several fine sub-vertical calcite-veins. Horizontal fracture at 859.1 w/ no visible mineralization (likely artificial – end of Box 67).
11-27-14		
Box 68		“859-868.4”
859.1	859.65	Medium gray fine-sandstone w/ medium grains of calcite throughout. Few fine sub-vertical to vertical fractures filled w/ calcite and quartz. Sub-horizontal fracture at 859.65' w/ minor granular quartz on surfaces, top and bottom surfaces do not align.
859.65	859.7	Medium gray fine-sandstone. Sub-horizontal fracture at 859.7'.
859.7	860.2	Medium gray fine-sandstone. Sub-horizontal fracture at 860.2' w/ granular and “frosty” quartz on surfaces.
860.2	860.7	Medium gray fine-sandstone. Numerous horizontal to vertical fine fractures, calcite- and quartz-veins. Sub-horizontal fracture at 860.7' w/ granular and crystalline quartz and exposed crystalline calcite vein (end of box section).
860.7	861.6	Medium gray fine-sandstone. Numerous horizontal to vertical fine fractures, calcite- and quartz-veins (some continuing from above). Sub-horizontal fracture at 861.6' w/ granular quartz on surfaces.
861.6	861.65	Medium gray fine-sandstone. Sub-horizontal fracture at 861.65' w/ minor crystalline quartz on surface, top and bottom surfaces do not align.
861.65	862.3	Medium gray fine-sandstone, slightly out-of-gauge near top. Numerous sub-vertical to vertical fine fractures, calcite- and quartz-veins. Sub-horizontal fracture at 862.3' w/ granular, “frosty” and

		crystalline quartz and very minor calcite on surfaces. (end of box section)
862.3	862.7	Medium gray fine-sandstone. Numerous sub-horizontal to vertical fine fractures, calcite- and quartz-veins. Several sub-horizontal fractures at 862.7' (highly broken) w/ flaky brown quartz and probable slickenlines.
862.7	863.7	Medium gray fine-sandstone. Numerous sub-horizontal to vertical fine fractures, calcite- and quartz-veins. Sub-horizontal fracture at 863.7' w/ probable slickenlines.
863.7	864.15	Medium gray fine-sandstone. Numerous sub-horizontal to vertical fine fractures, calcite- and quartz-veins. Sub-horizontal fracture at 864.15' w/ few disseminated grains of quartz (possibly artificial – end of box section).
864.15	864.65	Medium gray fine-sandstone. Numerous sub-horizontal to vertical fine fractures, calcite- and quartz-veins. Sub-horizontal fracture at 864.65' w/ granular and platy quartz on surfaces.
864.65	865.4	Medium gray fine-sandstone. Numerous horizontal to vertical fine fractures, calcite- and quartz-veins. Two (2) sub-horizontal fractures around 865.4' w/ minor quartz on lower fracture surfaces.
865.4	865.6	Medium gray fine-sandstone. Numerous sub-horizontal to sub-vertical fine fractures, calcite- and quartz-veins. Sub-horizontal fracture at 865.6' w/ some crystalline/platy quartz and probable slickenlines.
865.6	866.0	Medium gray fine-sandstone. Numerous horizontal to vertical fine fractures, calcite- and quartz-veins. Horizontal fracture at 866.0', no visible mineralization (likely artificial – end of box section).
866.0	866.3	Medium gray fine-sandstone. Numerous horizontal hairline fractures. Several sub-vertical to vertical fine calcite-/quartz-veins. Horizontal irregular fracture at 866.3' w/ granular quartz on surfaces.
866.3	866.5	Medium gray fine-sandstone. Several sub-vertical to vertical fine fractures, calcite- and quartz-veins. Sub-horizontal fracture at 866.8' w/ smooth surface and granular quartz.
866.5	866.6	Medium gray fine-sandstone. Horizontal irregular fracture at 866.6' w/ granular quartz.
866.6	866.7	Medium gray fine-sandstone. Sub-horizontal fracture at 866.7' w/ granular quartz on surfaces, top and bottom surfaces do not align.
866.7	866.85	Medium gray fine-sandstone. Several sub-horizontal hairline fractures. Two (2) sub-horizontal fractures around 866.85' w/ granular quartz on surfaces (core block).
Core Block	“867.4”	Total length of core recovery between 858.7'-867.4': 8.15'.
867.4	868.0	Dark gray very fine- to fine-sandstone, out-of-gauge for most of length w/ several medium grains of calcite. Several sub-horizontal to vertical fine fractures, calcite- and quartz-veins. Sub-horizontal fracture at 868.0' w/ smooth surfaces and granular quartz.
868.0	868.4	Dark gray very fine- to fine-sandstone w/ medium grains of calcite throughout. Several sub-vertical to vertical fine fractures, calcite- and quartz-veins. Sub-horizontal fracture at 868.4 w/ granular quartz. (End of Box)
11-28-14		
Box 69		“868.4-876.6”
868.4	868.55	Dark gray very fine-sandstone, medium grains of calcite throughout. Horizontal fracture at 868.55' w/ granular quartz on surfaces, top and bottom surfaces do not align.
868.55	869.4	Medium gray very fine-sandstone w/ 1 mm – 1.5 cm light gray bands, medium to coarse grains of calcite throughout.
869.4	869.8	Medium gray sandstone w/ banding and calcite grains as above. Sub-vertical fracture spans length w/ granular quartz and significant calcite on surfaces.
869.8	869.9	Medium gray very fine- to fine-sandstone w/ medium to coarse grains of calcite. Sub-horizontal fracture at 869.9'.
869.9	870.1	Medium gray fine-sandstone w/ medium to coarse grains of calcite. Three (3) sub-horizontal fractures around 870.1' w/ granular quartz and some exposed calcite grains on some surfaces. (end of box section)

870.1	871.0	Medium gray fine-sandstone, slightly out-of-gauge w/ medium to coarse grains of calcite. Highly fractured w/ numerous horizontal to sub-vertical hairline to major fractures w/ granular quartz and significant calcite on most surfaces. Also some fine sub-vertical calcite-/quartz-veins. Horizontal fracture at 871.0' w/ smooth surfaces and no visible mineralization
871.0	871.7	Medium gray fine-sandstone, slightly out-of-gauge in upper 1/3, w/ medium to coarse grains of calcite throughout. Numerous sub-horizontal to sub-vertical fine fractures, calcite-/quartz-veins. Sub-horizontal convex fracture at 871.7' w/ granular quartz on surfaces.
871.7	871.9	Medium gray fine-sandstone w/ few coarse calcite grains. Highly fractured w/ several sub-vertical to vertical fractures w/ granular quartz on surfaces and significant calcite on surfaces. (end of box section)
871.9	873.2	Dark transitioning to medium gray fine-sandstone w/ medium to very coarse (1 cm dia.) grains of calcite, orange-red mineralization (iron-oxide?) in upper (dark) portion. Numerous sub-vertical fine fractures, calcite-veins. Two (2) sub-horizontal fractures around 873.2' w/ granular quartz and few minor intersecting calcite-veins.
873.2	873.6	Medium gray fine-sandstone. Numerous sub-vertical to vertical fine fractures, calcite-/quartz-veins. Few minor horizontal to sub-horizontal fractures. Major sub-horizontal convex fracture at 873.2' w/ granular quartz. (end of box section)
873.6	874.1	Medium gray fine sandstone w/ medium grains of calcite. Highly fractured top. Numerous sub-horizontal to vertical fine fractures, calcite-veins. Horizontal fracture at 874.1' w/ granular quartz and few minor intersecting veins of calcite.
874.1	874.5	Medium gray fine-sandstone, wavy and slightly out-of-gauge w/ several medium grains of calcite. Few minor horizontal hairline fractures. Horizontal fracture at 874.5' w/ granular quartz.
874.5	874.8	Medium gray fine-sandstone, wavy and slightly out-of-gauge w/ few medium grains of calcite. Numerous sub-vertical fine fractures, calcite-veins. Major sub-vertical fracture spans length (splits sample) w/ substantial calcite and granular quartz on surfaces. Sub-horizontal fracture at 874.8' w/ granular quartz.
874.8	875.1	Medium gray fine sandstone, beginning substantially out-of-gauge and sharply transitioning to in-gauge. Major sub-vertical fracture spans length (continuation from above, splits sample) w/ substantial calcite and granular quartz on surfaces. Sub-horizontal fracture at 875.1' w/ granular quartz.
875.1	875.5	Medium gray fine- to medium-sandstone. Major off-center fracture splits sample, begins as sub-horizontal splay fracture from sub-horizontal fracture at 875.1', dips sub-vertical halfway across core, spans remaining length w/ substantial calcite and some granular quartz on surfaces. Sub-horizontal fracture at 875.5' w/ granular quartz. (end of box section)
875.5	876.1	Medium gray fine-sandstone w/ numerous fine- to medium-grains of calcite. Major fracture splits sample, starts sub-vertical (continuation from above), turns sub-horizontal toward bottom, and exits core just before bottom of sample w/ substantial calcite and some granular quartz on surfaces. Two (2) sub-horizontal fractures around 876.1' w/ some granular quartz. Lower fracture top and bottom surfaces do not align.
876.1	876.6	Medium gray fine-sandstone w/ numerous fine- to medium-grains of calcite. Several sub-vertical fine fractures, calcite-veins. Sub-horizontal fracture at 876.6' w/ some granular quartz on surfaces, top and bottom surfaces do not align.
876.6	876.8	Medium gray fine-sandstone. Single sub-horizontal partial hairline fracture near top. Horizontal fracture at 876.8' w/ smooth surfaces and granular quartz.
876.8	877.3	Medium gray fine-sandstone w/ several fine grains of calcite. Few horizontal hairline fractures. Sub-horizontal fracture at 877.3' w/ smooth surface and granular quartz. (End of Box)
Box 70		"876.6-886.2"

877.3	877.7	Medium gray very fine-sandstone. Break-out near bottom. Horizontal fracture at 877.8' w/ granular quartz. (core block)
Core Block	"877.2"	Total length of core recovery between 867.4'-877.2': 10.3'?
877.2	878.6	Medium gray fine- to medium-sandstone w/ fine to medium grains of calcite throughout. Numerous sub-horizontal to vertical fine fractures, calcite-/quartz-veins. Sub-horizontal fracture at 878.6' w/ 1-mm rime of "frosty" quartz and granular quartz. (end of box section)
878.6	879.4	Medium gray medium-sandstone w/ lighter bands including fine calcite grains. Numerous sub-horizontal to sub-vertical mostly fine fractures, quartz-veins including 1 mm sub-horizontal quartz-vein near bottom. Horizontal fracture at 879.4' w/ smooth surface.
879.4	879.75	Medium gray fine- to medium-sandstone w/ fine to coarse grains of calcite. Few angular 1 mm – 2 mm dia. grains of quartz. Sub-horizontal fracture at 879.75' w/ granular and "frosty" quartz.
879.75	881.15	Medium gray fine- to medium-sandstone w/ numerous fine to medium grains of calcite. Several sub-vertical to vertical fine fractures, calcite-veins. Sub-horizontal fracture at 881.15' w/ rime of "frosty" quartz and some granular quartz.
881.15	881.3	Medium gray fine- to medium-sandstone w/ numerous fine to medium grains of calcite. Few sub-vertical very fine calcite-veins. Sub-horizontal fracture at 881.3' w/ "frosty" and granular quartz. (end of box section)
881.3	882.35	Medium gray fine- to medium-sandstone w/ numerous fine to medium grains of calcite. Numerous sub-vertical to vertical fine fractures, calcite-veins. Also numerous sub-vertical to vertical fine to 1.5 mm quartz-veins. Sub-horizontal fracture at 882.35' w/ "axe-chop" break-out, minor granular quartz, possible slickenlines.
882.35	882.8	Medium gray conglomerated fine- to medium-sandstone w/ light gray-green to dark gray sub-angular to rounded grains 1 mm – 2 cm in dia., numerous fine to medium calcite grains. Numerous sub-vertical to vertical fine fractures, calcite-veins, including off-center fracture w/ break-out exposing substantial calcite and "frosty" quartz. Sub-horizontal fracture at 882.8' w/ smooth surface.
882.8	883.3	Medium gray fine-sandstone. Few sub-vertical to vertical fine fractures, calcite-veins. Highly fractured (sub-horizontal and sub-vertical) around 883.3' w/ granular quartz on most surfaces. (end of box section)
883.3	885.3	Medium gray fine-sandstone w/ numerous fine to coarse grains of calcite w/ 3 cm x 4 cm patch of apparent limestone around 884.7'. Numerous sub-vertical to vertical fine calcite-veins. Broken-out sub-vertical fracture near top w/ exposed calcite and granular quartz. Sub-horizontal fracture at 885.3' w/ some granular quartz. (end of box-section)
885.3	885.9	Medium to dark gray siltstone w/ numerous fine to medium grains of calcite and band of light gray apparent limestone near 885.9'. Numerous sub-horizontal to sub-vertical fractures. Several sub-vertical calcite-veins.
885.9	886.1	Light gray fine-grained limestone.
886.1	886.3	Medium to dark gray siltstone w/ numerous fine to medium grains of calcite and large (1.5 cm – 4 cm) sub-angular pieces of limestone. Sub-horizontal fracture at 886.3' w/ granular quartz.
886.3	886.5	Medium gray fine-sandstone w/ several medium to coarse grains of calcite. Several sub-vertical fine calcite-veins. Sub-vertical fracture at 886.5' w/ granular quartz.
886.5	887.1	Light gray fine-sandstone w/ numerous very fine to coarse grains of calcite. Several large sub-vertical fractures (one splits sample) w/ granular quartz and substantial calcite on exposed surfaces. Sub-horizontal fracture at 887.1' w/ granular quartz and substantial calcite. (End of Box)
Box 71		"886.2-895.5"
887.1	887.9	Light gray fine-grained calcareous sandstone w/ several sub-rounded highly calcareous grains, 2 mm -5 mm in dia. Major sub-vertical fracture splits sample w/ abundant calcite, "frosty" quartz, and few sub-rounded hard, white (chalcedonic?) inclusions 0.5 cm – 1.5 cm in dia. [detail photos 1&2]. Sub-



		horizontal fracture at 887.9' w/ minor granular quartz.
887.9	888.2	Medium gray fine-grained sandstone w/ few fine calcareous grains and large (0.5 cm x 3.5 cm) calcareous inclusion. Numerous short sub-vertical fine calcite-veins. Horizontal fracture at 888.2 w/ smooth surface (likely artificial - Core Block)
Core Block	"887.2"	Total length of core recovery between 877.2'-887.2: 11' ?
887.2	887.9	Light gray highly calcareous fine-grained sandstone/limestone. Highly fractured at top. Numerous sub-horizontal to sub-vertical fine fractures, calcite-veins some up to 2 mm. Sub-horizontal convex fracture at 887.9' w/ granular quartz. (end of box section)
887.9	888.1	Medium gray very fine-sandstone. Horizontal fracture at 888.1' w/ smooth surface.
888.1	888.4	Medium gray very fine-sandstone. Sub-horizontal fracture at 888.4' w/ granular quartz, top and bottom surfaces do not align. (Core Block)
Core Block	"888.7"	Total length of core recovery between 887.2'-888.7': 1.2'.
888.7	889.3	Light gray highly calcareous fine-sandstone transitioning to medium gray fine-sandstone near bottom. Massive (1 cm) sub-vertical calcite-vein crossing stripe at 889.15'. Numerous other sub-vertical fractures and calcite-veins. Sub-horizontal fracture at 889.3' w/ minor granular quartz.
889.3	889.7	Medium gray very fine-sandstone w/ light gray (non-calcareous) banding 1 mm – 1.5 cm. Sub-horizontal fracture at 889.7' w/ minor granular quartz.
889.7	890.0	Medium gray very fine-sandstone w/ light gray (non-calcareous) banding 1 mm – 2 mm. Horizontal fracture at 890.0' w/ smooth surface and minor granular quartz (likely artificial – end of box section).
890.0	890.3	Medium gray very fine-sandstone. Sub-horizontal fracture at 890.3 w/ smooth surface and minor granular quartz.
890.3	891.0	Medium gray very fine-sandstone w/ few angular coarse calcareous grains. Horizontal slightly convex fracture at 891.0'.
891.0	891.4	Medium gray very fine-sandstone. Sub-horizontal slightly concave fracture at 891.4' w/ granular quartz.
891.4	891.9	Medium gray fine-sandstone w/ coarse angular calcareous grains more numerous toward bottom. Several sub-vertical calcite-veins. Sub-horizontal fracture at 891.9' w/ granular quartz and minor calcite around intersecting veins. (end of box section)
891.9	892.7	Medium gray fine-sandstone w/ medium to coarse calcareous grains. Numerous sub-vertical calcite-veins, notably one (1) 1 mm off-center very porous vein which spans length and one exposed vein surface near bottom w/ substantial calcite. Sub-horizontal fracture at 892.7' w/ granular quartz and calcite primarily near intersecting veins.
892.7	893.4	Medium gray fine-sandstone w/ medium to coarse calcareous grains. Numerous sub-vertical calcite-veins including continuation of porous vein from above and circular 1 mm – 2 mm vein in lower portion. Sub-horizontal to sub-vertical highly irregular fracture at 893.4' w/ abundant exposed calcite along intersecting veins and granular quartz.
893.4	893.9	Medium gray fine-sandstone w/ medium to coarse calcareous grains. Numerous sub-vertical calcite-veins. Highly fractured w/ several sub-vertical fractures splitting sample w/ abundant calcite on surfaces and granular quartz. (end of box section)
893.9	894.3	Medium gray fine-sandstone w/ fine to coarse calcareous grains. Several sub-vertical calcite-veins. Highly fractured w/ sub-vertical fractures (continuing from above) splitting sample w/ abundant calcite on surfaces and granular quartz.
894.3	895.0	Medium gray fine-sandstone w/ fine to coarse calcareous grains. Numerous sub-horizontal to sub-vertical calcite-veins, some very porous. Sub-horizontal fracture at 895.0' w/ granular quartz and some calcite on intersecting veins.
895.0	895.4	Medium gray fine-sandstone w/ fine to coarse calcareous grain transitioning midway to medium-dark gray siltstone. Siltstone has numerous horizontal to sub-horizontal fine partial fractures. Major

		fracture at 895.4' w/ granular quartz. (End of Box)
11/29/14		
Box 72		"895.5-904.7"
895.4	896.2	Mottled light gray calcareous fine-sandstone w/ medium to very coarse calcareous grains. Few sub-vertical calcite veins. Sub-horizontal fracture near 895.4' w/ granular quartz. Horizontal fracture near 896.2' w/ granular quartz.
896.2	897.2	Medium gray fine-sandstone, very uniform, slightly out-of-gauge near top. Horizontal fracture at 897.2' w/ smooth surface and granular quartz. (end of box section)
897.2	897.55	Medium gray fine-sandstone. Few sub-vertical to vertical fine calcite-veins. Sub-horizontal fracture at 897.55' w/ granular quartz, some rosy.
897.55	898.2	Medium gray fine-sandstone w/ few angular coarse (non-calcareous) white grains. Several sub-vertical calcite-veins, including 2 mm exposure near bottom. Break-out starting near 898.1' w/ exposed granular quartz and minor calcite. Sub-horizontal fracture at 898.2' w/ granular quartz and minor calcite along intersecting veins.
898.2	898.7	Medium gray fine-sandstone. Highly fractured/"rubbilized" w/ granular quartz on most surfaces and abundant calcite on some. (Core Block at 898.7')
Core Block	"898.7"	Total length of core recovery between 888.7'-898.7': 10.0'.
898.7	899.1	Medium gray fine-sandstone. Partial sub-horizontal fractures at 898.7' and 898.8' w/ granular quartz, connected by sub-vertical fracture w/ abundant exposed calcite. Sub-horizontal fracture at 899.1' w/ smooth surface and very minor granular quartz (likely artificial – end of box section).
899.1	899.2	Medium gray fine-sandstone. Sub-horizontal fracture at 899.2' w/ minor granular quartz.
899.2	899.3	Medium gray fine-sandstone. Sub-horizontal fracture at 899.3' w/ minor granular quartz.
899.3	900.6	Medium gray fine-sandstone w/ few fine to medium calcareous grains. Numerous sub-vertical to vertical fine fractures, calcite-/quartz-veins. Major sub-vertical fracture splits sample most of length w/ abundant exposed calcite and granular quartz. Sub-horizontal fracture at 900.6' w/ granular quartz.
900.6	901.0	Medium gray fine-sandstone w/ few fine to coarse calcareous grains. Sub-horizontal fracture at 901.0 w/ granular quartz and minor calcite. (end of box section)
901.0	901.5	Medium gray fine-sandstone w/ fine to coarse calcareous grains. Sub-horizontal fracture at 901.5' w/ granular quartz.
901.5	902.5	Medium gray fine-sandstone w/ fine to coarse calcareous grains. Numerous sub-vertical to vertical partially and completely filled fractures (some w/ substantial porosity). Sub-horizontal fracture at 902.5' w/ smooth surface and minor granular quartz.
902.5	903.0	Medium gray fine-sandstone w/ fine to coarse calcareous grains. Major sub-vertical fracture splits sample w/ abundant exposed calcite and granular quartz. Sub-horizontal fracture at 903.0' w/ granular quartz. (end of box section – section is over-filled)
903.0	903.3	Light gray fine-sandstone w/ fine to coarse calcareous grains. Major sub-vertical fracture splits sample (continuation from above) w/ abundant exposed calcite and granular quartz. Sub-vertical fracture at 903.3' w/ granular quartz.
903.3	904.9	Light gray fine-sandstone w/ fine to medium calcareous grains and increasingly calcareous w/ depth. Sub-horizontal fracture at 904.9' (likely artificial – End of Box).
Box 73		"904.7-914.2"
904.9	906.9	Light gray fine-sandstone w/ fine to coarse calcareous grains. Numerous horizontal to vertical minor fractures (some partially filled w/ calcite/quartz but quite permeable) and calcite-/quartz- veins. Horizontal fracture at 906.9' (likely artificial – end of box section).
906.9	908.8	Light gray fine-sandstone w/ medium gray bands, fine to coarse calcareous grains. Numerous sub-vertical to vertical fine fractures, calcite-/quartz-veins, few break-outs exposing abundant calcite.

		Horizontal convex fracture at 908.8' w/ minor calcite on intersecting veins (likely artificial – core block, end of box section).
Core Block	“908.7”	Total length of core recovery between 898.7'-908.7': 10.1'? (probable measurement error in “rubbelized” zones in Box 72)
908.7	910.1	Medium gray fine-sandstone w/ numerous fine to medium calcareous grain and some medium to coarse (non-calcareous) white grains (quartz/chalcedonic?). Several sub-vertical fractures w/ quartz and calcite fill. Sub-horizontal fracture at 910.1 w/ granular quartz.
910.1	910.65	Medium gray fine-sandstone. Major sub-vertical fracture splits part of upper half w/ abundant calcite and granular quartz on exposed surfaces. Horizontal fracture at 910.65' (likely artificial – end of box section).
910.65	911.25	Medium gray fine-sandstone. Several sub-vertical fractures w/ calcite and quartz fill. Sub-horizontal fracture at 911.25' w/ granular quartz.
911.25	911.4?	Medium gray fine-sandstone. Highly fractured/“rubbelized” (so thickness/depth uncertain).
911.4?	912.5	Medium gray fine-sandstone w/ medium to coarse calcareous grains. “Peaked” sub-horizontal fracture at 911.4' w/ granular quartz. Sub-vertical fracture broken-out around 912.0' w/ 1 mm “rime” of exposed calcite. Sub-horizontal fracture on one side of sample w/ granular quartz. Highly fractured, piece alignment uncertain. (end of box section)
912.5	913.1?	Continuation of highly fracture material from above. Medium gray fine-sandstone. Thick “rime” of calcite on exposed surface of sub-vertical fracture as above.
913.1?	913.7	Light gray fine-sandstone, cohesive w/ several medium to coarse (non-calcareous) white grains. Sub-horizontal fractures at 913.1'? and 913.7' w/ granular quartz.
913.7	914.0	Light gray fine-sandstone w/ few medium to coarse (non-calcareous) white grains. Numerous major fractures around 914.0' w/ granular quartz on horizontal to sub-horizontal surfaces.
914.0	914.6	Light gray fine-sandstone w/ few fine to medium (non-calcareous) white grains. Major sub-vertical fracture splits sample w/ calcite and granular quartz on exposed surfaces. Sub-horizontal fracture at 914.6' w/ granular quartz (End of Box).
Box 74		“914.2-923.1”
914.6	915.7	Medium gray fine-sandstone w/ fine to coarse calcareous grains. End of broken out sub-vertical fracture near 914.6' w/ exposed calcite and granular quartz. Sub-horizontal fracture at 915.7' w/ granular quartz.
915.7	916.1	Mottled medium gray fine-sandstone w/ fine calcareous grains. Sub-horizontal fracture at 916.1' w/ granular quartz.
916.1	916.5	Light gray fine-sandstone, uniform. Sub-horizontal fracture at 916.5' w/ granular quartz. (end of box section)
916.5	917.1	Light gray fine- to medium-sandstone, very uniform. Sub-horizontal fracture at 917.1' w/ very abundant calcite and ¿feldspar? (hardness>5, translucent-transparent, visible cleavage, does not react w/ HCl).
917.1	917.8	Light gray fine- to medium-sandstone. Several sub-vertical fine calcite-veins. Sub-vertical fracture splits lower half of sample w/ abundant white and rosy granular quartz on surfaces. Sub-horizontal fracture at 917.8' w/ abundant calcite and ¿feldspar? (hardness>5, translucent-transparent, visible cleavage, does not react w/ HCl) and some granular quartz.
917.8	918.1	Light gray fine- to medium-sandstone. Several sub-horizontal to sub-vertical fractures (quite porous) and fine calcite veins. Sub-horizontal fracture at 918.1' w/ granular quartz.
918.1	918.5	Light gray fine-sandstone. Few sub-vertical to vertical fine quartz veins. Sub-horizontal fracture 918.5' w/ granular quartz. (end of box section)
918.5	918.9	Medium gray w/ sharp transition to light gray fine-sandstone. Numerous sub-horizontal to vertical fine fractures (partially filled and quite porous) and calcite/quartz veins. Sub-horizontal fracture at

		918.9' w/granular quartz.
918.9	919.1	Light gray fine-sandstone. Numerous sub-horizontal to vertical fine fractures (partially filled and quite porous) and calcite/quartz veins. Sub-horizontal fracture at 919.1' w/ granular quartz.
919.1	919.2	Light gray fine-sandstone. Numerous horizontal to vertical fine calcite/quartz veins. Horizontal fracture at 919.2' (likely artificial – core block).
Core Block	“918.7”	Total length of core recovery between 908.7'-918.7': 10.5'? (probable measurement error in “rubbelized” zones in Box 73)
918.7	919.45	Medium gray fine- to medium-sandstone w/ sub-rounded to sub-angular light gray and dark gray very calcareous mottling. Sub-horizontal fracture w/ granular quartz and minor calcite. (end of box section)
919.45	920.3	Medium gray fine-sandstone w/ numerous fine to medium calcareous grains. Substantial sub-horizontal and sub-vertical fracturing (but all pieces align) w/ abundant granular quartz and some calcite on exposed surfaces. Horizontal fracture at 920.3' w/ granular quartz.
920.3	920.8	Medium gray fine-sandstone w/ fine to medium calcareous grains, very abundant toward bottom (around irregular 1 cm – 3 cm band which turns dark gray when wet). Horizontal irregular fracture at 920.8' w/ granular quartz.
920.8	921.4	Medium gray fine- to medium-sandstone w/ fine to very coarse calcareous grains. Horizontal fracture at 921.4' w/ granular quartz. (end of box section)
921.4	921.7	Medium gray fine- to medium-sandstone w/ medium to very coarse calcareous grains. Several sub-vertical fine fractures/quartz veins. Sub-horizontal fracture at 921.7' w/ granular quartz.
921.7	922.55	Medium gray fine-sandstone w/ fine to very coarse calcareous grains. Major sub-vertical to sub-horizontal fracture splits sample w/ abundant calcite and granular quartz on surfaces. Horizontal fracture at 922.55' w/ granular quartz.
922.55	922.6	Medium gray fine-sandstone w/ medium to very coarse calcareous grains. Horizontal fracture at 922.6' w/ granular quartz.
922.6	923.4	Medium gray fine-sandstone w/ fine to very coarse calcareous grains. Sub-vertical fracture splits lower part of sample and intersects partial sub-horizontal fracture at 923.2' w/ calcite and granular quartz on sub-vertical surface and granular quartz on sub-horizontal surface (calcite/quartz vein continues past sub-horizontal fracture). Sub-horizontal fracture at 923.4' w/ granular quartz. (End of Box)
Box 75		“923.1-932.6”
923.4	923.65	Medium gray fine-sandstone. Sub-horizontal fracture at 923.65' w/ granular quartz.
923.65	923.95	Medium gray fine-sandstone w/ several medium to coarse very irregular calcareous grains. Sub-horizontal fracture at 923.95' w/ significant break-out below (splay fractures?) w/ granular quartz on all surfaces.
923.95	924.8	Medium gray fine-sandstone w/ fine to coarse calcareous grains. Several sub-vertical to vertical fractures, partially filled w/ calcite, substantial permeability. Sub-horizontal fracture at 924.8' w/ granular quartz.
924.8	925.1	Medium gray fine-sandstone. Few sub-horizontal to horizontal hairline fractures. Several sub-vertical fractures, partially filled w/ calcite and quartz, substantial permeability on some. Horizontal fracture at 925.1' w/ granular quartz. (end of box section)
925.1	926.1	Medium gray fine-sandstone w/ fine to medium calcareous grains and 1.5 cm x 2.5 cm sub-rounded highly calcareous patch near bottom which turns dark gray when wet. Numerous sub-horizontal to sub-vertical fractures, filled totally to partially (high permeability) w/ calcite and quartz. Sub-horizontal to sub-vertical fracture at 926.1' w/ granular and “frosty” quartz.
926.1	926.9	Medium gray fine-sandstone w/ few medium to very coarse calcareous grain and 4 cm x 5 cm sub-rounded highly calcareous patch near top which turns dark gray when wet. Numerous sub-vertical

		fractures filled w/ calcite and quartz. Sub-horizontal fracture at 926.9' w/ smooth surface and granular quartz.
926.9	927.0	Medium gray fine-sandstone. Sub-horizontal fracture at 927.0' w/ smooth surface and granular quartz (possibly artificial – end of box section).
927.0	927.7	Medium gray fine-sandstone w/ few fine to medium calcareous grains. Few sub-vertical fine fractures filled w/ quartz. Sub-horizontal fracture at 927.7' w/ granular quartz.
927.7	928.1	Medium gray to pink (arkosic?) fine-sandstone. Several sub-vertical fractures filled w/ calcite and quartz. Horizontal fracture at 928.1' w/ pink and gray granular quartz.
928.1	928.5	Medium gray/pink fine-sandstone. Few sub-horizontal to sub-vertical fine fractures filled w/ quartz. Horizontal fracture at 928.5' w/ smooth surface and granular quartz (likely artificial – Core Block).
Core Block	“928.7”	Total length of core recovery between 918.7'-928.7': 9.8'
928.7	929.0	Medium gray/pink very fine-sandstone. Sub-horizontal fracture at 929.0' w/ granular quartz. (end of box section)
929.0	929.4	Medium gray very fine-sandstone. Sub-vertical fracture splits upper half of sample w/ granular quartz on exposed surfaces. Horizontal fracture at 929.4' w/ smooth surface and granular quartz.
929.4	930.5	Medium gray fine-sandstone becoming more conglomerated toward bottom. Numerous sub-vertical fine calcite and quartz veins around conglomerated section. Sub-vertical fracture w/ abundant granular quartz terminates in sub-horizontal fracture at 930.5' w/ minor granular quartz.
930.5	930.8	Medium gray fine-sandstone, slightly out-of-gauge. Sub-horizontal fracture at 930.8' w/ smooth surface (likely artificial – end of box section).
930.8	931.1	Medium gray fine-sandstone, out-of-gauge. Sub-horizontal fracture at 931.1' w/ granular quartz.
931.1	931.45	Medium gray fine-sandstone. Sub-horizontal fracture at 931.45' w/ granular quartz.
931.45	932.4	Medium gray fine-sandstone. Few sub-vertical fractures filled w/ calcite and quartz. Sub-horizontal fracture at 932.4' w/ siltstone around top and bottom.
932.4	932.7	Medium gray fine-sandstone. Sub-horizontal fracture at 927.6' w/ abundant silvery (muscovite?) mica (hardness<4, platy cleavage, transparent-translucent, does not react w/ HCl) and rosy quartz. (End of Box)
Box 76		“932.6-941.0”
932.7	933.5	Medium gray medium-sandstone. Single sub-vertical fracture spans almost entire length (does not split sample) filled w/ calcite and quartz. Sub-horizontal fracture at 933.5' w/ granular quartz.
933.5	933.6	Mottled medium gray fine-sandstone. Sub-horizontal fracture at 933.6' w/ abundant silvery (muscovite?) mica (hardness<4, platy cleavage, transparent-translucent, does not react w/ HCl).
933.6	934.1	Mottled medium gray fine-sandstone w/ few fine to medium calcareous grains and numerous fine to medium (non-calcareous) white grains. Sub-horizontal fracture at 934.1' w/ granular quartz and minor silvery mica. (end of box section)
934.1	934.7	Mottled medium gray fine- to medium-sandstone w/ fine to coarse calcareous grains. Few sub-vertical fine fractures and calcite/quartz veins. Sub-horizontal fracture at 934.7' w/ granular quartz and minor calcite and silvery mica.
934.7	935.1	Slightly mottled medium gray fine- to medium-sandstone. Numerous sub-horizontal to sub-vertical calcite/quartz veins. Horizontal concave fracture at 935.1' w/ siltstone surface, top and bottom surfaces do not align.
935.1	935.4	Medium gray fine-sandstone. Sub-vertical fracture w/ ¿“sericitized” feldspar? (hardness<4, visible cleavage, white, translucent (transparent when wet), does not react w/ HCl) and granular quartz intersect sub-horizontal fracture at 935.4' w/ granular quartz.
935.4	936.0?	Medium gray fine-sandstone. Highly fractured/“rubbelized” w/ ¿“sericitized” feldspar? (see properties above) on sub-vertical surfaces and granular quartz on sub-horizontal surfaces. Depth/thickness uncertain due to “rubbelized” nature. (end of box section)

936.0?	936.3	Light gray fine-sandstone. Horizontal fracture at 936.0' w/ smooth surface and granular quartz. Sub-horizontal fracture at 936.3' w/ smooth surface and granular quartz.
936.3	936.7	Light gray fine-sandstone, highly calcareous toward bottom. Few sub-vertical fine fractures, calcite/quartz veins. Sub-vertical fracture w/ abundant calcite and granular quartz intersects sub-horizontal fracture at 936.7' w/ granular quartz.
936.7	937.6	Medium gray fine-sandstone. Few sub-vertical calcite and quartz veins in upper portion. Sub-horizontal fracture at 937.6' w/ granular quartz. (end of box section)
937.6	938.1	Medium gray fine sandstone. Sub-vertical fracture in upper portion w/ granular quartz and minor calcite. Sub-vertical to sub-horizontal fracture at 938.1 w/ abundant calcite and granular quartz. (Core Block)
Core Block	"938.7"	Total length of core recovery between 928.7'-938.7': 9.4' (possible measurement error through "rubbelized" section)
938.7	940.05	Light to medium gray fine-sandstone, slightly out-of-gauge toward bottom. Sub-vertical to sub-horizontal fracture around 938.7' (continuation from above) w/ abundant calcite and granular quartz. Sub-vertical fracture near bottom w/ abundant calcite and granular quartz intersects sub-horizontal fracture at 940.05 w/ minor granular quartz. (end of box section)
940.05	940.95	Medium to light gray fine-sandstone, wavy and very out-of-gauge. Sub-horizontal fracture at 940.95' w/ minor granular quartz.
940.95	941.7	Light to medium gray fine-sandstone, slightly out-of-gauge. Highly fractured, w/ major sub-vertical fracture splitting most of sample w/ granular quartz and abundant calcite on surface, minor granular quartz on surfaces of other lesser fractures. Horizontal fracture at 941.7' w/ smooth surface and granular quartz. (End of Box).
12/2/14		Paul Morgan
Box 77		"941.0-950.7"
941.0	941.6	Light to medium gray fine-grained sandstone. Out of gauge from 941.3-941.5.
941.6	943.0	Gradation banding between pinkish/whitish and light gray fine-grained sandstone on few mm to cm scale. Sub-vertical fracture from 942.7 to 943.0, calcite on fracture.
943.0	947.5	Light to medium gray fine-grained sandstone. Sub-vertical fracture from 943.0 to 945.3 and from 946.7 to 947.4; calcite on fractures. Core in small pieces from 947 to 947.5
947.5	948.4	Reddish-brown fine-grained sandstone. Horizontal fracture at 948.0
948.4	950.7	Light to medium gray fine-grained sandstone with reddish-brown bands from 947.5 to 947.6 and 949.7 to 949.9. Vertical fractures from 948.4 to 949.1 and 950.4 to 950.7.
Box 78		"950.7-960"
950.7	954.6	Bands of Light to medium gray and reddish-brown fine-grained sandstone on the scale of 1 to 10 cm. Sub-vertical fracture from 950.7 to 951.6 and 952.4 to 952.9. Sub-horizontal fractures at 951.9, 953.6 and 954.2.
954.6	958.7	Reddish-brown fine-grained sandstone. 45 degree angle fracture from 956.5 to 956.7. Core broken into pieces from 958.3 to 958.7,
958.7	960.0	Light to medium gray fine-grained sandstone. Indications of bioturbation below 959.4. Only sliver of core remaining below 959.7 – a sliver from a sub-vertical fracture – NO calcite on fracture.
12/3/14		Paul Morgan
Box 79		"960.0-968.7"
960.0	961.25	Light gray fine-grained sandstone. Bioturbation from 960.0 to 960.2 and from 960.8 to 961.25. Rough horizontal fracture at 960.65 with calcite.
961.25	968.7	Reddish-brown fine-grained sandstone grading to light reddish brown color with depth with one irregular patch of light gray 0.15 ft at 967.9. 45 degree angle fracture from 968.4 to 968.6. Steep angled fracture from 963.6 to 963.9. Rough horizontal fracture at 964.2. Sub-horizontal fracture

		from 966.2 to 966.3.
12/6/14		Paul Morgan
Box 80		"968.7-978.5"
968.7	978.5	Fine grained sandstone varying in color from greenish gray to reddish. Some thin sub-vertical cracks filled with white mineral, probably anhydrite. Sub-vertical fractures from 971.9 to 972.5, from 973.3 to 974.2, from 974.1 to 974.8, from 977.8 to 078.2 and from 978.0 to 978.5. Sparse carbonate on some fractures.
Box 81		"978.5-986.7"
978.5	986.7	Fine grained sandstone varying in color from greenish gray to reddish. White clay rich layer from 985.2 to 985.25. Potentially open fracture at 984.4.
Box 82		"986.7-995.7"
986.7	995.7	Fine grained sandstone varying in color from greenish gray to reddish to light gray. No significant evidence of bioturbation.
Box 83		"995.7-1003.5"
995.7	998.5	Very light slightly pinkish gray fine grained sandstone with weak wavy fine horizontal layering. High angle fracture from 997.7 to 998.0.
998.5	998.8	Light gray very fine grained sandstone/siltstone.
998.8	1003.5	Light gray fine to medium grained sandstone. Clear sub-angular quartz grains. No carbonate. High angle fracture from 1001.8 to 1002.5. Drillers reported very difficult to break this core.
12/7/14		Paul Morgan
Box 84		"1003.5-1012.7"
1003.5	1011.9	Light gray fine grained sandstone. No carbonate. Sub-horizontal band of medium gray finer grained sandstone/siltstone from 1007.8 to 1007.9. Sub-vertical fracture from 1008.6 to 1009.2 and from 1011.0 to 1011.6. some growth of euhedral anhydrite crystals on sub-vertical fractures
1011.9	1012.7	Medium gray fine grained sandstone. Broke into small pieces from 1011.9 to 1012.2
Box 85		"1012.7-1021.0"
1012.7	1021.0	Light gray to reddish fine grained sandstone. No carbonate. Much bioturbation. Mostly reddish but bands of light gray up to 3 inches thick, and light gray irregular masses up to 3 inches thick. Near vertical fracture <sup>9</sup> from 1012.7 to 1013.3 and from 1016.9 to 1018.4 with core broken into pieces from 1016.9 to 1017.7.
Box 86		"1021.0-1030.0"
1021.0	1030.0	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses vary in shape from oval to amoeboid and from a fraction of an inch to about 1 inch by 2 inches. No carbonate.
Box 87		"1030.0-1040.0"
1030.0	1031.3	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses vary in shape from oval to amoeboid and from a fraction of an inch to bands up to 2 inches thick. Well laminated layer from 1030.2 to 1030.35. No carbonate.
1031.3	1032.0	Light gray fine grained sandstone.
1032.0	1040.0	Reddish fine grained sandstone with light gray masses spaced along length of core and becoming sparser with depth. Masses range in shape from round to irregular shapes and from less than an inch to 1 inch by 0.3 inches.
Box 88		"1040.0-1050.0"
1040.0	1050.0	Reddish fine grained sandstone with groups of light gray fine grained sandstone masses along core. Groups are 1 to 5 inches in length and masses are generally irregular in shape ranging in size from a fraction of an inch to irregular horizontal bands up to about 1 inch thick. No carbonate. Sub-vertical fracture from 1043.5 to 1045.5

Box 89		"1050.0-1058.5"
1050.0	1051.1	Light gray fine grained sandstone with irregularly shaped reddish masses from 1050.5 to 1050.8. Sub-vertical fracture starting at 1050.0 and extending into next section.
1051.1	1058.5	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 3.5 inches thick. Sub vertical fractures extend through core from 1050.0 to 1057.6 resulting in zones of broken up core.
Box 90		"1058.5-1067.2"
1058.5	1067.2	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 5.5 inches thick. Light gray fine grained sandstone band from 1061.3 to 1061.7 with gradational boundaries. Sub-vertical fractures from 1058.7 to 1058.95, from 1061.7 to 1062.6 and from 1065.5 to 1065.7. Broken core in fracture from 1061.7 to 1062.6. Healed sub-vertical fracture from 1066.2 to 1067.2 with white anhydrite in fracture.
Box 91		"1067.2-1075.7"
1067.2	1075.7	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 6 inches thick. High angle fracture from 71.1 to 71.6 with thin flakes of gypsum on fracture.
Box 92		"1075.7-1084.6"
1075.7	1079.5	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 2 inches thick.
1079.5	1080.5	Light gray fine grained sandstone.
1080.5	1084.6	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 2 inches thick. Sub-vertical fracture from 1083.1 to 1082.6.
Box 93		"1084.6-1093.5"
1084.6	1093.5	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 8 inches thick. Sub-vertical fractures from 1088.3 to 1088.7, and from 1089.9 to 1090.1.
Box 94		"1093.5-1103.7"
1093.5	1103.7	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 3 inches thick. Healed 45 degree fracture from 1094.7 to 1095 with anhydrite in fracture. Open fracture at 1102.6.
Box 95		"1103.7-1110.7"
1103.7	1110.7	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 18 inches thick. This sub-vertical healed fracture filled with anhydrite. More core in box than indicated by length marked on box.
Box 96		"1110.7-1121.0"
1110.7	1121.0	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 12 inches thick. Still no carbonate.
12/8/14		Paul Morgan
Box 96.5		"1121.0-1131.0"
1121.0	1131.0	Reddish fine grained sandstone with light gray masses spaced along length of core. Masses generally amoeboid in shape and from a fraction of an inch to bands up to 0.5 inches thick. Most of light gray sandstone masses between 1121.0 and 1121.5 and between 1127.0 and 1129.3. Otherwise core mainly reddish sandstone,



Box 97		"1131.0-1140.7"
1131.0	1137.4	Reddish fine grained sandstone with light gray amoeboid shaped masses mostly between 1131.55 and 1131.8.
1137.4	1139.9	Light gray fine grained sandstone with very minor reddish sandstone intermixed where bioturbated.
1139.9	1140.7	Reddish fine grained sandstone with light gray oval to amoeboid shaped masses spread along length.
Box 98		"1140.7-1150.7"
1140.7	1150.7	Reddish fine grained sandstone with very minor light gray oval to amoeboid shaped masses spread along length.
Box 99		"1150.7-1160.7"
1150.7	1159.7	Reddish fine grained sandstone. Light gray fine grained sandstone in sub-vertical burrows ~2.25 inches wide from 1150.7 to 1152.4.
1159.7	1160.7	Light gray fine grained sandstone with gradational transition from reddish sandstone at top.
12/3/14		Paul Morgan
Box 100		"1160.7-1168.7"
1160.7	1167.4	Dark reddish brown siltstone with carbonate. Strongly bioturbated with traces up to 1.5 inches wide and over 1 foot in length sub-vertical, especially between 1160.7 and 1163.0. Small white veins, some branching, up to 0.05 inches in width and 1.5 inches in length, from 1164.4 to 1167.4 – cannot distinguish if more calcite than matrix. Irregular sub-horizontal fractures at 1161.2, 1162, 1163.7, 1164.5, 1166.4 and 1167.4, 1167.7, and 1168.5.
1167.4	1168.45	Medium gray siltstone with carbonate and some bioturbation. Irregular sub-horizontal fracture at 1167.7.
1168.45	1168.7	Dark reddish brown siltstone with carbonate and some bioturbation. Irregular sub-horizontal fracture at 1168.5.
Box 101		"1168.7-1177.5"
1168.7	1169.6	Alternating bands of medium gray and darkish red fine-grained sandstone/siltstone 0.75 to 1 inch thick with carbonate. Sub-horizontal fractures at 1169.1 and 1169.25.
1169.6	1170.3	Dark reddish brown fine grained sandstone/siltstone with carbonate.
1170.3	1173.2	Medium gray fine grained sandstone/siltstone with carbonate. Sub-horizontal fracture at 1171.7.
1173.2	1176.2	Dark reddish brown fine grained sandstone/siltstone with carbonate. Sub-horizontal fractures at 1173.4 and 1175.1. 45 degree fracture from 1175.4 to 1175.7 fully cemented with carbonate.
1176.2	1176.9	Light to medium gray fine grained sandstone/siltstone with carbonate. Sub-horizontal fracture at 1176.9.
1177.0	1177.5	Dark reddish brown fine grained sandstone/siltstone with carbonate. Sub-horizontal fractures at 1177.2 and 1177.7.
Box 102		"1177.5-1186.7"
1177.5	1183.8	Dark reddish brown fine grained sandstone/siltstone. Carbonate down to 1182.0 where it disappears abruptly. Strong bioturbation from 1178.1 to 1178.4, from 1181.2 to 1182.3 and from 1183.4 to 1183.8.
1183.8	1186.7	Fine grained gypsum (anhydrite?). Near vertical fracture from 1183.8 to 1184.8 with selenite needles up to ~0.1 inches long grown on fracture.
Box 103		"1186.7-1196.7"
1186.7	1196.7	Fine grained gypsum (anhydrite?). Bioturbation with mid-gray and gray-green irregular intermixing from 1187.6 to 1187.9: irregular sub-horizontal fracture through this bioturbation. Sub-horizontal fracture from 1187.3 to 1187.4. Irregular sub-horizontal fracture at 1188.7. Sub-vertical fracture from 1190.2 to 1191.6. Intense sub-horizontal wavy black banding from 1192.9 to 1193.4: irregular sub-horizontal fracture at 1192.9. Healed sub-vertical fractures filled with carbonate from 1193.4 to 1196.7. Increasing sand and carbonate content below 1193.4.

Box 104		"1196.7-1205.5"
1196.7	1198.6	Light gray fine grained sandstone with carbonate. Large irregular sub-horizontal fracture at 1196.8: black coating on surfaces and sides do not match: probably open fracture. Intense sub-horizontal wavy black banding from 1197.7 to 1197.8: irregular sub-horizontal fracture at 1197.8. Sub-vertical fracture from 1197.8 to 1198.7,.
1198.6	1199.05	Light gray fine grained sandstone with carbonate and darker gray sub-horizontal inclusions from <0.05 in. up to 1 in. long by 0.2in. thick.
1199.05	1205.5	Fine-grained sandstone with carbonate varying in color from light gray to medium gray to dark reddish. Color changes often abrupt but sometimes mixed by bioturbation. Black indistinct sub-horizontal banding from 1198.9 to 1199.2. Sub-horizontal fractures at 1198.6, 1198.9, 1199.0, 1199.5, 1202.2, 1203.3, 1303.5,1204.5, 1205.0, and 1205.3.
12/4/14		Paul Morgan
Box 105		"1205.5-1214.0
1205.5	1214.0	Light gray fine-grained sandstone with carbonate. Irregular dark reddish sub-horizontal banding from 1213.6 to 1213.7. Near-vertical fracture from 1210.1 to 1210.5. Sub-horizontal breaks in core, but none have carbonate or other deposits and look to be breaks when core removed, not in situ fractures.
Box106		"1214.0-1224.3"
1214.0	1224.3	Mostly light to medium gray fine-grained sandstone with carbonate. Dark reddish from 1214.4 to 1215.1 and from 1215.7 to 1216.2. Irregular sub-horizontal partially-open fractures at 1216.0, 1216.6, 1217.05, 1217.6 and 1221.8.
Box 107		"1224.3-1233.5"
1224.3	1230.3	Mostly light to medium gray fine-grained sandstone with carbonate. Dark reddish from 1224.7 to 1225.1. Near-vertical fractures continuous below 1225.2 mostly healed with carbonate. Irregular sub-horizontal partially-open fractures at 1226.3 and 1227.0.
1230.3	1231.3	Dark reddish fine-grained sandstone. Carbonate content decreasing with depth. Intense carbonate veining at ~45 deg in upper portion of this section. Sub-vertical fracture splits core through all but lowest 2 inches of this section.
1231.3	1235.5	Medium gray mudstone – NO carbonate. Bioturbation leaving trace fossils (burrows?) > 5 inches long and >1 inch wide.
Box 108		"1233.5-1242.7"
1233.5	1242.7	Light to medium gray fine-grained sandstone with carbonate. Sub-vertical fracture from 1234.1 to 1234.6. Sub-horizontal slightly open fracture at 1238.4.
Box 109		"1242.7-1252.5"
1242.7	1252.5	Light to medium gray fine-grained sandstone with greenish and pinkish tinges in upper 4 feet and with carbonate. No fractures apparent. Weak to strong bioturbation along length of core. Very strong bioturbation with irregular black banding and light gray inclusions from 1247.0 to 1247.2. Abrupt color change to darker gray in general below 1251.2.
Box 110		"1252.5-1262.5"
		Medium to dark gray fine-grained sandstone. NO carbonate. Bioturbation varies along length of core from little to moderate. Some bioturbation includes sub-horizontal irregular black bands from 0.2 inches to ~1 inch thick. All fractures appear to be associated with core recovery.
Box 111		"1262.5-1271.5"
1262.5	1271.5	Light to dark gray fine to medium grained sandstone with minor anhydrite. Grain size increases with depth. NO carbonate. Little to moderate bioturbation: some apparent burrows, other stronger bioturbation associated with darker sections of core. Healed sub-vertical fracture from 1263.6 to 1264.1 – cement probably anhydrite, NOT carbonate. Broken near vertical fracture

		from 1267.7 to 1269.3. Irregular sub-horizontal partially-open fracture at 1263.6.
Box 112		"1271.5-1280.5"
1271.5	1280.5	Light to medium gray fine to medium grained sandstone with minor anhydrite. NO carbonate. Medium grained from 1271.5 to 1273.7, from 1275.3 to 1277.5, and from 1280.0 to 1280.5. Moderate bioturbation, even in medium grained sections. Irregular sub-horizontal partially-open fractures at 1271.6, 1274.1, 1274.3 and 1275.6. Sub-vertical fracture from 1273.0 to 1273.3.
12/5/14		Paul Morgan
Box 113		"1280.5-1289.0"
1280.5	1289.0	Light to medium gray fine and medium grained sandstone. No carbonate. Clear sub-rounded quartz grains visible in coarser sections. Somewhat friable in fractures in coarser sections. Bioturbated. Friable open fractures at 1281.0, 1281.4, 1281.5, 1281.6, 1281.9, 1284.0, 1284.3, 1284.7, 1285.9, 1287.2 and 1288.7.
Box 114		"1289.0-1299.0"
1289.0	1299.0	Light to medium gray fine and medium grained sandstone. No carbonate. Clear sub-rounded quartz grains visible in coarser sections. Bioturbated. Somewhat friable open fractures at 1289.75, 1289.8, 1293.2, 1297.2, 1298.0 and 1298.5. Sub vertical fracture from 1295.9 to 1296.4 with euhedral quartz microcrystals growing on fracture.
Box 115		"1299.0-1308.5"
1299.0	1308.35	Light to medium gray medium grained sandstone. No carbonate. Clear sub-rounded quartz grains visible. Bioturbated. Somewhat friable open fractures at 1300.6, 1301.4, 1302.4 and 1306.2.
1308.35	1308.5	Medium gray, fine grained laminated sandstone/siltstone.
Box 115		"1308.5-1317.5"
1308.5	1309.1	Light gray fine grained sandstone. No carbonate.
1309.1	1310.2	Gradual transition from light gray to dark reddish fine grained sandstone. Carbonate in sandstone increases with depth. As color darkens increase in white irregular sub-horizontal veins of carbonate, some penetrating core, ranging from very thin to ~0.05 inch thick.
1310.2	1317.5	Dark reddish fine grained sandstone with carbonate. Near-vertical fracture from 1310.4 to 1311.6: white irregular sub-vertical veins of carbonate in this depth range unrelated to fracture. Minor evidence of bioturbation along core but irregular disturbances from 1312.2 to 1312.3 and 1312.5 to 1312.8 with carbonate concentrations. Leaky horizontal fractures at 1314.2 and 1314.8.
Box 117		"1317.5-1327"
1317.5	1327.0	Mostly dark reddish fine grained sandstone with little or no carbonate. Red grades to light gray from 1319.9 to 1320.3, from 1324.7 to 1325.1 and from 1325.9 to 1326.4. Irregular light gray patches at other positions in core up to 0.75 inch bands or 2 inches long by 0.75 inches thick. Minor bioturbation. Some sub-vertical to random white carbonate veins, branched or including irregular shaped masses up to 0.75 inches thick.
Box 118		"1327.0-1335.3"
1327.0	1335.3	Light gray to light-pinkish gray fine grained sandstone. No carbonate. Only fractures appear to be associated with core retrieval. Variable bioturbation along length of core. Irregular dark (could be clear) markings on outside of core from 1327.45 to 1328.0. Uppermost marking is the intersection of a plane with rough edges, a dip of about 30 degrees and a thickness of about 0.1 inches with the core. Lower markings appear to have a similar dip but are more irregular in shape. The dark mineral may be quartz – does not react with dilute acid and cannot be scratched with a knife blade.
Box 119		"1335.3-1344.4"
1335.3	1341.0	Reddish fine grained sandstone. No carbonate. Horizontal fracture at 1319.6 open to flow. Healed sub-vertical fracture from 1338.9 to 1340.0 filled with mixture of black and white minerals. White is carbonate. On fracture black appears to be in compact sheets parallel to fracture - biotite mica?

1341.0 to	1342.6	Transition from reddish to light grey fine grained sandstone. No carbonate. Irregular dark (could be clear) sinuous markings on outside of core from 1341.2 to 1341.4. Dark mineral may be quartz – does not react with dilute acid and cannot be scratched with a knife blade.
1342.6	1344.4	Light grey fine grained sandstone. No carbonate. Distinct lighter gray band from 1343.625 to 1347.0. Irregular dark (could be clear) thin generally straight, intersecting markings (probably quartz) on outside of core from 1343.1 to 1343.3 with younger (cross-cutting) arcuate white marking varying in width from a point to ~0.5 inches. Mineral is probably anhydrite (does not react with dilute acid, just scratched with a penny).
Box 120		"1344.4-1353.6"
1344.4	1352.65	Light grey fine grained sandstone. No carbonate.
1352.65	1353.6	Light grey medium grained sandstone. No carbonate. Bioturbation. Healed sub-vertical fracture from 1352.4 to 1352.8 and from 1347.95 to 1348.2: white cement, probably anhydrite. White flecks and short white sinuous veins from 1349.4 to 1349.8 and 1350.7 to 1351.5, again, probably anhydrite.
Box 121		"1353.6-1364.4"
1353.6	1364.4	Light gray fine and medium grained sandstone. Grain size generally decreasing with depth. No carbonate above ~1354, but rapidly increasing below ~1354. Sinuous, sub-vertical, discontinuous carbonate vein from 1361.1 to 1361.6. Only fractures appear to be associated with retrieval of core.
12/6/14		Paul Morgan
Box 122		"1364.4-1372.6"
1364.4	1365.9	Light gray fine and medium grained sandstone with carbonate.
1365.9	1368.8	Anhydrite with VERY minor light gray fine grained sandstone.
1368.8	1372.6	Anhydrite with light gray fine grained sandstone with carbonate varying from 10 to 30% in sub-horizontal layers. Leaky fractures at 1367.5, 1368.7, and 1373.35.
Box 123		"1372.6-1382.6:"
1372.6	1373.3	Anhydrite with minor light gray fine grained sandstone. Leaky fracture at 1373.3.
1373.3	1374.8	Anhydrite with light gray fine grained sandstone with carbonate varying from 10 to 60% in sub-horizontal layers.
1374.8	1376.1	Light gray fine grained sandstone with carbonate with anhydrite in sub-horizontal oval masses up to 20%.
1376.1	1374.5	Transition to >95% anhydrite.
1374.5	1382.6	Anhydrite with crazy-paving pattern of intergranular dark, thin veins with carbonate.
124		"1382.6-1391.5:"
1382.6	1391.5	Anhydrite with crazy-paving pattern of intergranular dark, thin veins with carbonate. Leaky fracture at 1388.7.
125		"1391.5-1401.5"
1391.5	1401.5	Anhydrite with crazy-paving pattern of intergranular dark, thin veins with carbonate.
126		"1401.5-1410.5"
1401.5	1410.5	Anhydrite with crazy-paving pattern of intergranular dark, thin veins with carbonate.
127		"1410.5-1420.5"
1410.5	1420.5	Anhydrite with crazy-paving pattern of intergranular dark, thin veins with carbonate. Size of anhydrite grains significantly coarser (up to ~2.5 by 1.5 inches) from 1412.8 to 1412.9 and 1413.3 to 1416.2.
128		"1420.5-1429.5"
1420.5	1429.5	Anhydrite with crazy-paving pattern of intergranular dark, thin veins with carbonate. Size of anhydrite grains very variable from <0.02 inches to layers >3 inches thick. Dark gray veins have carbonate. Leaky fractures at 1422.8, 1423.4, 1424.8, and 1426.9.

129		"1429.5-1439.0"
1429.5	1437.9	Anhydrite with crazy-paving pattern of intergranular dark, thin veins with carbonate. Generally coarse grained with layers up to ~3 inches thick.
1437.9	1238.2	Very organic rich black friable shale.
1238.2	1439.0	Anhydrite with crazy-paving pattern of intergranular dark, thin veins with carbonate. Generally coarse grained with layers up to ~3 inches thick.
130		"1439.0-1448.7"
1439.0	1447.8	Anhydrite with sub-horizontal to horizontal layers of medium gray fine grained sandstone/siltstone with carbonate. Layers from 0.02 inches to 0.75 inches thick. Anhydrite grains sometimes separated by dark veins extending from sandstone/siltstone layers.
1447.8	1448.7	Medium gray fine grained sandstone/siltstone layers with carbonate become thicker and start to envelope anhydrite grains, ratio of compositions becoming about 50:50.
Box 131		"1448.7-1457.8"
1448.7	1452.0	Anhydrite with sub-horizontal to horizontal layers of medium gray fine grained sandstone/siltstone with carbonate. Layers from 0.02 inches to 0.6 inches thick.
1452.0	1453.9	Transition from anhydrite with layers of medium gray fine grained sandstone/siltstone to medium gray fine grained siltstone with carbonate with no anhydrite.
1453.9	1457.5	Medium gray fine grained siltstone with carbonate.
1457.5	1457.8	Light gray fine grained sandstone with carbonate.

<b>Top Ft</b>	<b>Base Ft</b>	<b>Description</b>
<b>2014-12-18</b>		
80		Gray siltstone, with 5% lighter grey chips. Chips recovered are 2-10mm in size and platy. Some fine laminations
90		50-50% light gray-gray siltstone. Chips recovered are 2-10mm in size and platy. Some fine laminations.
100		80-20% light gray-gray siltstone. Chips recovered are 2-10mm in size and platy. Some fine laminations.
110		Light gray-gray siltstone, 1-5mm platy chips. Only minimal recovery from this depth (2-3 cc)
120		Gray clay, balls formed from washing, which only succeeded in shrinking the sample size.
130		Light gray-gray siltstone, 1-5mm platy chips. Only minimal recovery and sample contains some organics (pine needles)
140-200		Circulation lost, no recovery from these depths.
<b>2015-1-7</b>		
<b>Box 1</b>	200-210	
200.3	200.7	Grey fine-medium grained sandstone with 25-30% quartz and 70-75% darker grains. May be brecciated with a calcite cement. Fracture surface contains minor pyrite and quartz crystals 1-4mm in size. Orientation of pieces not determinable due to jumbled nature of core and small size of recovered pieces. Oil? Related deposit in the fine grained calcite, black and rubbery in texture.
200.7	204.6	Massive grey medium grained sandstone with horizontal open fracture at 201.6 and several other closed fracture surfaces. Fracture surfaces have dark (organic related) material, pyrite, and in some cases minor yellow minerals which are fine sand sized grains (sulfur?). Silicic cement in sst.
204.6	205.1	Same rock as above, with subvertical (75 degree from horizontal) fracture stretching this length. Silicic cement in sst.
205.1	210	Massive grey medium grained sandstone with horizontal and subhorizontal fracture planes with pyrite and dark gray clay or organic related material on the surfaces. The gray frequently has overgrown the pyrite on the plane, and is scratchable with a nail but does not penetrate. Silicic cement in sst.
<b>Box 2</b>	210-220	
210	211.4	Grey massive medium grained sandstone with silicic cement. 75° fracture from 210.3-210.8. Horizontal fractures at 210.6, 211.1, Fractures have <.5mm

		subhedral to euhedral pyrite and quartz on <1% of the surface.
211.4	212.3	Light-grey to grey medium grained sandstone with silicic cement. Light grey and grey regions create a mottled surface texture. Circular to elongate 1-2mm lenses of dark grey
212.3	212.4	Horizontal dark clay layer that easily penetrates with a nail when wet.
212.4	215.6	Light grey to grey medium grained sandstone with silicic cement. Light grey and grey regions create a mottled surface texture. Circular to elongate 1-2mm lenses of dark grey
215.6	220	Light grey fine to medium grained sandstone intermixed with dark grey very fine horizontal to sub-horizontal sandstone laminae. Dark grey laminae form 80% of the surface expression on the core, with lighter gray sandstone generally layered.
<b>Box 3</b>	220-230	
220	224.6	Mottled texture with light grey medium to fine grained sandstone and dark grey very fine grained sandstone intermixed. Vertical fracture from 220.1 to 222 with subhedral pyrite masses and grains <.5mm. Silicic cement.
224.6	230	Light grey massive fine grained sandstone with a few dark grey very fine grained sandstone laminae. Highly fractured region from 225.3-225.9, with subhedral pyrite masses and grains <.5mm on the surfaces. Elongate vertical fracture (?) surface from 226.1 to 227.9 subhedral pyrite masses and grains <.5mm on the surfaces. Silicic cement. Pyrite sometimes masses in horizontal layers aligned with breakage planes within this region. Only partial recovery of the core, with one half the breakage plane missing from the box. 228.8 and 229.4 horizontal fractures contain dark fine grained material, possibly organic. Silicic cement.
<b>Box 4</b>	230-238	
230	238	Light grey fine to medium grained sandstone with silicic cement. Broken and fractured region from 230.6 to 230.9 and 236.2 to 236.9, as well as many horizontal fractures through the section. Fracture surfaces contain dark organic material and <.5mm grained pyrite masses covering 10-80%. Dark grey fine grained intermixed layers creating a similar mottled texture as above.
<b>Box 5</b>		238-247.5

238	239.5	Mottled texture of light grey medium grained sandstone and dark grey fine to very fine grained sandstone with silicic cement. Dark grey to light grey riation 50-50. Horizontal fractures occur at 238.2, 238.6, 238.8, and 239.3 and a 50° fracture occurs from 238.9 to 239.1. Fracture faces have dark organic fine grained material as well as subhedral pyrite masses with grains <.5mm.
239.5	241.1	Same as above but highly fragmented, many recovered pieces of core are 1-3cm in size.
241.1	242.5	As above with primarily horizontal fractures, in addition to a 60° fracture from 241.4 to 241.6 and a vertical fracture from 241.7 to 242.
242.5	244	Unit transitions to 80-90% dark grey sandstone, otherwise as above. Fractures are generally 40-60°, and contain pyrite masses as above.
244	246	As above but with horizontal fractures at 245 and 245.3.
246	246.3	Light grey clay with horizontal laminations. Clay penetrates to 1mm with a nail when wet. May be volcanic ash.
246.3	247.5	Continues as above the clay layer, but with 50-50 mix between light and dark sandstones. Horizontal fractures at 246.7 and 247.4 with only dark organic material, no pyrite present.
<b>2015-1-8</b>		
<b>Box 6</b>	<b>247-257</b>	
247	257	Mottled light grey medium grained sandstone with dark grey fine grained sandstone. Vertical Crack from 247 to 247.4 has calcite filling. Sandstone cement is silicic. Horizontal fractures at 249, 250, 250.9, and 255 contain black organic material. Vertical fracture from 256.4 to 257.2 shows no mineralization on surface.
<b>Box 7</b>	<b>257-267</b>	
257	263.3	Mottled light grey medium grained sandstone with dark grey coarse siltstone. Vertical fracture from 258.1 to 259.5. From 259-259.5 thick (1cm) calcite filling.
263.3	263.4	Finely laminated dark grey silt that fractures easily on horizontal surfaces.
263.4	267	Mottled light grey medium grained sandstone with dark grey coarse siltstone. Horizontal fractures with black organics or mineralization at 264, 264.6, 265.4, 165.6, and 265.9. Subhedral pyrite masses <3mm diameter on face of fracture at 265.4.
<b>Box 8</b>	<b>267-276</b>	



267	269	Light Grey fine grained massive sandstone. Vertical fracture cemented with calcite from 267.3-269.
269	270.2	Black shale with bedding surfaces containing significant pyrite (<.5mm grain size). Vertical fracture at ~269.5 contains euhedral quartz and pyrite up to 3mm.
270.2	277	Light grey fine grained sandstone. Tar pockets of 1-3mm between 270.2 and 271.1. Vertical fracture from 270.2 to 272.4 with euhedral pyrite grains <.5mm. Vertical fracture from 276-276.6 contains euhedral pyrite and quartz as well as an unidentified transparent cubic mineral and oil related mineralization (black, brittle, conchoidal fracture)? Horizontal fractures and 274.1 and 275.7 contain <.5mm pyrite grains.
<b>Box 9</b>		276-285
276	279.8	Light Grey fine grained sandstone with multiple horizontal and vertical fractures. Fracture surfaces contain masses of <.5mm euhedral pyrite grains and some black (oil related?) mineralization with conchoidal fracture.
279.8	280.2	Very fine grained sandstone with horizontal bedding. Where broken faces show imprints of shells.
280.2	285	Sandstone and fractures as above, with 2mm infilling of black conchoidally fractured mineralization or organic/oil related material at 281.8.
<b>Box 10</b>		285-295
285	288.1	Light grey fine grained massive sandstone with calcite cement. Vertical fracture from 286.1-286.5 and 287.6-288.1 contains fine grained masses of euhedral pyrite. Horizontal to subhorizontal fractures at 286.5, 286.8, 287.1, 287.3, and 287.6 also contain fine grained masses of euhedral pyrite.
288.1	289.3	Finely laminated dark grey shale contains multiple vertical fractures with some fine grained masses of euhedral pyrite.
289.3	291.7	Mottled texture of light grey fine grained sandstone and dark grey coarse silt. Horizontal fracturing contains fine grained masses of euhedral pyrite as well as black organic related (?) mineralization which shows conchoidal fracture and a thickness of up to 2mm.
291.7	292.3	Finely laminated dark grey shale. Multiple horizontal fractures with some fine grained masses of euhedral pyrite.
292.3	295	Mottled texture of light grey fine grained sandstone and dark grey coarse silt. Many horizontal fractures contain

		black organic (?) related mineralization and fine grained euhedral pyrite masses.
<b>Box 11</b>		295-304?
295	304	<p>From 296-297.5 mottled texture of dark grey fine grained sandstone and dark grey coarse siltstone. Multiple horizontal fractures with dark grey to black covering and sparse very fine grained euhedral pyrite grains. A vertical fracture from 297.1-297.5 has fine grained masses of euhedral pyrite.</p> <p>From 297.5 to 301.5, there is an increase to 50% of the core being coarse siltstone and more consistently horizontally bedded. A .6" vertical fracture contains significant pyrite and dark black mineralization.</p> <p>301.5 to 301.8 is a soft white clay layer which penetrates to 1mm with a nail when wet.</p> <p>301.8 to 304.2 is a fractured coal layer with fracture surfaces covered up to 20% in pyrite globules with primarily subhedral grains of &lt;.5mm.</p> <p>304.2 to 306 is a light grey fine grained sandstone with white 2mm inclusions of clay interspersed.</p>
<b>Box 12</b>		304-314
306	307.9	Medium grey fine to medium grained sandstone with silicic cement. Grading to coarse sandstone by the end of the section. Has 2mm inclusions of white clay. Horizontal fractures at 307.1, 307.5, and 307.8 have black organic or oil related mineralization (?), fine grained euhedral pyrite masses, and <2mm long selenite (?) needles.
307.9	312.1	Light grey fine grained sandstone to coarse siltstone grading to a medium grey by 312. Horizontal fractures at 309.1 and 309.3 with little to no mineralization on the surface.
312.1	316	Light grey massive fine grained sandstone. Contains pockets of white clay (?) of less than 3mm diameter which are somewhat concentrated in horizontal layers. Silicic cement.
<b>Box 13</b>		314-324
315.6	316.1	Light grey massive fine grained sandstone. Contains pockets of white clay (?) of less than 3mm diameter which are somewhat concentrated in horizontal layers. Silicic cement.

**Commented [PF1]:** I believe this box actually goes from 296 to 306, and is marked incorrectly. To keep the log from getting confusing it is all written as one box, where the depths reflect this difference

**Commented [PF2]:** 306 to 316 actual

**Commented [PF3]:** 316-325 actual

316.1	316.3	Massive light grey siltstone. Multiple horizontal and vertical fractures (may be drilling related) and some black oil related (?) mineralization with conchoidal fracture in pockets <2mm diameter.
316.3	324.8	Mixed light grey fine grained sandstone with a medium grey fine grained sandstone to coarse siltstone. Texture changes from mottling to cross beds by 320, and continues with cross bedding until the end of the section. Horizontal fractures at 317.2, 318.4, 319.5, 320, and 324.3 with some masses of fine grained subhedral to euhedral pyrite. Vertical open fracture 324.4 to 324.8 with black mineralization and pyrite masses open 3-5mm through the core.
<b>Box 14</b>		324-334
324.8	328.6	Light grey fine grained sandstone as above. Vertical to subvertical fracturing present from 324.8-325.4, 326-326.2, and 326.5-328.6. Fractures contain fine grained subhedral to euhedral pyrite masses covering up to 95% of some surfaces as well as dark black mineralization with conchoidal fracture more limited in presence.
328.6	329.3	Gradation to a poorly cemented dark grey sandstone.
329.3	334	Dark grey poorly cemented coarse sandstone. Clay clasts up to 5mm diameter are present with broad (.2-.5ft) layers of increased concentration. Gradation from dark grey to light grey poorly sorted coarse sandstone by 333.2. Subvertical (60°) fractures with euhedral to subhedral masses of pyrite with <.5mm grain size at 329.7-330 and 331.5-331.9. Fractured regions (both horizontal and vertical) at 330.2-330.4 and 323.8-334.
<b>Box 15</b>		334-344
334	338.5	Light grey massive fine grained sandstone with silicic cement. Generally homogenous. Vertical fracture from 334.5-335.9 with only minor black mineralization. Horizontal fractures with similar mineralization at 336.2, 336.8, 337, and 337.5.
338.5	340	Rubble in box. Green mudstone (chlorite rich?) with a few black grains of up to 2mm. Pieces fracture easily in hand.
340	341.2	Light green mudstone. Breaks on horizontal plane when handled, but has no natural fractures.
341.2	344	Light green fine grained sandstone with <1% coarse sand black grains. Vertical fracture from 343.1 to 344 with no surface mineralization apparent.

<b>Box 16</b>		344-354
344	347.7	Light grey to light green fine grain sandstone grading into a light grey to light green conglomerate with clasts of up to pebble size but a modal abundance of fine to coarse sand (pebble grains comprise <3% by volume). Horizontal fractures at 344.8, 345.3, and 346.3 with no fracture surface mineralization. A vertical fracture with no additional mineralization at 346.6-347.0 and the horizontal fracture at 346.3 both expose serpentine veins.
347.7	350.7	Medium to coarse sandstone with a dark green matrix. Grains are variable in color, texture, and rounding. Horizontal fracture at 348.4 with no mineralization. Vertical fracture from 347.7-348 running along a serpentine vein, but no additional mineralization.
350.7	351.4	Green mudstone to fine grained sandstone. Green clay layer from 350.7 to 351.4 penetrates with a nail to 2mm when wet.
351.4	354	Sharp depositional boundary to light grey massive fine grained sandstone. An open vertical fracture is present from 252.6 to 254 with masses of euhedral pyrite of grain size <1mm, euhedral selenite blades of up to 2mm, and white transparent euhedral cubic silicate mineral (?)
<b>Box 17</b>		354-363
354	355.7	Light grey medium grained sandstone. Vertical fracture from 354.7 to 355.7 with minor euhedral pyrite (<.5mm grain size) covering <2% of the fracture surface.
355.7	356	Dark grey clay which easily penetrates to 3mm with a nail when wet.
356	358.5	Light grey medium well cemented conglomerate with a maximum grain size of a medium pebble and median size of coarse sand and a silicic cement. Horizontal fractures at 356.8, 357.2, and 357.8, and 358.
356	363	Light grey to white medium to fine grained sandstone. Returns to conglomerate as above from 361.4 to 362.7. Horizontal fractures at 359.4, 359.8, 360.1-4, 361, and 362.3. Vertical fracture from 361-363. Neither horizontal nor vertical fractures show any mineralization or alteration on the surface.
<b>Box 18</b>		363-370.5
363	363.8	Fine grained sandstone as above. Multiple horizontal fractures with not additional mineralization.
363.8	368.4	Conglomerate as above, moderately cemented.

368.4	370.3	Sandstone as above, moderately cemented.
370.3	370.5	Conglomerate as above, moderately cemented.
<b>Box 20-22</b>		1436-1461.5
1436	1461.5	Dark grey hornblende biotite gneiss. General grain size is <1mm. Steeply dipping (80°) veins of light pink to white translucent feldspar of a thickness up to the width of the core are present with a crystal size of up to 1cm. Many fractures (~2 per foot) present ranging from horizontal to a maximum of 70°. The majority are horizontal or less than 20° from it. Fracture surfaces show alteration to serpentine and other red and black (?) minerals. In some cases offset in feldspar veins coincides with apparent slickenlines in the alteration surface, particularly evident at 1436.6.