

Crisp County

CECIL PATTE #1

1 1/4 miles west of Arabi, land lot 144, land district 13,  
Crisp County.

1.2.40.1/23-

TOPS

Top Cretaceous	825 feet
Eutaw	1,888 "
Tuscaloosa	2,190 "
Middle Tuscaloosa	2,969 "
Lower Tuscaloosa	3,087 "
Massive Sand	3,232 "
Red Shale	4,050

S. M. Herrick

DP#2

UNPUBLISHED RECORDS  
SUBJECT TO REVISION

1.2.40.1/22 -

Kerr-McGee'  
# 1 Cecil Pate \*  
Crisp Co.: GGS # 108  
Elev. 364: Logged by  
SMH

Depth  
in Feet:

Summary:

Formation:

Samples very poor

	No Samples -----	0 - 370	485	Scott
In Claiborne (top not determined)	-----	370 -	485	
Undifferentiated Wilcox	-----	485 -	800	12/16/55
" Paleocene (Midway)	-----	800 -	910	
Porters Creek	-----	800 -	835	
Clayton	-----	835 -	920	
Upper Cretaceous	-----	920 -	3130	
Undifferentiated Navarro-Taylor-Austin	--	910 -	2495	
Mutaw	-----	2405 -	2495	
Tuscaloosa	-----	2495 -	3130	
Upper Tuscaloosa	-----	2495 -	2970	
Undiff. Mid.-Lower Tuscaloosa	-----	2970 -	3130	
Lower Cretaceous (?)	-----	3130 -	3250 ( )	

Possible Water Bearing Horizons:

Fine to coarse-grained sand at depths, 500 - 582, 595 - 635, 645 - 668, ~~835-890~~

Limestone at depth, 835 - 890.

Fine to coarse-grained sand at depths, 926 - 950, 1000 - 1025, 1080 - 1095, and 1136 - 1170.

\* Owing to poor quality of samples all formational tops above depth of 1200 feet picked from electric log and from sections penetrated by neighboring wells having similar stratigraphic sections.

UNPUBLISHED RECORDS  
SUBJECT TO REVISION

CRISP COUNTY

Kerr-McGee  
Cecil Pate #1

1240.1/21

Tentative formational tops:

No samples	0 - 370
In Claiborne (top not determined)	370 - 475
Undifferentiated Wilcox	475 - 800
Paleocene	800 - 920
Upper Cretaceous	920 - 3130
Undifferentiated Navarro-Taylor-Justin	2495 - 2495
Possible Eutaw	2495 - 2495
" Tuscaloosa	2495 - 3130
Lower Cretaceous (?)	3130 - 3250 (+)

(J. M. Herrick)

Georgia Geological Survey well no. 108

Crisp County, Georgia

Kerr-McGee Oil Co., Cecil Pate no. 1

TD 5015

geophysical datum: one foot above rotary

logged by Katherine Lee Avary, 1975

\* means a microfossil slide is in the sample envelope.

note: this is the first well logged by Ms Avary.

1.2.40.1/19

GG5 108

Please note, before reading these descriptions:

\* means fossils pulled, mounted, and placed back in sample envelope

most of the grain sizes given are the average or predominant size in the sample

in the description of the amounts of accessory constituents, many is more than several which is more than few

under particle characteristics, range is given, sometimes exceeding the average grain size given in the general description

in some highly fossiliferous samples, the fossil content is given as either the limy or limestone percentage.

in some highly glauconitic samples, the glauconite percentage is included in the sand, or sandy percentage

the(color)is overall megascopic color of the sample

different lithologies within the sample are given colors and listed usually in the order of abundance, least to most, unless otherwise noted.

frosted quartz should probably be described as milky or white (N9)

grain size usually the quartz, not other minerals

medium gray (N5) claystone, fissile, is probably better described as siltstone.

dark reddish brown sandstone (10R 3/4) is probably better described as siltstone

even when describing samples mostly of clay. still determining the sorting and grain size of sedimentary grains in the sample.

arkosic is used instead of feldspathic

0-370 no samples

370-380\* fresh, hard, colorless quartz, very light gray (N8), flakes of limestone, light gray limestone (N7), speckled, dark reddish brown (10R 4/2) sandstone; very fossiliferous, vitreous quartz, dull limestone and sandstone, slightly permeable sandstone, coarse grained, 1/2-1.0 mm, sandy (15% sandstone grains, 20% quartz grains), limy (65%) limestone dark reddish brown (10R 4/2) equant, very fine grained (1/16-1/8 mm) sand grains, colorless or iron stained, polished, smooth, subangular, equant, anhedral, medium to coarse grained (1/4-1.0 mm) quartz grains

380-390 fresh, hard, colorless quartz, very light gray (N8); limestone flakes light gray (N7), speckled, dark reddish brown (10R 4/2) sandstone, very fossiliferous, vitreous quartz, dull limestone and sandstone, slightly porous sandstone, coarse grained (1/2-1.0 mm) sandy (15% sand grains), 20% quartz grains), limy (65%) limestone dark reddish brown (10 R 4/2), dull, petroliferous, subangular, equant, very fine grained (1/16-1/8 mm) sedimentary grains. limestone reacts with HCl, then turns yellow--maybe a little sulfur? grains colorless or iron stained, polished, smooth, subangular, equant, anhedral, medium coarse grained (1/4-1.0 mm) quartz grains.

390-400\* fresh, hard, colorless quartz grains, very light gray (N8) limestone flakes, light gray (N7) limestone, speckled dark ~~xxxxx~~ reddish brown (10R 4/2) sandstone; very fossiliferous, vitreous quartz, dull limestone and sandstone, slightly porous sandstone, coarse grained (~~10R 4/2~~ 1/2-1.0 mm) sandy (5% sand, 5% quartz) limy (90%) limestone stone dark reddish brown (10R 4/2), very fine grained (1/16-1/8 mm) sand grains; colorless, iron stained, polished, smooth, subangular, equant, anhedral, medium coarse grained (1/4-1.0 mm) quartz grains

400-410 fresh, hard, colorless quartz, very light gray (N8) limestone, light gray (N7) limestone, dark reddish brown sandstone (10R 4/2); very fossiliferous; vitreous quartz, dull limestone and sandstone, slightly porous sandstone; medium grained (1/4-1/2 mm) sandy (5% sandstone, 5% quartz) limestone. dark reddish brown (10R 4/2), very fine grained (1/16-1/8 mm) sand grains, colorless or iron stained, polished, smooth, subangular, equant, anhedral, medium to coarse grained (1/4-1.0 mm) quartz grains.

410-420 fresh, hard, colorless quartz, very light gray (N8) limestone (more than above), light gray (N7) limestone, and dark reddish brown sandstone (10 R 4/2). fossiliferous; vitreous quartz, dull limestone and sandstone, slightly porous sandstone, medium grained (1/4-1/2 mm) sandy (5% sandstone, 5% quartz) dolomitic limestone. dark reddish brown (10R 4/2), very fine grained (1/16-1/8 mm) sand grains, colorless or iron stained, smooth, polished, subangular, equant, anhedral medium to coarse grained (1/4-1.0mm) quartz

- 420-430\* Fresh, hard, dark reddish gray (10R 4/2) sandstone, colorless quartz, medium gray (N5) limestone, very fossiliferous, vitreous quartz, dull limestone and sandstone, slightly porous sandstone, medium grained (1/4-1/2 mm), sandy (1% sandstone, 39% quartz, 60% dolomitic limestone)  
 dark reddish brown (10R 4/2) very fine grained (1/16-1/8 mm), sand grains, colorless, polished smooth, subangular, ~~xxx~~ equant, anhedral, medium to coarse grained (1/4-1.0 mm) quartz grains  
 sandstone may be caving!
- 430-440 Fresh, hard, dark reddish brown (10R 4/2) sandstone, colorless quartz, medium gray (N 5) limestone, glauconitic, very fossiliferous, vitreous quartz, dull limestone and sandstone, slightly porous sandstone, coarse grained (1/2-1.0 mm), sandy ( 1% sandstone, 30% quartz, 69% limestone)  
 dark reddish brown (10R 4/2), very fine grained (1/16-1/8 mm) sand grains, colorless quartz, polished smooth, subangular, equant, anhedral, medium to coarse grained (1/4-1.0 mm) quartz grains.  
 sandstone is probably cave!
- 440-450 no samples.
- 450-460 fresh, hard, dark reddish brown (10R 4/2) sandstone; very light gray (N 8) limestone; medium gray (N 5) limestone, pyrite, very fossiliferous, vitreous quartz, dull limestone and sandstone, slightly porous sandstone, coarse grained (1/2-1.0 mm) sandy (1% sandstone 19% quartz) limy (80%) limestone  
 dark reddish brown (10R 4/2), very fine grained (1/16-1/8 mm) colorless or iron stained, polished smooth, subangular, equant, anhedral, medium to coarse grained (1/4-1.0 mm) quartz grains.  
 sandstone is probably caving!
- 460-470 Fresh, hard, dark reddish brown (10R 4/2) sandstone; colorless quartz; very light gray (N 8) limestone, glauconitic, very fossiliferous; vitreous quartz, dull limestone and sandstone; slightly porous sandstone, medium grained (1/4-1/2 mm), sandy (1% sandstone, 39% quartz), limestone (60%).  
 dark reddish brown (10R 4/2), very fine grained (1/16-1/8 mm) sand grains, colorless, polished smooth, subangular, equant, anhedral, medium grained (1/4-1/2 mm) quartz grains.
- 470-480 Fresh, hard, colorless quartz, medium gray (N 5) limestone, glauconitic, very fossiliferous; vitreous quartz, dull limestone; medium grained 1/4-1/2 mm) sandy (45%) limestone.  
 colorless or iron stained, polished smooth, subangular, equant, anhedral, medium grained (1/4-1/2 mm) quartz grains.
- 480-490 Fresh, hard, colorless quartz; medium gray (N 5) limestone; light gray (N 8) limestone, glauconitic, very fossiliferous; vitreous quartz, dull limestone, coarse grained (1/2-1.0 mm), sandy (45%) limestone.  
 colorless or iron stained, polished smooth, subangular, equant, anhedral, medium to coarse grained (1/4-1.0 mm) quartz grains.

- 490-500 Fresh, hard, medium red (5R 5/4) sandstone, colorless quartz; medium gray (N5) limestone; very light gray (N 8) limestone, glauconitic, very fossiliferous; vitreous quartz, dull limestone, coarse grained (1/2-1 mm), sandy (1% sandstone, 39% quartz) limestone.  
moderate red (5R 5/4) dull, pitted, subangular, equant, very fine grained (1/16-1/8 mm) sand grains.
- 500-510\* Fresh, hard, colorless quartz; medium gray (N5) limestone; very light gray (N 8) limestone, very fossiliferous; vitreous quartz, dull limestone; coarse grained (1/2-1.0 mm) sandy (40%) limestone.  
colorless or iron stained ~~quartz~~ polished smooth, subangular, equant, anhedral, medium to coarse grained (1/4-1.0 mm) quartz grains.
- 510-520 Fresh, hard, moderate red (5R 5/4) sandstone, colorless quartz; moderate gray (N 5) limestone; very light gray (N 8) limestone, very fossiliferous, vitreous quartz, dull limestone; coarse grained (1/2-1.0 mm) sandy ( 1 % sandstone, 44% quartz) limestone.  
moderate red (5R 5/4), dull, pitted, subangular, equant, very fine grained (1/16-1/8 mm) sand grains. colorless or iron stained, polished, smooth, subangular, equant, anhedral medium to coarse grained (1/4-1.0 mm) quartz grains.
- 520-530\* Fresh, hard, colorless quartz; medium gray limestone (N 5); very very light gray (N8) limestone, slightly phosphatic, glauconitic, very fossiliferous, vitreous quartz, dull limestone, medium grained (1/4-1/2 mm) sandy (quartz 45%) limestone.  
colorless or iron stained, polished, smooth, subangular, equant, anhedral, medium grained ( 1/2 mm ) quartz grains.
- 530-540 fresh, hard, colorless quartz, medium gray (N 5) limestone and very light gray (N8) limestone, glauconitic, very fossiliferous, vitreous quartz, dull limestone, medium grained (1/4-1/2 mm) sandy (40% quartz) limestone.  
colorless or iron stained, polished smooth, subangular, equant, anhedral, fine-medium grained (1/8-1/2 mm) quartz grains.
- 540-550 Fresh, hard, colorless quartz, medium light gray (6) limestone and very light gray (N8) limestone, wood fragment, glauconite, very fossiliferous, vitreous quartz, dull limestone, medium grained (1/4-1/2 mm) sandy limestone.  
colorless or iron stained, polished smooth, subangular, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 550-560\* Fresh, hard, colorless quartz, medium gray (N5) limestone and very light gray (N 8) limestone, glauconitic, very fossiliferous, (50% fossils), vitreous quartz, dull limestone, medium grained (1/4-1/2mm) sandy limestone.  
colorless or iron stained, polished, smooth, subangular, equant, anhedral, fine to medium grained (1/8-1/2 mm) ~~sandy~~ quartz grains.



- 560-570. Fresh, hard, colorless quartz, medium light gray (N 6) limestone, and very light gray limestone, glauconitic, very fossiliferous, (50%), vitreous quartz, dull limestone, medium grained ( $\frac{1}{4}$ - $\frac{1}{2}$  mm), sandy (45%) limestone.  
colorless or iron stained polished smooth, subangular, equant, anhedral, fine to medium-grained ( $\frac{1}{8}$ - $\frac{1}{2}$  mm) quartz grains.
- 570-580. Same as above. medium grained. some elongate quartz grains. 2 or 3 pieces of red sandstone-cave.  
Fresh, hard, colorless quartz, medium light gray (N 6) sandstone, very light gray limestone (N 8) limestone, glauconitic, very fossiliferous (50%), vitreous quartz, dull limestone, medium grained ( $\frac{1}{4}$ - $\frac{1}{2}$  mm) sandy (45%) limestone.  
colorless or iron stained, polished smooth, subangular, equant or elongate, anhedral, fine to medium grained ( $\frac{1}{8}$ - $\frac{1}{2}$  mm) quartz grains.
- 580-590\* same as above. some elongated quartz grains; no sandstone cave noticed. shell fragments and foraminifera.
- 590-600. Fresh, hard, yellow-gray (5Y 8/1), very light gray (N8) limestone, colorless quartz, glauconite, slightly fossiliferous (5%), dull limestone, vitreous quartz, medium sorted, medium grained ( $\frac{1}{4}$ - $\frac{1}{2}$  mm) limy (7%) sand.  
colorless or iron stained, polished, smooth, subangular, equant, anhedral, fine to medium grained ( $\frac{1}{8}$ - $\frac{1}{2}$  mm) quartz grains.  
\*\*\*very noticeable change in fossil content 590-600 and 580-590.
- 600-610. Fresh, hard, yellow-gray (5Y 8/1) very light gray (N 8) limestone, medium gray (N5) limestone, and colorless quartz, glauconite, slightly fossiliferous (less than 5%), dull limestone, vitreous quartz, well sorted, medium grained ( $\frac{1}{4}$ - $\frac{1}{2}$  mm) limy (8%) sand.  
colorless or iron stained quartz, polished smooth, subangular, equant, anhedral, fine to medium grained ( $\frac{1}{8}$ - $\frac{1}{2}$ ) mm quartz grains.  
2 pieces of glauconite  
2 pieces of red sandstone-probably cave.
- 610-620. Fresh, hard, yellow-gray (5Y 8/1), medium gray (N5) limestone, and very light gray (N8) limestone, colorless quartz, glauconite, slightly fossiliferous (less than 5%), dull limestone, vitreous quartz, medium sorted, medium grained ( $\frac{1}{4}$ - $\frac{1}{2}$  mm) limy (8%) sand.  
colorless or iron stained, polished smooth, subangular to subrounded, equant and elongated, anhedral, fine to medium grained ( $\frac{1}{8}$ - $\frac{1}{2}$  mm) quartz grains.
- 620-630. Fresh, hard, yellow gray (5Y 1/1) medium gray (N5) and very light gray (N8) limestone, yellow gray limestone has quartz, colorless, glauconite, slightly fossiliferous (10%). dull limestone, vitreous quartz, medium sorted, medium grained ( $\frac{1}{2}$ - $\frac{1}{4}$  mm) limy (15%) sand  
colorless or iron stained, polished, smooth, subangular to subrounded, equant and elongate, anhedral, fine to medium grained ( $\frac{1}{8}$ - $\frac{1}{2}$  mm) quartz grains.  
1 piece of red sandstone-cave probably.



- 690-700. Fresh, hard, medium gray (N5), very light gray (N8) limestone, colorless quartz, and medium gray (N5) marl (marl itself isn't calcareous, but chips of limestone are present in the sample).  
Claystone (or marl) itself has pieces of glauconite in it; its non calcareous and brittle. Whole sample is phosphatic and phosphatic and slightly fossiliferous (less than 5%), also possibly limonitic, medium sorted, medium grained (1/4-1/2 mm) limy (10%), sandy (40%) claystone.  
quartz grains as above.  
since this is the first appearance of claystone, maybe everything else is cave?
- 700-710. Fresh, hard, dark greenish gray (5GY 4/1), very light gray (N8) limestones and colorless quartz, extremely glauconitic (55%), phosphatic, slightly fossiliferous (less than 5%), dull limestone, vitreous quartz, well sorted, medium grained (1/4-1/2 mm), limy (10%) sandy (35%) glauconite.  
greensand- so much glauconite  
quartz grains as above  
a few pieces of red sandstone, probably cave(?)
- 710-720. Fresh, hard, dark greenish gray (5GY 4/1) and very light gray (N8) limestone, and colorless quartz, and medium gray claystone (with glauconite in it); very glauconitic (40%) (not as glauconitic as above), phosphatic, slightly fossiliferous (less than 5%), sandy (40%), glauconite.  
greensand like above, but not as much glauconite, and claystone present  
quartz grains as above.
- 720-730. Fresh, hard, dark greenish gray (5GY 4/1), and very light gray (N8) limestone, and colorless quartz, and medium gray claystone with glauconite in it; very glauconitic (40%) (about the same as above) phosphatic, slightly fossiliferous (5%), dull limestone, vitreous quartz, well sorted, medium grained (1/4-1/2 mm), limy (20%), sandy (40%) glauconite.  
greensand like 710-720  
quartz grains as above.
- 730-740. Fresh, hard, light olive gray (5Y 6/1), very light gray (N8) limestone, colorless quartz, a few pieces of medium gray (N5) claystone with glauconite in it, glauconitic (30%) (less than above), phosphatic, slightly fossiliferous (7%), dull limestone, vitreous quartz, medium sorted, medium grained (1/4-1/2 mm) limy (20%), glauconitic (30%) sand.  
greensand, but with less glauconite than the above samples.  
quartz grains as above.
- 740-750. Fresh, hard, light olive gray (5Y 6/1), very light gray (N8) limestone, colorless quartz, and a few pieces of medium gray (N5) claystone, glauconitic (20%), phosphatic, fossiliferous (20%), medium sorted, medium grained (1/4-1/2 mm) limy (30%), glauconitic (20%) sand.  
greensand, but not as much glauconite as above  
colorless or iron stained, polished smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains. red sandstone or something; maybe a little limonite or sandstone is cave? probably.

- 750-760. Fresh, hard, light olive gray (5Y 6/1), very light gray (N8) limestone, colorless quartz, and some medium gray (N5) claystone. glauconite (20%), phosphatic, fossiliferous (20%), medium sorted, medium grained (1/4-1/2 mm) limy (30%) glauconitic (20%) sand. Still greensand like 740-750 sample, but much less glauconite than 700-710 above.  
quartz grains as above.
- 760-770. Fresh, hard, dark medium gray (5GY 4/1), very light gray (N8) limestone, colorless quartz, and a few pieces of medium gray (N5) claystone. Very glauconitic (50%), slightly fossiliferous (less than 5%), well sorted, medium grained (1/4-1/2 mm), limy (10%) sandy (40%) glauconite.  
As green or greener than 700-710.  
Quartz grains as above.
- 770-780. Fresh, hard, dark greenish gray (5GY 4/1). Very light gray (N8) limestone and colorless quartz. Glauconite (50%), well sorted, medium grained (1/4-1/2 mm) limy (5%) sandy (40%) glauconite. Greensand. As green as 760-770 and 700-710.  
colorless or iron stained, polished, smooth, subangular, equant and elongated, anhedral, medium grained (1/4-1/2 mm) quartz grains.  
A little bit of red sandstone-probably cave.
- 780-790. Fresh, hard, greenish gray (5GY 4/1). Very light gray (N8) limestone and colorless quartz, very glauconitic (50%), well sorted, medium grained (1/4-1/2 mm) limy (5%), sandy (45%) glauconite. Greensand as above.  
colorless, iron stained, or pale yellow, clear, greenish (5GY 7/4), polished, smooth, subangular, equant and elongated, anhedral, medium grained (1/4-1/2 mm) quartz grains.  
Piece of red sandstone, probably cave.
- 790-800. Fresh, hard, dark greenish gray (5GY 4/1). Very light gray (N8) limestone and colorless quartz, glauconitic (40%), phosphatic, slightly fossiliferous (10%), medium sorted, medium grained (1/4-1/2 mm), limy (15%) glauconitic (40%) sand. Greensand, but not quite as green as 780-790.  
colorless, iron stained, and clear, yellow green (5GY 7/4), polished, smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/4 mm) quartz grains.
- \*\*\*\*\*690-700 sample is quite clayey (about 50%). Other samples contain only a few chips of claystone\*\*\*\*\*
- 800-810. Fresh, hard, dark greenish gray (5GY 4/1). Very light gray (N8) limestone and colorless quartz. Rather glauconitic (30%), phosphatic, slightly fossiliferous (15%), well sorted, medium grained (1/4-1/2 mm). Limy (20%), glauconitic (30%) sand.  
colorless, polished smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.  
3 pieces of reddish orange material, cave or maybe limonite?

810-820. Fresh, hard, greenish gray (5GY 6/1). Very light gray limetone (N8), colorless quartz, 2 or 3 pieces of medium gray (N5) claystone, rather glauconitic (30%), slightly fossiliferous (less than 5%), phosphatic, well sorted, medium grained (1/4-1/2 mm), limy (10%) glauconitic (30%) sand.

colorless or iron stained, polished smooth, subangular to subround, equant and elongated, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

820-830. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, colorless quartz, medium gray (N5) claystone, glauconite (5%), phosphatic, slightly fossiliferous (10%), Well sorted, medium grained (1/4-1/2 mm) limy (20%), glauconitic (5%) sand.

Greensand but not with very much glauconite.

colorless or iron stained, polished smooth, subangular, equant and elongate, anhedral, medium grained (1/4-1/2 mm) quartz grains.

830-840\* Fresh, hard, light olive gray (5Y 6/1). Medium gray(N5) and/light gray ( N8) limestones, colorless quartz, glauconite, phosphate, mega and micro fossils (30%), Medium grained 1/4-1/2 mm), well sorted limy (45%) sand.

colorless and yellowish green (5GY 7/4) or iron stained, polished, smooth, subangular to subrounded, equant, fine to medium grained (1/8-1/2 mm) quartz grains.

a few pieces of red sandstone or something. Siderite? maybe.

840-850. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N 5) and very light gray (N8) limestone. Colorless quartz, glauconite, fossils (less than 10%), well sorted, medium grained limy (45%) sand. quartz grains as above.

850-860. Fresh, hard, light olive gray (5GY 7/4). Very light gray (N8) limestone and colorless quartz. glauconite, very fossiliferous (45%), megafossil fragments. Medium grained (1/4-1/2 mm) sandy (40%) limestone.

green quartz grains as above.

860-870. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) claystone, very light gray (N8) limestone and colorless quartz. Glauconite, very fossiliferous (50%), Medium grained (1/4-1/2 mm) clayey (5%), sandy (40%) limestone.

Quartz grains--few frosted, some pretty well rounded, otherwise same as above.

870-880. Fresh, hard, light olive grey (5Y 6/1). Very light gray (N8) limestone and colorless quartz. Phosphatic, glauconitic, fossiliferous (45%). Medium grained (1/4-1/2 mm) sandy (40%) limestone.

colorless, iron stained, smoky or yellow green (5GV 7/4), polished, frosted or smooth, subangular to subrounded (some pretty well rounded) equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

\*\*\*\*\*samples seem to be getting lighter megascopically\*\*\*\*\*

212  
364  
516  
200  
300

- 880-890. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, medium gray (N5) claystone and colorless quartz. very fossiliferous (50%), glauconitic (5%), phosphatic (slightly), Medium grained (1/4-1/2 mm), sandy (40%) limestone.  
colorless, iron stained, or yellow green (5GY 7/4), polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 890-900. Fresh, hard, light olive gray (5Y 6/1). pale? (really isn't very limy, maybe red weathered glauconite or something) yellow green (10GY 7/2) limestone?, very light gray (N5) claystone and colorless quartz. very fossiliferous (45%), glauconite (5%), slightly phosphatic. Medium grained (1/4-1/2 mm) clayey (5%), sandy (35%) glauconitic (5%) limestone.  
quartz grains as above, but no yellow-green grains noticed.
- 900-910. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, medium gray claystone, and colorless quartz. very fossiliferous (50%), glauconitic (3%), slightly phosphatic, Medium grained (1/4-1/2 mm) clayey (5%), sandy (37%), glauconitic (3%) limestone.  
colorless or iron stained, polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 910-920. Fresh, hard, light olive gray (5Y 6/1). Very light gray limestone (N8) and colorless quartz. Very fossiliferous (50%), glauconitic (5%), phosphatic (slightly). Medium grained (1/4-1/2 mm) sandy (40%), glauconitic (5%) limestone.  
colorless or iron stained, polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 920-930. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone and colorless quartz. Very fossiliferous (50%), glauconite (5%). Fine grained (1/8-1/4 mm) sandy (40%), glauconitic (5%) limestone.  
quartz grains same as above .  
fine grained (1/8-1/4 mm)
- 930-940. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, medium gray (N5) claystone and colorless quartz. Very fossiliferous (50%), glauconitic (5%), slightly phosphatic. Fine grained (1/8-1/4 mm) sandy (40%), glauconitic (5%) limestone.  
quartz grains same as above.
- 940-950\* Fresh, hard, light olive gray (5Y 6/1). Very light gray (8) limestone and colorless quartz. Very fossiliferous (50% micro- and megafossils), glauconitic (5%), slightly phosphatic, fine grained (1/8-1/4 mm) sandy (40%), glauconitic (5%) limestone.  
colorless or iron stained, polished smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

- 950-960. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, medium gray (N5) claystone and colorless quartz. very fossiliferous (50%), glauconitic (5%), slightly phosphatic. Fine grained (1/8-1/4 mm), sandy (43%), glauconitic (5%) limestone.  
colorless or iron stained, polished smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains
- 960-970. Fresh, hard, light olive gray (5Y6/1). Very light gray (N8) limestone, colorless quartz, and medium gray (N5) claystone. Very fossiliferous (45%), glauconitic (5%), slightly phosphatic. Medium grained (1/4-1/2 mm) sandy (45%), glauconitic (5%) limestone.  
quartz grains as above. Some sorta frosted.
- 970-980. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, colorless quartz, and a few chips of medium gray (N5) claystone. Fossiliferous (10%), glauconitic (10%), slightly phosphatic, Well sorted, fine grained (1/8-1/4 mm) limy (15%), glauconitic (10%) sand.  
colorless or iron stained, polished smooth, subangular to subrounded, equant, anhedral, fine grained (1/8-1/4 mm) quartz grains.  
glauconite is weathered?
- 980-990. Fresh, hard, olive gray (5Y6/1). A few chips of medium gray (N5) claystone, colorless quartz. slightly glauconitic (5%), slightly phosphatic, slightly fossiliferous (5%). Medium sorted, medium grained (1/4-1/2 mm) limy (5%), glauconitic (5%) sand.  
colorless, iron stained or medium light gray (6) smoky, polished smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- \*\*\*\*\*change in grain size\*\*\*\*\*
- 990-1000. Fresh, hard, light olive gray (5Y6/1). Very light gray (N8) limestone, a few chips of medium gray (N5) claystone, and colorless quartz. Glauconite (less than 5%), slightly phosphatic (a few pieces), slightly fossiliferous (5%). Well sorted, coarse grained (1/2-1.0 mm) limy (5%) sand.  
quartz same as above. Smoky, light gray (N6) quartz present in this sample also.
- 1000-1010. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, and medium gray (N5) claystone (a few chips each of the limestone and claystone) and very light gray (N8) limestone (few chips) and colorless quartz. Slightly glauconitic (5%), slightly phosphatic (few pieces), slightly pyritic (one piece), fossiliferous (25%). Medium sorted, medium grained (1/4-1/2 mm) limy (10%) sand.  
colorless, iron stained or medium light gray (N6) smoky, polished smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

- 1010-1020. Fresh, hard, light olive gray (5Y 6/1). a few chips of medium gray (N5) claystone and colorless quartz. Slightly glauconitic (less than 5%), slightly phosphatic (a few pieces), fossiliferous (15%). Well sorted, fine grained (1/8-1/4 mm), clayey (3%), limy (15%) sand.  
Colorless, iron stained or yellowish green (5GY 7/4), polished smooth, subangular to subrounded, equant, anhedral, fine grained (1/8-1/4 mm) quartz grains.
- 1020-1030. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, a few chips of medium gray (N5) limestone, and colorless quartz. Slightly glauconitic (less than 5%), slightly pyritic (1 piece), slightly phosphatic (few pieces), fossiliferous (25%). Medium sorted, medium grained (1/4-1/2 mm) limy (30%), glauconitic (less than 5%) sand.  
quartz grains as above. fine to medium grained (1/8-1/2 mm)
- 1030-1040. Fresh, hard, light olive gray (5Y6/1). Medium gray (N5) limestone, very light gray (N8) limestone (a few chips only of each limestone) and colorless quartz. Slightly glauconitic (less than 5%), 1 piece of pyrite, slightly phosphatic (a few pieces), fossiliferous (25%). Medium sorted, medium grained (1/4-1/2 mm) limy (30%), glauconitic (less than 5%) sand.  
colorless of iron stained, polished smooth, subangular, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 1040-1050. Fresh, hard, light olive gray (5Y6/1). A few chips of very light gray (N8) and medium light gray (N6) limestone and colorless quartz. Slightly glauconitic (5%), slightly phosphatic (a few pieces), slightly pyritic (one piece), fossiliferous (35%). Medium sorted, medium grained (1/4-1/2 mm) limy (40%), glauconitic (5%) sand.  
quartz grains as above.
- 1050-1060. Fresh, hard, light olive gray (5Y6/1). Medium gray (N5) and very light gray (N8) limestone and colorless quartz. Slightly glauconitic (less than 5%), slightly phosphatic (a few pieces), fossiliferous (30%). Medium sorted, medium grained (1/4-1/2 mm) limy (35%), glauconitic (5%) sand.  
quartz grains as above. Some rather rounded.
- 1060-1070. Fresh, hard, light olive gray (5Y 6/1). A few chips of medium gray (N5) claystone, and very light gray (N8) limestone and colorless quartz. Slightly glauconitic (3%), slightly phosphatic (few pieces), slightly pyritic (more than above--a few pieces), fossiliferous (40%). Medium sorted, fine grained (1/8-1/4 mm) limy (40%), glauconitic (3%) sand.  
colorless or iron stained, polished smooth, subangular, equant, anhedral, fine grained (1/8-1/4 mm) quartz grains.
- 1070-1080. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly glauconitic (3%), slightly phosphatic (a few pieces), very fossiliferous (50%). Medium grained (1/4-1/2 mm), sandy (42%), glauconitic (3%) limestone.  
quartz grains as above. Some pretty round, subrounded, fine to medium grained. Some frosted.



- 1080-1090. Fresh, hard, light olive gray (5Y6/1). Very light gray (N8) limestone and a few chips of medium gray (N5) limestone and colorless quartz. Slightly glauconitic (5%), slightly phosphatic (a few pieces), fossiliferous (40%). Medium sorted, medium grained (1/4-1/2 mm) limy (45%), glauconitic (5%) sand. colorless or iron stained, plished smooth, subangular, equant, anhedral, fine to medium-grained (1/8-1/2 mm) quartz grains.
- 1090-1100. Fresh, hard, light olive gray (5Y 6/1) and 3-4 chips of medium gray (N5) claystone. Very light gray (N8) and medium gray (5) limestone and colorless quartz. Slightly glauconitic (5%), slightly pyritic (1 piece), slightly phosphatic (a few pieces), fossiliferous (40%). Medium sorted, medium grained (1/4-1/2 mm) limy (45%), glauconitic (5%) sand. colorless or iron stained, polished smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 1100-1110. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) and a few chips of medium gray (N5) limestone, and colorless quartz. Slightly glauconitic (5%), slightly phosphatic (a few pieces), fossiliferous (40%). Medium sorted, medium grained (1/4-1/2 mm) limy (45%), glauconitic (5%) sand. quartz grains as above. Some pretty well rounded to subrounded. \*\*\*\*\*red sandstone cave? all through most recent sample\*\*\*\*\*
- 1110-1120. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) and a few pieces of medium gray (N5) limestone and colorless quartz. Slightly glauconitic (5%), slightly phosphatic (a few pieces --seems to be more than usual), very fossiliferous (40%). Medium sorted, medium grained (1/4-1/2 mm), limy (45%), glauconitic (5%) sand. colorless or iron stained, polished smooth and frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 1120-1130. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, medium gray (N5) claystone (few chips), slightly glauconitic (10%), slightly phosphatic a few pieces), very fossiliferous (40%). Medium sorted, fine grained (1/4-1/8 mm), limy (45%), glauconitic (10%) sand. colorless or iron stained, polished smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 1130-1140. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone, and colorless quartz. Slightly glauconitic (5%), slightly phosphatic (a few pieces--more than usual), very fossiliferous (35%). Medium sorted, fine grained (1/8-1/4 mm) limy (40%), glauconitic (5%) sand. quartz grains as above except that many are frosted.

1140-1150. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone (a few chips), medium gray (N5) claystone (a few chips), very light gray (N8) limestone, and colorless quartz. Slightly glauconitic (5%), slightly pyritic (one piece), slightly phosphatic (few pieces--more than usual), very fossiliferous (40%). Medium sorted, medium grained (1/4-1/2 mm) limy (45%), glauconitic (5%) sand.

colorless or iron stained, polished smooth, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

1150-1160. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone, and colorless quartz. Slightly glauconitic (5%), slightly phosphatic (a few pieces), slightly pyritic (one piece), fossiliferous (30%). Medium sorted, fine grained (1/8-1/4 mm) limy (35%), glauconitic (5%) sand.

Quartz grains as above.

\*\*\*\*\*change in grain size\*\*\*\*\*

1160-1170. Fresh, hard, light olive gray (5Y6/1). Medium gray (N5) limestone, medium gray claystone, very light gray (N8) limestone with tiny colorless quartz inclusions, and colorless quartz. Slightly glauconitic (5%), slightly phosphatic (a few pieces, more than usual), slightly pyritic (one piece), very fossiliferous (40%). Poorly sorted, coarse grained (1/2-1.0 mm) limy (45%) glauconitic (5%) sand.

colorless or iron stained or medium gray (N5)(smoky)polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to coarse grained (1/8-1.0 mm) quartz grains.

1170-1180. Fresh, hard, light olive gray (5Y6/1). Medium gray (N5) claystone, medium gray (N5) limestone, very light gray (N8) limestone, and colorless quartz. Slightly pyritic (more pyrite than any other sample), slightly phosphatic (few pieces), glauconite (20%), medium fossiliferous (30%). Medium sorted, medium grained (1/4-1/2 mm), limy (40%), glauconitic (20%), sand.

colorless, iron stained or rose, polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

1180-1190. Fresh, hard, light olive gray (5Y 6/1). medium gray (N5) claystone, medium gray (N5) limestone, very light gray (N8) limestone, and colorless quartz. Slightly phosphatic (a few pieces), slightly pyritic (more pieces than usual-like above), slightly glauconitic (10%), fossiliferous (35%). Medium sorted, medium grained (1/4-1/2 mm), limy (40%), glauconitic (10%) sand.

colorless or iron stained, polished smooth or frosted, subangular to subround, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

- 1190-1200. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (a few pieces), slightly pyritic (few pieces), glauconitic (15%), fossiliferous (40%). Medium sorted, medium grained (1/4-1/2 mm), limy (40%), glauconitic (15%) sand. quartz grains as above.
- 1200-1210. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone, and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (a few pieces), glauconitic (5%), fossiliferous (20%). Medium sorted, medium grained (1/4-1/2 mm) limy (25%) glauconitic (5%) sand. colorless or iron stained, polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 1210-1220. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone, and colorless quartz. Slightly pyritic (a few pieces), slightly phosphatic (a few pieces), slightly glauconitic (5%), moderately fossiliferous (30%). Medium grained, medium sorted (1/4-1/2 mm) limy (35%), glauconitic (5%) sand. Quartz grains as above--one piece of rose quartz.
- 1220-1230. Fresh, hard, light olive gray (5Y 6/1), Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly pyritic, slightly phosphatic (a few pieces), glauconitic (10%), fossiliferous (30%). Medium sorted, medium grained (1/4-1/2 mm) limy (35%) glauconitic (10%) sand. Colorless, iron stained or moderately yellow green (5GY 7/4) or rose (moderate pink 5R 7/4), polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 1230-1240. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly pyritic (many pieces), slightly phosphatic (few pieces), slightly glauconitic (10%), moderately fossiliferous (30%). Medium sorted, medium grained (1/4-1/2 mm), limy (35%), glauconitic (10%) sand. Colorless or iron stained, polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium-grained (1/8-1/2 mm) quartz grains.
- 1240-1250. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (15%), moderately fossiliferous (30%). Medium sorted, medium grained (1/4-1/2 mm), limy (35%), glauconitic (10%) sand. Quartz grains as above.

1250-1260. As above but glauconite (10%) and fossils (40%).

Quartz grains as above.

1260-1270. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, medium gray (N5) limestone, and colorless quartz. Slightly pyritic (a few grains), slightly phosphatic (several pieces), slightly glauconitic (20%), moderately fossiliferous (30%). Medium sorted, medium grained (1/4-1/2 mm), limy (35%) glauconitic (20%) sand.

Pyritized shell fragments.

Maybe a piece of pinkish feldspar.

Colorless or iron stained, polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

1270-1280\* Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone, and colorless quartz. Slightly phosphatic (a few pieces), slightly pyritic (a few pieces), slightly glauconitic (10%), moderately fossiliferous (30%), Medium sorted, medium grained (1/4-1/2 mm), limy (35%) glauconitic (10%) sand.

Colorless, iron stained, or moderate yellow green (5GY 7/4) polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

1280-1290. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly glauconitic (15%), moderately fossiliferous (shell fragments and Foraminifera) (30%). Medium sorted, medium grained (1/4-1/2 mm) limy (35%), glauconitic (15%) sand.

Quartz grains as above, including moderate yellow green ones.

A few pieces of red sandstone or whatever it is.

1290-1300. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray limestone (N8) and colorless quartz. Slightly pyritic (a few pieces), slightly phosphatic (a few pieces), slightly glauconitic (10%), slightly fossiliferous (10%-shell fragments). Medium sorted, medium grained (1/4-1/2 mm) limy (15%), glauconitic (10%) sand.

1300-1310. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (a few pieces), slightly pyritic (a few pieces), glauconitic (7%), fossiliferous (10%) (shell fragments). Medium sorted, medium grained (1/4-1/2 mm), limy (15%), glauconitic (7%) sand.

Colorless, iron stained or moderate yellow green (5GY 7/4) (1 piece), polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

\*\*\*\*\* much sandier than before \*\*\*\*\*

- 1310-1320. Fresh, hard, yellowish gray (5Y 6/1). Very light gray (N8) limestone (a few pieces), medium gray (N5) limestone (very few pieces) and colorless quartz. Slightly pyritic (few pieces), slightly glauconitic (5%), slightly phosphatic (a few pieces), slightly fossiliferous (5%). Well sorted, medium grained (1/4-1/2 mm) limy (5%), glauconitic (5%) sand. colorless, iron stained, polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 1320-1330. Fresh, hard, yellowish gray (5Y8/1). Very light gray (N8) limestone (one piece) and colorless quartz. Slightly micaceous (one piece), slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (5%), fossiliferous (2%). Well sorted, medium grained (1/4-1/2 mm) limy (2%) glauconitic (5%) sand.  
Colorless, iron stained or rose (5R 7/4), polished, smooth, frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains
- 1330-1340. Fresh, hard, yellowish gray (5Y 8/1). Medium gray (N5) limestone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly glauconitic (5%), slightly fossiliferous (2%). Well sorted, medium grained (1/4-1/2 mm) limy (2%), glauconitic (5%) sand.  
Quartz grains as above.
- 1340-1350. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray limestone (N8), and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), glauconitic (5%), fossiliferous (5%). Well sorted, medium grained (1/4-1/2 mm) limy (7%), glauconitic (5%) sand.  
Quartz grains as above except no rose quartz.
- \*\*\*\*\* changes back to limier sand\*\*\*\*\*
- 1350-1360. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) claystone (a few pieces), medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly glauconitic (10%), slightly fossiliferous (10%). Medium sorted, coarse grained (1/2-1.0 mm) limy (15%), glauconitic (10%) sand.  
Quartz grains as above--no rose.
- 1360-1370. As above but fossiliferous (7%). Medium sorted, medium grained (1/4-1/2 mm) limy (12%), glauconitic (10%) sand.  
Colorless, iron stained, rose (moderate pink 5R 7/4, or moderate yellow green 5GY 7/4), polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

1370-1380. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (a few pieces), glauconitic (10%), fossiliferous (10%). Medium sorted, medium grained (1/4-1/2 mm), limy (15%), glauconitic (10%) sand. Quartz as above but with no rose quartz.

\*\*\*\*\*red sandstone or shale or whatever, a few pieces\*\*\*\*\*

1380-1390. Fresh, hard, light olive gray (5Y 6/1). Very light gray (N8) limestone, medium gray (N5) limestone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), glauconitic (10%), fossiliferous (10%). Medium sorted, medium grained (1/4-1/2 mm) limy (15%), glauconitic (10%) sand. Quartz grains as above except no rose or green.

\*\*\*\*\*a few pieces of red sandstone or shale or whatever\*\*\*\*\*

1390-1400. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly pyritic (a few pieces), slightly phosphatic (a few pieces), glauconitic (10%), fossiliferous (10%). Medium sorted, medium grained (1/4-1/2 mm) limy (15%), glauconitic (10%) sand. Colorless or iron stained, polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

1400-1410. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) claystone, medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), glauconitic (10%), fossiliferous (10%). Well sorted, medium grained (1/4-1/2 mm) limy (15%) glauconitic (10%) sand. Quartz grains as above with a little rose quartz.

1410-1420. Fresh, hard, light olive gray (5Y 6/1). A few chips of cream colored limestone, medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), glauconitic (10%), fossiliferous (15%). Medium sorted, coarse grained (1/2-1.0 mm), limy (30%), glauconitic (10%) sand. Colorless, iron stained, rose (moderate pink, 5R 7/4 or moderate yellow 5GY 7/4), polished, smooth or frosted, subangular to subround, equant, anhedral, fine to coarse grained (1/8-1.0 mm) quartz grains.

\*\*\*\*\* big increase in the amount of limestone present \*\*\*\*\*

1420-1430. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, medium gray (N5) claystone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), glauconitic (10%), fossiliferous (15%). Medium sorted, medium grained (1/4-1/2 mm), limy (20%), glauconitic (10%) sand. Quartz grains as above but no rose quartz. fine to medium grained (1/8-1/2 mm).

- 1430-1440. As above. Medium sorted, medium grained (1/4-1/2 mm) limy (20%), glauconitic (10%) sand.  
Quartz grains as above with rose quartz.
- 1440-1450. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, light gray (N8) limestone and colorless quartz. Slightly phosphatic (a few pieces), slightly pyritic (a few pieces), glauconitic (10%), fossiliferous (15%). Medium sorted, medium grained (1/4-1/2 mm) limy (20%), glauconitic (10%) sandstone.  
Colorless or iron stained, polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 1450-1460\* Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) claystone, medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), glauconitic (15%), fossiliferous (15%). Medium sorted, medium grained (1/4-1/2 mm) limy (20%) glauconitic (15%) sand.  
Quartz grains same as above with rose quartz, moderate pink (5R 7/4) May be a few pieces of pink feldspar.
- 1460-1470. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, medium gray (N5) claystone, very light gray (N8) limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (10%), fossiliferous (15%). Medium sorted, medium grained (1/4-1/2 mm) limy (20%) glauconitic (10%) sand.  
colorless or iron stained, rose (moderate pink 5R 7/4 or moderate yellow green 5GY 7/4), polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.
- 1470-1490. Samples missing August 28, 1975.
- 1490-1500. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, medium gray (N5) claystone, very light gray (N8) limestone and colorless quartz. Slightly phosphatic (a few pieces), slightly pyritic (few pieces), slightly micaceous (1 piece), glauconitic (10%), fossiliferous (15%). Medium sorted, coarse grained (1/2-1.0 mm), limy (20%), glauconitic (10%) sand.  
Colorless, iron stained, rose (moderate pink 5R 7/4) or moderate yellow green 5GY 7/4), polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to coarse grained (1/8-1.0 mm) quartz grains.
- \*\*\* a few pieces of pinkish sandstone or whatever. Pink feldspar is probably quartz of a previous sample. More of the red sandstone than in a long time--dull, weathered, brittle.
- 1500-1510. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) claystone, medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (10%), fossiliferous (10%). Well sorted, medium grained (1/4-1/2 mm), limy (15%), glauconitic (10%) sand.  
Colorless, iron stained, rose (moderate pink 5R 7/4), (moderate yellow green 5GY 7/4), polished smooth or frosted, subangular to subrounded, equant, anhedral, fine to coarse grained (1/2-1.0 mm) quartz grains. i pice of red sandstone or shale.

- 1510-1520. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (10%), fossiliferous (7%). Well sorted, medium grained (1/4-1/2 mm), limy (10%), glauconitic (10%) sand.  
quartz grains as above. Including rose and green.
- 1520-1530. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) claystone, medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (10%), fossiliferous (7%). Well sorted, medium grained (1/4-1/2 mm), limy (10%), glauconitic (10%) sand.  
Colorless, iron stained or moderate yellow green (5GY 7/4), polished smooth or frosted, subangular to subrounded (better rounded than most particles--maybe almost be classified as rounded), equant, anhedral, fine to coarse grained (1/8-1.0 mm) quartz grains.
- 1530-1540. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) claystone (a few pieces), medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly pyritic (a few pieces), slightly phosphatic (a few pieces), glauconitic (10%), fossiliferous (5%). Medium sorted, coarse grained (1/2-1.0 mm) limy (7%), glauconitic (10%) sand.  
Quartz grains as above plus a few pieces of medium gray (N5) quartz.. (Not quite as well rounded, but still pretty round)
- 1540-1550. Fresh, hard, light olive gray (5Y 6/1). Medium gray (N5) claystone, medium gray (N5) limestone, very light gray (N8) limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic, several pieces, more than usual), glauconitic (10%), fossiliferous (10%). Medium sorted, coarse grained (1/2-1.0 mm), limy (15%), glauconitic (10%) sand.  
Quartz grains as above, no gray quartz; green, rose, iron stained, colorless, frosted, pretty well rounded but not quite as round as 1520-1530.
- 1550-1560\* Fresh, hard, light olive gray (5Y 6/1). Medium gray N5 claystone, medium gray N5 limestone, very light gray N8 limestone, and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (10%), fossiliferous (10%). Medium sorted, coarse grained (1/2-1.0 mm) limy (15%) glauconitic (10%) sand.  
Colorless, iron stained, rose (moderate pink 5R 7/4) polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to coarse grained (1/8-1.0 mm) quartz grains.



1560-1570. Fresh, hard, light olive gray (5Y 6/1). Medium gray N5 claystone, medium gray N5 limestone, very light gray N8 limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (10%), fossiliferous (10%). Medium sorted, coarse grained (1/2-1.0 mm) limy (15%), glauconitic (10%) sand.

Quartz grains as above except some are elongate.

\*\*\*\*\* note megascopic color change below \*\*\*\*\*

1570-1580. Fresh, hard, yellowish gray (5Y 8/1). Medium gray N5 limestone very light gray N8 limestone, and colorless quartz. Slightly pyritic (a few pieces), slightly phosphatic (a few pieces), glauconitic (10%), fossiliferous (5%). Well sorted, medium grained (1/4-1/2 mm) limy (7%) glauconitic (10%) sand.

Colorless or iron stained, polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to medium grained (1/8-1/2 mm) quartz grains.

1580-1590. Fresh, hard, yellowish gray (5Y 8/1). Medium gray N5 limestone, very light gray N8 limestone and colorless quartz. Slightly pyritic (a few pieces), slightly phosphatic (few pieces), glauconitic (10%), fossiliferous (5%). Medium sorted, medium grained (1/4-1/2 mm) limy (7%) glauconitic (10%) sand.

Colorless, iron stained or moderate yellow green (5GY 7/4) polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to coarse grained (1/8-1.0 mm) quartz grains.

One piece of pyritized phosphate. Pyrite crystals on one side.

1590-1600. Fresh, hard, light olive gray (5Y 6/1). Medium gray N5 limestone, very light gray N8 limestone and colorless quartz. Slightly pyritic, slightly phosphatic (a few pieces - more than usual), glauconitic (10%) fossiliferous (7%). Medium sorted, medium grained (1/4-1/2 mm) limy (12%) glauconitic (10%) sand.

1600-1610. Fresh, hard, light olive gray (5Y 6/1). Medium gray N5 claystone, medium gray N5 limestone, very light gray N8 limestone, and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (10%), fossiliferous (10%). Medium sorted, medium grained (1/4-1/2 mm) limy (15%), glauconitic (10%) sand.

Quartz grains as above with rose (moderate pink 5R 7/4) grains.

1610-1620. Fresh, hard, light olive gray (5Y 6/1). Medium gray N5 limestone, very light gray N8 limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces, more than usual), glauconitic (10%), fossiliferous (10%). Poorly sorted, coarse grained (.5-1.0 mm) limy (18%), glauconitic (10%) sand.

Colorless, iron stained, rose (moderate pink 5R 7/4) polished, smooth or frosted, subangular to subrounded, equant, anhedral, fine to coarse grained (.125-1.0 mm) quartz grains.

1620-1630. Fresh, hard, light olive gray (5Y 6/1). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and leached, brittle medium gray N5 claystone. Slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (2%), fossiliferous (5%). Medium sorted, medium grained (.25-.5 mm) limy (15%), glauconitic (2%), clayey (25%) sand.

Quartz grains as above except no rose quartz.

\*\*\*\*\* gets very clayey \*\*\*\*\*

\*\*\*\*\* note megascopic color change below \*\*\*\*\*

1630-1640\* Fresh, hard, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray claystone, leached, brittle. Slightly pyritic (few pieces), slightly phosphatic (few pieces), glauconitic (2%), fossiliferous (5%). Poorly sorted, coarse grained (.5-1.0 mm), limy (15%), glauconitic (2%), clayey (40%) sand.

Quartz grains as above with rose quartz.

1640-1650. Fresh, hard quartz and limestone, leached brittle claystone (N5). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (2%, shell fragments). Poorly sorted, medium grained (.25-.50 mm) limy (22%), clayey (38%) sand no rose quartz.

1650-1660. Fresh, hard, quartz and limestone and leached, brittle claystone (medium gray, N5). Very light gray limestone N1, medium gray N5 claystone, medium gray N5 limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (2%). Medium sorted, medium grained (.25-.50 mm) limy (20%), clayey (35%) sand.

1660-1670. Fresh, hard, quartz and limestone and leached, brittle claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (3%). Medium sorted, medium grained (.25-.50 mm) limy (20%), clayey (30%) sand. colorless quartz grains.

1670-1680. Fresh, hard, quartz and limestone, and leached, brittle claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone, and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (2%). Medium sorted, medium grained (.25-.50 mm) limy (25%) clayey (30%) sand.

1680-1690. Samples missing Sept. 2, 1975.

- 1690-1700. Fresh, hard, limestone and quartz and leached, brittle claystone light olive gray (5Y 6/1). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5) claystone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (2%). Medium sorted, medium grained (.25-.50 mm) clayey (20%), limy 30%, sand.  
Shell fragments , limestone cement, colorless quartz grains.
- 1700-1710. Fresh, hard, light olive gray (5Y 6/1). (a few chips of leached, brittle claystone), very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (5%). Clayey (5%), limy (20%) sand.
- \*\*\*\*\*-note lithologic change above \*\*\*\*\* also color change \*\*\*\*\*
- 1710-1720. Fresh, hard, light olive gray (5Y 6/1), medium gray N5 claystone, very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (3%). Medium sorted, medium grained (.25-.50 mm) clayey (2%), limy (18%) sand.  
more limestone cement. colorless quartz grains.
- 1720-1730. Samples missing Sept. 2, 1975.
- 1730-1740. As above.  
Medium sorted, medium grained (.25-.50 mm) clayey (2%), limy (18%) sand.
- 1740-1750. As above.  
Medium sorted, medium grained (.25-.50 mm) limy (20%) sand.
- 1750-1760. As above.  
Medium sorted, medium grained (.25-.50 mm) limy (20%) sand.
- 1760-1770. Samples missing. Sept. 2, 1975.
- 1770-1780. Fresh, hard, limestone and quartz, leached brittle claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone, and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (5%). Medium sorted, fine grained (.125-.25 mm) limy (10%) clayey (15%) sand.
- 1780-1790. Fresh, hard, limestone and quartz, leached brittle claystone, light olive gray (5Y 6/1). Very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (5% -mainly shell fragments, pearly luster, Pelecypods (?)), limestone cement (some aggregated pieces of colorless quartz, but most grains are loose grains). Medium sorted, medium grained (.25-.50 mm) clayey (5%) limy (15%) sand.

- 1790-1800. Fresh, hard limestone and quartz and leached, brittle claystone, light olive gray (5Y 6/1). Medium gray N5 claystone, very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly pyritic (a few pieces), slightly phosphatic (a few pieces), slightly glauconitic (a few pieces), fossiliferous (less than 5%, mainly shell fragments, probably pelecypods), limestone cement. Some pieces of rock of colorless quartz, most just loose grains. Medium sorted, medium grained (.25-.50 mm) clayey (2%) limy (13%) sand.  
Very small sample.
- 1800-1810. Fresh, hard limestone and quartz, leached and brittle claystone, light olive gray (5Y 6/1). A few chips of medium gray N5 claystone, very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly pyritic (a few pieces), slightly phosphatic (a few pieces), slightly glauconitic (a few pieces), fossiliferous (5%, mostly shell fragments, probably pelecypods), limy cement. (Some pieces of rock with colorless quartz, mostly loose grains. Medium sorted, medium grained (.25-.50 mm) clayey (2%) limy (13%) sand.
- 1810-1830. Samples missing. Sept. 3, 1975
- 1830-1840. Fresh, hard limestone and quartz, leached and brittle claystone, light olive gray (5Y 6/1). A few chips of medium gray N5 claystone, very light gray N8 limestone, medium gray N5 limestone, and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (a few pieces), fossiliferous (2%, some shell fragments, probably pelecypods), limestone cement (a few pieces with colorless quartz, most is just loose quartz grains. Medium sorted, medium grained (.25-.50 mm) clayey (5%), limy (10%) sand.
- 1840-1850. Fresh, hard, limestone and quartz, leached and brittle claystone, light olive gray (5Y 6/1). A few chips of medium gray claystone very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly pyritic (very few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (2%, mainly shell fragments, probably pelecypods), limestone cement (a few pieces with colorless quartz; most quartz just loose grains). Medium sorted, medium grained (.25-.50 mm) clayey (5%), limy (10%) sand.
- \*\*\*\* \*\*\*\*\* 1 piece of scarlet red shale or earthy, brittle something. Very bright red, like ochre or something, and also a few pieces of gold-yellow shale, earthy, brittle.
- 1850-1860. As above-no red stuff.

- 1860-1870. Fresh, hard, limestone and quartz, brittle, leached claystone, light olive gray (5Y 6/1). A few chips of medium gray N5 claystone, very light gray N8 limestone, medium gray limestone N5, and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (5%, some shell fragments, probably pelecypods), limestone cement (a few pieces), but mainly loose quartz grains. Medium sorted, medium grained (.25-.50 mm) clayey (5%), limy (10%) sand.  
Small sample.
- 1870-1880. Fresh, hard limestone and quartz, leached and brittle claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, and colorless quartz, and medium gray N5 claystone. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), fossiliferous (2%, few shell fragments), limestone cement (a few pieces of colorless quartz quartz cemented together, most is loose quartz grains). Medium sorted, medium grained (.25-.50 mm) limy (5%), sandy (35%) clay.  
Small sample.
- 1880-1890\* Fresh, hard, limestone and quartz; brittle, leached claystone; medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces) fossiliferous (5%, microfossils and shell fragments), limestone cement (a few pieces of colorless quartz; most are just loose grains). Medium sorted, medium grained (.25-.50 mm), limy (10%) clayey (40%) sand.
- 1890-1900. Samples missing. Sept. 3, 1975.
- 1900-1910. Fresh, hard limestone and quartz; leached and brittle claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, medium gray N5 claystone. Slightly phosphatic (few pieces), slightly pyritic (very few pieces), slightly glauconitic (few pieces in limestone cement matrix with with quartz grains), slightly fossiliferous (very few pieces), limestone cement (few pieces with colorless quartz grains; most quartz grains just loose). Medium sorted, fine grained (.125-.25 mm) limy (5%), sandy (20%) clay.  
Very small sample.
- 1910-1920. Fresh, hard limestone and quartz; leached and brittle claystone; medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, medium gray N5 claystone. Slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly glauconitic (few pieces), slightly fossiliferous (very few pieces, mainly shell fragments), limestone cement (few pieces, with colorless quartz--mostly just loose grains). Medium sorted, fine grained (.125-.25 mm), limy (5%), sandy (20%) clay.

1920-1930. Fresh, hard quartz and limestone; leached, brittle claystone; medium gray (N5). Very light gray limestone N8, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly phosphatic (very few pieces), slightly glauconitic (very few pieces), slightly lignitic (1 piece), slightly limonitic (1 piece), slightly fossiliferous (just a few shell fragments), limestone cement (a few pieces with colorless quartz grains, not very many though). Medium sorted, fine grained (.125-.25 mm) limy (5%), sandy (15%) clay.

\*\*\* First lignite

\*\*\*probably been seen limonite all the way down.

1930-1940\* Fresh, hard limestone and quartz, brittle, leached claystone, medium gray (N5). Very light gray limestone N8, medium gray N5 limestone, colorless quartz, and medium gray claystone N5. Slightly pyritic (very few pieces), slightly phosphatic (few pieces) slightly glauconitic (few pieces), slightly limonitic (very few pieces), slightly fossiliferous (just a few shell fragments and forams), limestone cement (few pieces with colorless quartz, but most quartz just loose grains), medium sorted, fine grained (.125-.25 mm) limy (5%), sandy (40%) clay.

1940-1950. Fresh, hard limestone and quartz, leached, brittle claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray claystone (N5). Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (very few pieces), slightly limy (very few pieces, slightly fossiliferous ( nice forams and a few shell fragments), limestone cement (few pieces, with colorless quartz, but most quartz just loose grains). Medium sorted, fine grained (.125-.25 mm), limy (10%) sandy (40%) clay

\*\*\*\*\* grain size changes \*\*\*\*\*

1950-1960. Fresh, hard limestone and quartz, leached brittle claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (very few pieces), slightly fossiliferous (nice forams and a few shell fragments), limestone cement (few pieces with quartz, but most quartz is loose grains). Medium sorted, medium grained (.25-.50 mm) limy (10%), sandy (40%), clay.

1960-1970. Fresh, hard limestone and quartz, leached brittle claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (very few pieces), slightly fossiliferous (nice forams and a few shell fragments), limestone cement (a few pieces with colorless quartz, mostly just loose quartz grains). Medium sorted, fine grained (.125-.25 mm), limy (10%), sandy (40%) clay.

\*\*\*\*\* one piece of deep red sandstone--maybe this is limonite..

1970-1980. Fresh, hard limestone and quartz, brittle leached claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly pyritic (very few pieces), slightly phosphatic (few pieces), slightly glauconitic (few pieces), slightly limonitic (very few pieces), slightly fossiliferous (shell fragments and a few forams), limestone cement (a few pieces with colorless quartz, mostly just loose quartz grains). Medium sorted, fine grained (.125-.25 mm) limy (10%) sandy (40%) clay.

unwashed sample mixed with the washed sample.

1980-1990. As above. Medium sorted, fine grained (.125-.25 mm) limy (15%), sandy (40%) clay.

\*\*\*\* mega color change with next sample \*\*\*\*

1990-2000. Fresh, hard quartz and limestone, brittle and leached claystone, light olive gray (5Y 6/1). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces-pretty many), slightly glauconitic, (very few places), slightly lignitic (very few pieces), slightly fossiliferous (shell fragments and foraminifera), limestone cement (few pieces with colorless quartz, most quartz just loose grains). Medium sorted, medium grained (.25-.50 mm), limy (15%) clayey (40%) sand.

2000-2010. color change  
Fresh, hard, quartz and limestone, leached brittle claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly glauconitic (very few pieces), slightly lignitic (few pieces including ones with yellow coating --sulphur?), slightly fossiliferous (shell fragments and a few forams), limestone cement (few pieces with colorless quartz, most quartz just loose grains). Medium sorted, medium grained (.25-.50 mm) limy (15%) clayey (40%) sand.

2010-2020. As above.  
\*\*\*most shell fragments seen recently are peleycopods-oysters\*\*

2020-2030. As above.

2030-2040. As above, but no glauconite.

2040-2050. Fresh, hard limestone and quartz; leached, brittle claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone and colorless quartz. Slightly pyritic (few pieces), slightly phosphatic (few pieces), slightly lignitic (few pieces), slightly fossiliferous (shell fragments), limestone cement (few pieces with colorless quartz, most just loose grains). Medium sorted, medium grained (.25-.50 mm) limy (10%), sandy (40%) clay.

- 2050-2060. Fresh, hard limestone and quartz; leached, brittle claystone medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly phosphatic (very few pieces), slightly pyritic (few pieces), slightly lignitic (few pieces), slightly fossiliferous (few shell fragments-clams and oysters), limestone cement (few pieces, with colorless quartz; mostly quartz as loose grains). Medium sorted, medium grained (.25-.50 mm) limy (10%), sandy (40%) clay.
- 2060-2070.\*\*\*\*\* Change in grain size \*\*\*\*\*  
 Fresh, hard limestone and quartz and leached, brittle claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz and medium gray N5 claystone. Slightly glauconitic (very few pieces), slightly lignitic (few pieces, including some with yellow coating), slightly fossiliferous (few oyster shell fragments), limestone cement (few pieces with colorless quartz, mostly loose quartz grains), Medium sorted, fine grained (.125-.25 mm), limy (20%) sandy (35%) clay.
- 2070-2080. \*\*\* megascopic color change \*\*\*  
 Fresh, hard limestone and quartz, leached, brittle claystone, light olive gray (5Y 6/1). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone and colorless quartz. Slightly glauconitic (very few pieces), slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly lignitic (few pieces), slightly fossiliferous (few shell fragments, oysters mainly and a few forams), limestone cement (colorless quartz, more than before). Medium sorted, medium grained (.25-.50 mm) limy (20%), clayey (25%) sand.
- 2080-2090\* Fresh, hard limestone and quartz, leached brittle claystone, light olive gray (5Y 6/1). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone and colorless quartz. Slightly glauconitic (more pieces than in a long time), slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly fossiliferous (shell fragments- oysters and clams, and a few forams). Limestone cement (of colorless quartz grains, more than usual but not quite as many as last 2070-2080). Medium sorted, medium grained (.25-.50 mm) clayey (20%) limy (25%) sand.
- 2090-2100 Samples missing Sept. 4, 1975.
- 2100-2110.  
 \*\*\*\*\*note change in lithology amount of sand increases a lot.\*\*\*\*\*  
 Fresh, hard limestone and quartz, leached brittle claystone (only a few pieces of claystone present in this sample)., light olive gray (5Y 6/1). Medium gray N5 claystone, very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly glauconitic (few pieces, more than in a long time), slightly lignitic (few pieces), slightly phosphatic (few pieces), slightly fossiliferous (some shell fragments and a few forams), limestone cement (a few pieces with colorless quartz). Medium sorted, medium grained (.25-.50 mm) clayey (5%), limy (25%) sand .



- 2110-2120. Fresh, hard limestone and quartz and brittle leached claystone, (just a few pieces), light olive gray (5Y 6/1). Medium gray N5 claystone, very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly phosphatic (few pieces), slightly lignitic (very few pieces), slightly glauconitic (several pieces--about the same as last sample), slightly fossiliferous ( few shell fragments not many). Medium sorted, medium grained (.25-.50 mm) clayey (3%) limy (7%) sand.
- 2120-2130. Fresh, hard limestone and quartz and leached, brittle claystone, medium light gray (N6). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone, and colorless quartz. Slightly phosphatic (few pieces), slightly glauconitic (few pieces), slightly pyritic (few pieces), slightly limonitic (very few pieces), slightly lignitic (very few pieces), slightly fossiliferous (forams and oyster shell fragments), limestone cement( few pieces, mostly just loose quartz grains). Medium sorted, medium grained (.25-.50 mm) limy (15%) clayey (40%) sand.
- 2130-2140. As above.
- 2140-2150. Fresh, hard limestone and quartz and leached, brittle claystone N5. Very light gray N8 limestone, medium gray N5 limestone, colorless quartz and medium gray N5 claystone. Slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly glauconitic (few pieces), slightly lignitic (very few pieces), slightly fossiliferous (few oyster and clam shell fragments), limestone cement ( few pieces, mostly loose quartz grains). Medium sorted, medium grained (.25-.50 mm) limy (10%) sandy (40%) claystone.
- 2150-2160. Samples missing, Sept. 5, 1975.
- 2160-2170. Fresh, hard limestone and quartz and leached brittle claystone, medium light gray (N6). Very light gray limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly phosphatic (few pieces), slightly pyritic (very few pieces), slightly glauconitic (few pieces), very slightly limonitic (one piece), slightly lignitic (one piece), slightly fossiliferous (shell fragments-few oysters and other fragments), limestone cement (with colorless quartz-few pieces, mostly loose quartz grains ). Medium sorted, medium grained (.25-.50 mm) limy (15%), clayey (35%) sand.
- 2170-2180. Fresh, hard quartz and limestone, and brittle leached claystone, medium light gray (N6). Very light gray limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly phosphatic (few pieces), slightly glauconitic (few pieces), slightly pyritic ( Very few pieces), slightly lignitic (very few pieces), slightly fossiliferous ( few oyster and clam shell fragments), limestone cement (few pieces, mostly loose quartz grains). Medium sorted, medium grained (.25-.50 mm) limy (15%), clayey (40%) sand.
- \*\*\*\*\*  
one piece of pearly, purplish pink reflected light-maybe oil on it?  
kinda opalescent \*\*\*\*\*

- 2180-2190\* Fresh, hard limestone and quartz, and leached, brittle claystone medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly phosphatic (few pieces), slightly glauconitic (few pieces), slightly pyritic (few pieces), slightly fossiliferous (shell fragments (oysters) and a few forams), limestone cement (few pieces mostly loose colorless quartz grains). Medium sorted, medium grained (.25-.50 mm) limy (15%) sandy (40%) clay .
- 2190-2200. Fresh, hard limestone and quartz; brittle, leached claystone; light olive gray (5Y 6/1). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly glauconitic (very few pieces), slightly fossiliferous (mainly oyster shell fragments), limestone cement (few pieces--mostly colorless quartz grains). Medium sorted, medium grained (.25-.50 mm) limy (25%) clayey (30%) sand.
- 2200-2210. Fresh, hard limestone and quartz; brittle, leached claystone; light olive gray (5Y 6/1). Very light gray N8 limestone, medium gray N5 limestone, medium gray (N5) claystone and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (more pieces than usual), slightly glauconitic (few pieces), slightly fossiliferous (oyster and clam shell fragments, and forams), limestone cement (few pieces, mostly just loose quartz grains). Medium sorted, medium grained (.25-.50 mm) limy (25%) clayey (30%) sand.
- 2210-2220. Very small sample.  
Fresh, hard limestone and quartz; brittle leached claystone (just a few chips), light olive gray (5Y 6/1). Medium gray N5 claystone, very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly phosphatic (few pieces), slightly glauconitic (very few pieces), slightly fossiliferous (few chips), limestone cement (few pieces with fine grained (1/8-1/4 mm) colorless quartz grains; mostly loose quartz grains). Well sorted, medium grained (.25-.50 mm) clayey (5%), limy (10%) sand  
\*\*\*\*\* clay is probably cave \*\*\*\*\*
- 2220-2230. Very small sample.  
Fresh, hard limestone and quartz, (just a few chips medium gray N5, brittle, leached claystone), Medium light gray (N6). Very light gray N8 limestone, Medium gray N5 limestone, and colorless quartz. Slightly phosphatic (few pieces), slightly glauconitic (very few pieces), slightly pyritic (few pieces), slightly lignitic (few pieces), slightly fossiliferous (few chips and a few forams), limestone cement (several chips, more than lately, still a lot of loose quartz grains). poorly sorted, medium grained (.25-.50 mm) clayey (2%), limy 23%) sand.
- 2230-2240\* Color change , Medium light gray (N6)  
Change in grain size  
As above. Fossils are shell fragments and forams. Poorly sorted, coarse grained (.50-1.0 mm) limy (15%) clayey (25%) sand.

- 2240-2250. Small sample.  
Fresh, hard limestone and quartz; brittle leached claystone; Medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly phosphatic (few pieces), slightly lignitic (very few pieces), slightly fossiliferous (few forams and shell fragments), limestone cement (many pieces with colorless quartz and few loose quartz grains). Limy (10%), medium sorted, coarse grained (.50-1.0 mm) sandy (15%) clay.
- 2250-2260. Fresh, hard limestone and quartz; brittle leached claystone, medium gray (N5). Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone and colorless quartz. Slightly pyritic (very few pieces), slightly phosphatic (few pieces), slightly glauconitic (very few pieces), slightly fossiliferous (shell fragments, clams and a few forams), limestone cement (few pieces with colorless quartz, most just loose quartz). Medium sorted, medium grained (.25-.50 mm) limy (10%), sandy (40%) clay.
- 2260-2270. Fresh, hard, limestone and quartz; brittle, leached claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone (not much of either), colorless quartz, and medium gray N5 claystone. Slightly glauconitic (few pieces), slightly phosphatic (few pieces), slightly pyritic (very few pieces), slightly fossiliferous (few shell fragments), Limestone cement (very few pieces, mostly loose sand grains). Medium sorted, medium grained (1/4-1/2 mm) limy (5%) sandy (45%) clay
- 2270-2280. As above. Medium sorted, medium grained (1/4-1/2 mm) limy (10%) sandy (40%) clay.
- 2280-2290\* Small sample.  
Fresh, hard limestone and quartz, leached, brittle claystone, medium gray N5. Medium gray N5 limestone, colorless quartz, medium gray N5 claystone. Slightly glauconitic (few pieces), slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly lignitic (one piece), slightly fossiliferous (some oyster shell fragments and a few forams--dark brown--replaced by phosphate or something?). Medium sorted, coarse grained (1/4-1/2 mm), limy (10%) sandy (40%) claystone
- 2290-2300\* Very small sample  
As above, no lignite. Medium sorted, medium grained (1/4-1/2 mm) limy (5%) sandy (40%) claystone.  
\*\*\*\*clay is in bigger chips than the quartz or limestone 2-4 mm length or diameter, some chips are elongated all are thin.
- 2300-2310. As above.  
Medium sorted, medium grained (1/4-1/2 mm) limy (10%), sandy (42%) clay

- 2310-2320. Fresh, hard limestone and quartz, leached, brittle claystone (much less than before), medium light gray N6. Very light gray limestone N8, medium gray N5 limestone, medium gray N5 claystone, and colorless quartz. Slightly phosphatic (few pieces), slightly pyritic (few pieces), glauconitic (3%, more than in a long time), slightly fossiliferous (some oyster and other shell fragments and a few forams), limestone cement (a few pieces with colorless quartz, mostly just loose quartz grains). Limy (15%), clayey (20%) sand.
- 2320-2330. As above. Glauconite 2%, slightly fossiliferous (few forams and shell fragments, some oyster shell fragments), medium sorted, medium grained (1/4-1/2 mm) limy (10%), clayey (40%) sand.
- 2330-2340. Fresh, hard limestone and quartz, leached brittle claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. Slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly glauconitic (few pieces), slightly fossiliferous (some forams and some oysters and other shell fragments), limestone cement (few pieces with colorless quartz, mostly loose quartz grains). Medium sorted, medium grained (1/4-1/2 mm) limy (15%) sandy (40%) claystone.
- 2340-2350. Fresh, hard, limestone and quartz, leached brittle claystone medium gray N5. Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, and medium gray N5 claystone. (Slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly glauconitic (few pieces), slightly fossiliferous (few forams and few shell fragments-oysters and others), limestone cement (few pieces with colorless quartz, mostly loose quartz grains). Medium sorted, medium grained (1/4-1/2 mm) limy (15%) clayey (40%) sand.
- 2350-2360\* As above.  
Medium sorted, medium grained, (1/4-1/2 mm) limy (10%) clayey (30%) sand.
- 2360-2370 \*\*\*\*\* color change\*\*\*\*\*  
Fresh, hard quartz and limestone, leached, brittle claystone, light olive gray 5Y 6/1. Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone, and colorless quartz. Slightly phosphatic (few pieces), slightly glauconitic (few pieces), slightly pyritic (few pieces), slightly fossiliferous (few shell fragments and forams), limestone cement (few pieces with colorless quartz-- mostly loose quartz grains). Medium sorted, medium grained (1/4-1/2 mm) limy (10%) clayey (30%) sand
- 2370-2380. Fresh, hard limestone and quartz, leached, brittle claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone and colorless quartz. Slightly glauconitic (few pieces), slightly phosphatic (very few pieces), slightly pyritic (few pieces), slightly fossiliferous (few shell fragments and foraminifera), limestone cement (few pieces with colorless quartz, mostly loose quartz grains). Medium sorted, medium grained (1/4-1/2 mm) limy (10%) sandy (40%) claystone

- 2380-2390 \*\*\*\*\*color change\*\*\*\*\*  
 Fresh, hard, limestone and quartz, leached brittle claystone, light olive gray 5Y 6/1. Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone, colorless quartz. Slightly glauconitic, slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly fossiliferous (shell fragments), limestone cement (few pieces with colorless quartz, mostly loose quartz grains). Medium sorted, medium grained (1/4-1/2 mm) limy (10%) clayey (30%) sand.
- 2390-2400 \*\*\*\*\*color change \*\*\*\*\*  
 small sample  
 Fresh, hard limestone and quartz, leached brittle claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone, medium gray claystone N5 and colorless quartz. Slightly glauconitic (very few pieces), slightly phosphatic (very few pieces), slightly pyritic (very few pieces), slightly fossiliferous (few shell--some oyster shell fragments and forams). Medium sorted, medium grained (1/4-1/2 mm) limy (10%) clayey (30%) sand
- 2400-2410\* \*\*\*Color change\*\*\*  
 Fresh, hard limestone and quartz, leached brittle claystone (not as much as before) light olive gray 5Y 6/1. Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone, and colorless quartz. Slightly glauconitic (few pieces), slightly phosphatic (few pieces), slightly fossiliferous (forams and shell fragments ?some oyster shell fragments), limestone cement (few pieces, mostly loose quartz grains). Medium sorted, medium grained (1/4-1/2 mm) limy (10%) clayey (15%) sand
- 2410-2420 Small sample  
 Fresh, hard, quartz and limestone, leached brittle claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, medium gray claystone N5. Slightly phosphatic (few pieces), very slightly glauconitic (very few pieces), slightly fossiliferous (shell fragments), limestone cement (few pieces, mostly colorless quartz in loose grains). Medium sorted, medium grained (1/4-1/2 mm) limy (10%) sandy (40%) claystone  
 \*\*\*\*\*  
 clay chips aren't as large as they have been \*\*\*\*\*
- 2420-2430 Samples missing Sept. 8, 1975
- 2430-2440 Fresh, hard quartz and limestone, leached brittle claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone, colorless quartz, medium gray N5 claystone. Slightly glauconitic (few pieces), slightly phosphatic (few pieces), very slightly pyritic (1-2 pieces), slightly fossiliferous (few forams and few shell fragments--some oyster shell fragments) (not much of either limestone above) limestone cement (few pieces). Medium sorted, medium grained (1/4-1/2 mm) limy (10%) sandy (40%) claystone.

- 2440-2450. Fresh, hard limestone and quartz, leached, brittle claystone, medium gray N5. Very light gray N8 limestone (very few pieces), medium gray N5 limestone (very few pieces), colorless quartz (few pieces), medium gray claystone (a great deal). Slightly glauconitic (very few pieces), slightly lignitic (few pieces), slightly phosphatic (very few pieces), very slightly fossiliferous (just a few chips). Medium sorted, medium grained (1/4-1/2 mm) (just a few sand grains) limy (2%) sandy (8%) claystone.
- 2450-2460. Fresh, hard limestone and quartz, leached brittle claystone, medium gray N5. Very light gray N8 limestone, medium gray N5 limestone, medium gray N5 claystone, and colorless quartz. Slightly phosphatic (few pieces), slightly glauconitic (few pieces), slightly lignitic (few pieces), slightly fossiliferous (few forams and some oyster and other shell fragments), limestone cement (very few pieces, with colorless quartz, mostly loose quartz grains). Medium sorted, medium grained (1/4-1/2 mm) limy (10%) clayey (40%) sand.
- 2460-2470. As above.  
Medium sorted, medium grained (1/4-1/2 mm) limy (10%) clayey (43%) sand.
- 2470-2480. Fresh hard quartz and limestone, leached brittle claystone, medium gray N5. Very light gray N8 and medium gray N5 limestone (just a few pieces of each), medium gray N5 claystone and colorless quartz. Slightly glauconitic (few pieces), slightly phosphatic (few pieces including one that looks like it was coated with pyrite), slightly pyritic (very few pieces), slightly fossiliferous (few forams and shell fragments-oyster and others), Medium sorted, medium grained (1/4-1/2 mm) limy (10%) clayey (40%) sand
- 2480-2490\* Fresh, hard limestone and quartz, leached brittle claystone, light olive gray 5Y 6/1. i piece of micaceous claystone, very light gray N8 limestone, medium gray N5 limestone (very few pieces of both limestones), medium gray N5 claystone (not much of this either) and colorless quartz. Slightly glauconitic (few pieces), slightly phosphatic (few pieces), slightly lignitic (very few pieces), slightly pyritic (very few pieces), slightly micaceous, slightly fossiliferous (forams and shell fragments, oysters and others). Medium sorted, medium grained (1/4-1/2 mm) limy (5%) clayey (10%) sand.
- 2590-2500. \*\*\*change in color and lithology \*\*\*\*\*  
Fresh hard limestone and quartz, leached brittle claystone, light olive gray 5Y 6/1. No limestone readily visible, but fossils are present with medium gray N5 claystone chips, colorless quartz. Slightly phosphatic (few pieces), slightly glauconitic (few peices), slightly lignitic (very few pieces), slightly arkosic (1 piece, may have been some in earlier sample), slightly fossiliferous (some shell fragments-oysters and others, very few forams). Medium sorted, medium grained (1/4-1/2 mm) limy (3%) clayey (12%) sand.

- \*\*\* color change \*\*\*  
 2500-2510 \*\*\*clay is probably cave\*\*\*\*\*  
 frosted quartz grains  
 Fresh, hard, limestone and quartz, leached brittle claystone, very pale orange 10YR 8/2). Very light gray N8 limestone, medium gray N5 limestone (not much of either limestone), medium gray N5 claystone and colorless quartz. Slightly glauconitic (few pieces), slightly phosphatic (few pieces), slightly lignitic (few pieces), slightly pyritic (very few pieces), slightly fossiliferous (few chips and shell fragments-oysters and others). Medium sorted, medium to coarse grained (1/4-1.0 mm) limy (5%) clayey (10%) sand.
- 2510-2520 Fresh, hard limestone and quartz, leached brittle claystone (just a few chips), very pale orange 10YR 8/2. (No limestone readily visible). Medium gray N5 claystone and colorless quartz. Slightly glauconitic (few pieces), slightly phosphatic (few pieces), slightly fossiliferous (shell fragments make up the limy % of this sample). Medium sorted, coarse grained (1/2-1.0 mm) limy (3%) clayey (7%) sand.  
 Some iron stained quartz.
- 2520-2530\* Fresh hard limestone and quartz, leached brittle claystone, very pale orange 10YR 8/2 (with chips of medium gray N5 claystone). Very light gray N8 limestone, medium gray N5 limestone (not much of either limestone), medium gray N5 claystone and colorless quartz. Slightly glauconitic (few pieces), slightly phosphatic (few pieces), slightly phosphatic (few pieces), slightly fossiliferous (lots of forams and some shell fragments). Medium sorted, coarse grained (1/2-1.0 mm) limy (2%) clayey (7%) sand.  
 some iron stained quartz grains. colorless or iron stained, polished smooth or frosted, subangular to subrounded, equant, anhedral, 1/4-1/0 mm quartz grains.
- 2530-2540 Fresh, hard limestone and quartz, leached brittle claystone, very pale orange 10YR 8/2 (with medium gray N5 claystone chips). (Not any limestone readily visible, just fossils) (1 piece of green limestone). Medium gray N5 claystone, colorless quartz. Slightly glauconitic, slightly phosphatic (few pieces), slightly pyritic (very few pieces), slightly fossiliferous (few forams and chips). Medium sorted, coarse grained (1/2-1.0 mm) limy (3%) clayey (7%) sand.  
 Quartz is iron stained and also frosted
- 2540-2550. As above.  
 medium sorted, coarse grained (1/2-1.0 mm) limy (5%) clayey (10%) sand  
 iron stained quartz and frosted quartz
- 2550-2560 Fresh, hard limestone and quartz, leached brittle claystone, very pale orange 10YR 8/2 with some gray N5 claystone chips-probably cave. Very light gray N8 limestone, medium gray N5 limestone (not much of either limestone), medium gray claystone, and colorless quartz. Slightly glauconitic (few pieces), slightly phosphatic (very few pieces), slightly fossiliferous (some forams and chips). Claystone chips are probably caving). Medium sorted, coarse grained (1/2-1.0 mm) limy (3%) clayey (7%) sand.

- 2560-2570. Fresh hard quartz (with just a few chips of brittle, leached claystone), very pale orange 10 YR 8/2 with a few chips of medium gray N5 claystone (only one piece of very light gray N8 limestone visible), no other limestone, just fossils for the limy content. Very slightly glauconitic (very few pieces), very slightly phosphatic (very few pieces), slightly fossiliferous (few oyster shell fragments and other chips, few forams). Medium sorted, coarse grained (.50-1.0 mm) limy (3%) clayey (7%) sand. Some frosted equant to elongated, subangular to subrounded, some iron stained quartz grains.
- 2570-2580 Samples missing Sept. 9, 1975.
- 2580-2590 Fresh, hard quartz (with a few chips of leached, brittle claystone), very pale orange 10 YR 8/2 with chips of medium gray N5 claystone. Medium gray N5 claystone (probably cave), colorless or iron stained or frosted (milky) quartz. Slightly glauconitic (very few pieces), slightly phosphatic (few pieces), slightly pyritic (one piece), slightly fossiliferous (few shell fragments - oysters and others - very few forams). Medium sorted, coarse grained (.50-1.0 mm) limy (3%) clayey (7%) sand
- 2590-2600. Fresh, hard quartz and limestone (with a few chips of brittle, leached claystone), very pale orange 10 YR 8/2 with chips of medium gray N5 claystone. Very light gray N8 limestone (very few pieces), medium gray (N5) claystone (a few chips probably cave), colorless or iron stained or frosted (milky) quartz. Slightly glauconitic (few pieces), slightly phosphatic (few pieces), slightly fossiliferous (few forams and shell chips). Medium sorted, coarse grained (.50-1.0 mm) limy (2%) clayey (3%) sand. clay is almost certainly cave, considering size of pieces.
- 2600-2610. Fresh hard pinkish gray 5YR 8/1 (with only a very few medium gray N5 chips of claystone), colorless, iron stained, frosted (milky) quartz. Very slightly phosphatic (1 piece), very slightly fossiliferous (just a few chips and a few forams). Medium sorted, coarse grained (1/2-1.0 mm) limy (2%) clayey (3%) sand.
- 2610-2620. Fresh hard (with a few chips of brittle leached claystone), pinkish gray 5YR 8/1, with chips of medium gray N5 limestone. Medium gray N5 claystone and colorless, iron stained or frosted (milky) quartz. Very slightly glauconitic (very few pieces), slightly fossiliferous (few forams, some chips). Medium sorted, coarse grained (1/2-1.0 mm) limy (3%) clayey (7%) sand.
- 2620-2630 Fresh hard (with a few chips of leached brittle claystone), very pale orange 10YR 8/2 (with chips of medium gray N5 claystone), quartz. Medium gray N5 claystone, colorless, iron stained or frosted (milky), slightly arkosic quartz. Slightly phosphatic (very few pieces), slightly fossiliferous (a few forams and chips and fragments). Medium sorted, coarse grained (1/2-1.0 mm) limy (2%) clayey (3%) sand.
- \*\*\*claystone chips are probably caving from above because of their size.



- 2630-2640. As above.  
Medium sorted, coarse grained (1/2-1.0 mm) limy (2%) clayey (3%) sand.
- 2640-2650. Fresh hard (with a few chips of brittle leached claystone), very pale orange 10YR 8/2 (with a few chips of medium gray N5 claystone) sand. Medium gray N5 claystone, colorless, iron stained, or frosted quartz. Slightly pyritic (few pieces), slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (very few pieces), slightly fossiliferous (some forams). Medium sorted, coarse grained (1/2-1.0 mm) limy (3%) clayey (7%) sand.
- 2650-2660. As above.  
*my base of 2650-2660*  
Medium sorted, coarse grained (1/2-1.0 mm) limy and clayey (5%) sand.
- 2660-2670. Change in grain size.  
Fresh hard (with a few chips of medium gray N5 claystone, probably cave), very pale orange 10YR 8/2 (with a few chips of medium gray N5 limestone, probably cave) quartz. Slightly arkosic (very few pieces), slightly pyritic (very few pieces), very slightly glauconitic, slightly fossiliferous (few forams and few chips). Medium sorted, medium grained (1/4-1/2 mm) limy, clayey (10%) sand. Limestone and clay probably cave.
- 2670-2680 Fresh hard (with a few chips of leached brittle clay-probably cave), very pale orange 10YR 8/2 (with a few chips of medium gray N5 claystone). Colorless (or iron stained, most has been) quartz. Slightly fossiliferous (few forams and chips). Coarse grained (1/2-1.0 mm) limy and clayey (10%) sand.
- 2680-2690 Still getting a few chips of gray claystone--caving from above. Fresh hard (with a few chips of leached, brittle claystone --probably cave), very pale orange (10YR 8/2 (with medium gray N5 claystone chips). Medium gray claystone and colorless or iron stained quartz. Slightly arkosic (few pieces, slightly phosphatic (very few pieces), slightly fossiliferous (very few forams). Medium sorted, coarse grained (1/2-1.0 mm) clayey (5%) sand.
- 2690-2700 Sample missing. Sept 10, 1975
- 2700-2710. Fresh hard, very pale orange 10YR 8/2 (with a very few chips of brittle, leached medium gray N5 claystone). Colorless quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly fossiliferous (few forams). Medium sorted, coarse grained (1/2-1.0 mm) limy and clayey (5%) sand.
- 2710-2720. As above.  
Some quartz iron stained, and slightly phosphatic.  
Medium sorted, coarse grained (1/2-1.0 mm) clayey (5%) sand.

- 2720-2730. As above.  
Medium sorted, coarse grained (1/2-1.0 mm) clayey (5%) sand.
- 2730-2740. As above.  
Medium sorted, coarse grained (1/2-1.0 mm) clayey (5%) sand.  
Some medium grained particles in this sample.
- 2740-2750. As above.  
Medium sorted, coarse grained (1/2-1.0 mm) clayey (5%) sand. This sample and the one above also have pretty many medium grained particles.
- 2750-2760. As above.  
Medium sorted, coarse grained (1/2-1.0 mm) clayey (2%) sand. Some clay is probably cave from above.
- 2760-2780. Samples missing, Sept. 10, 1975
- 2780-2790. As above.  
Medium sorted, coarse grained (1/2-1.0 mm) clayey (2%) sand.
- 2790-2800. *1325 - 1/2" section at 7/2/75*  
Fresh, hard, very pale orange 10YR 8/2 (with three chips of brittle leached claystone), colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (very few pieces), slightly pyritic (Very few pieces), slightly fossiliferous (very few forams). Medium sorted, coarse grained (1/2-1.0 mm) sand.
- 2800-2810. As above.  
Medium sorted, coarse grained (1/2-1.0 mm) sand, slightly micaceous.
- 2810-2820. Fresh, hard, very pale orange 10YR 8/2 (with a few chips of leached brittle claystone medium gray N5) colorless or iron stained quartz. Slightly arkosic (few pieces), slightly phosphatic (very few pieces), slightly pyritic (very few pieces), very slightly fossiliferous (one oyster shell fragment and a very few forams). Medium sorted, coarse grained (1/2-1.0 mm) sand.
- 2820-2830. As above.  
Medium sorted, coarse grained sand. Colored reddish brown grains? Siderite? very slightly micaceous
- 2830-2840. Fresh hard very pale orange 10YR 8/2 (with a few chips of leached brittle medium gray N5 claystone). Colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (very few pieces), slightly pyritic (very few pieces). No fossils readily visible. Medium sorted, coarse grained sand.

still a few chips of medium gray N5 claystone caving from above.

- 2840-2850. Fresh, hard, very pale orange 10YR 8/2, with a few chips of brittle, leached medium gray N5 claystone. Colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (very few pieces), slightly pyritic (very few pieces), very slightly fossiliferous (very few forams).

- 2840-2850 (continued). Medium to coarse grained (1/4-1.0 mm) sand.
- 2850-2860. Sample missing September 10, 1975
- 2860-2870. Fresh, hard, pale orange 10YR 8/2 with a few chips of medium gray N5 claystone. Colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (very few pieces), slightly pyritic (very few pieces), very slightly fossiliferous (very few forams, and one oyster shell fragment). Medium sorted, coarse grained (1/2-1.0 mm) sand. Dark reddish brown opaque stuff again and in sample above. Maybe just quartz.
- 2870-2880. As above. Medium sorted, coarse grained sand.
- 2880-2890. As above. Medium sorted, coarse grained (1/2-1 mm) sand.
- 2890-2900. Sample missing September 10, 1975
- 2900-2910. Fresh, hard, very pale orange 10YR 8/2, with a few chips of brittle leached medium gray N5 claystone. Colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (few pieces), not noticeably fossiliferous. Medium sorted, coarse grained (1/2-1.0 mm) sand.
- 2910-2920. As above. slightly pyritic (few pieces. Medium sorted, coarse grained (.50-1.0 mm) sand.
- \*\*\*\*\* possibly the gray claystone represents interbedding of very thin beds of claystone and sand.
- 2920-2930. Fresh, hard, very pale orange 10YR 8/2, with chips (more than in a while) of brittle, leached medium gray N5 claystone. Colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few 1-2 pieces) slightly phosphatic (few pieces), not noticeably fossiliferous. Medium sorted, coarse grained (.5-1. mm) sand.
- 2930-2940. Fresh, hard, very pale orange 10YR 8/2, with more than recently chips of brittle, leached medium gray N5 claystone. Colorless or iron stained quartz. Slightly arkosic (few pieces), slightly micaceous (1 piece), very slightly glauconitic (1 piece), slightly phosphatic (few pieces), slightly pyritic (few pieces), not noticeably fossiliferous. Medium sorted, coarse grained (.5-1. mm) clayey (15%) sand.
- \*\*\*Probably clay represents thick bed or several thin beds in this 10-foot interval.
- 2940-2950. Fresh, hard, very pale orange 10YR 8/2 with a few (not near so many as last sample) chips of brittle, leached medium gray N5 claystone. Colorless or iron stained quartz. 1 piece of very light gray N8 limestone. Slightly arkosic (few pieces), slightly glauconitic (very few 3-4 pieces), slightly micaceous (1 piece), slightly phosphatic (few pieces), slightly pyritic (1 piece). Medium sorted, coarse grained (1/2-1.0 mm) sand.

- 2950-2960. Fresh, hard, very pale orange 10YR 8/2 with a few chips of medium gray N5 claystone, brittle and leached. Colorless, frosted or iron stained quartz (been seeing frosted quartz for a while). Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (few pieces), slightly pyritic (very few pieces), slightly fossiliferous (3 oyster shell fragments, a couple of forams maybe). Medium sorted, coarse grained (.50-1.0 mm) sand.
- 2960-2970. As above.  
Medium sorted, coarse grained (.50-1.0 mm) sand
- 2970-2980. Fresh, hard, very pale orange 10YR 8/2 with a few chips of leached brittle medium gray N5 claystone. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (few pieces), slightly pyritic (few pieces), slightly micaceous (1 piece), not noticeable fossiliferous. Medium sorted, coarse grained (1/2-1.0 mm) sand.
- 2980-2990. Fresh, hard, very pale orange 10YR 8/2 with more than in a while brittle, leached chips of medium gray N5 claystone. Frosted or colorless or iron stained quartz. Slightly arkosic (few pieces), slightly micaceous (1 piece), slightly phosphatic (very few pieces), slightly pyritic (very few pieces), slightly fossiliferous (very few oyster shell fragments). Medium sorted, coarse grained (.5-1.0 mm) sand.
- 2990-3000\* Fresh, hard, very pale orange 10YR 8/2 with a few chips of leached brittle, medium gray N5 claystone. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (very few pieces), slightly pyritic (very few pieces), slightly fossiliferous (1 brown foram? also possible tooth that looks like it was replaced by phosphate). Medium sorted, coarse grained (.5-1.0 mm) sand
- 3000-3010. Fresh, hard, very pale orange 10YR 8/2 with pretty many chips of leached brittle medium gray N5 claystone. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly phosphatic (very few pieces), slightly fossiliferous (few oyster shell fragments). Medium sorted, coarse grained (.5-1.0 mm) sand.
- 3010-3020. \*\*\*color change\*\*\*  
Fresh, hard, pinkish gray 5YR 8/1 with many chips of leached, brittle medium gray N5 claystone; some chips are really big ones-- one is 5x10 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly phosphatic (very few pieces). Medium sorted, coarse grained (.5-1.0 mm) sand. with clay about 15%. Not sure if it is cave possible because of its size or if these chips represent thin beds of interbedded claystone and sand.

- 3020-3030. As above.  
Medium sorted, coarse grained (.5-1.0 mm) sand about 15% clay which may be cave.
- 3030-3040. As above.  
Medium sorted, coarse grained (.5-1.0 mm) sand. clay 15%, cave?
- 3040-3050 Fresh, hard, very pale orange 10YR8/2 with many chips of brittle leached medium gray N5 claystone--biggest is 10X10 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (few pieces), slightly lignitic? (2 pieces), slightly phosphatic (few pieces), slightly fossiliferous (few oyster shell fragments). Medium sorted, coarse grained (.5-1.0 mm) sand, with 5% claystone. Cave or interbedded?
- 3050-3060. As above. no lignite.  
Medium sorted, coarse grained (.5-1.0 mm) sand. 10% claystone. cave or interbedded?
- 3060-3070. \*\*\*\*\*change in grain size \*\*\*\*\*  
Fresh, hard, pinkish gray 5YR 8/1 with many chips of brittle, leached, medium gray N5 claystone--biggest piece 5X3 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (very few pieces), not noticeably fossiliferous. Poorly sorted, fine to coarse grained (1/8-1/0 mm) mostly coarse grained but some fine grains, sand. with 15% claystone cave or interbedded?
- 3070-3080. Fresh, hard, very pale orange 10YR8/2, with several chips of leached brittle, medium gray N5 claystone, biggest is 2X5 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces), slightly phosphatic (few pieces), slightly pyritic (few pieces), not noticeably fossiliferous. poorly sorted, fine to coarse grained (1/8-1.0 mm) sand, with 5% claystone chips. Cave or interbedded?
- 3080-3090. As above.  
Poorly sorted, fine to coarse grained sand with 10% claystone, cave or interbedded?
- 3090-3100.\*\*\*\*\*change in grain size \*\*\*\*\*  
Fresh, hard, very pale orange 10YR8/2 with a few chips of brittle, leached, medium gray N5 claystone, biggest is 2X5 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly phosphatic (very few pieces), slightly glauconitic (few pieces), not noticeably fossiliferous. Medium sorted, medium grained (1/4-1/2 mm) sand, with 3% claystone--cave or interbedded?

- 3100-3110. \*\*\*change in grain size\*\*\*\*\*  
 Fresh, hard, very pale orange 10YR8/2 with a few chips of medium gray N5 claystone, leached and brittle. Frosted, colorless or iron stained quartz grains. Slightly arkosic (few pieces), slightly glauconitic (few pieces), slightly phosphatic (few pieces), slightly pyritic (very few pieces). Medium sorted, coarse grained (.50-1.0 mm) with some medium grains, sand, with 2% claystone chips. cave or interbedded?
- 3110-3120. As above.  
 Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 5% claystone cave or interbedded?
- 3120-3130. As above, micaceous  
 Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand, with 10% claystone chips. cave or interbedded?
- 3130-3140. As above.  
 Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 10% claystone. cave or interbedded?
- 3140-3150. As above.
- 3150-3160. \*\*\*change in grain size, really sorting\*\*\*\*\*  
 Fresh, hard, very pale orange 10YR8/2 with many chips of leached, brittle medium gray N5 claystone, 3X7 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly fossiliferous (2 oyster shell fragments, probably caving from above). Medium sorted, coarse grained (1/2-1.0 mm) sand with 10% claystone chips. Cave or interbedded?
- 3160-3170. Fresh, hard, very pale orange 10YR8/2 with many chips of leached, brittle, medium gray N5 claystone, largest 3X7 mm. Frosted, colorless and iron stained quartz. Slightly arkosic (few pieces), slightly micaceous (1 piece), slightly pyritic (very few pieces), slightly fossiliferous (forams-probably cave). Medium sorted, coarse grained (1/2-1.0 mm) sand with 10% claystone chips. Cave or interbedded?
- 3170-3180. As above.  
 Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 10% claystone chips.
- 3180-3190. Sample missing September 11, 1975.
- 3190-3200. Fresh, hard, very pale orange 10YR8/2 with many chips of leached, brittle medium gray N5 claystone, largest 3X5 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly micaceous (1 piece), slightly phosphatic (very few pieces), slightly lignitic? (1 piece). Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 10% claystone, cave or interbedded?

- 3200-3210. Fresh, hard, very pale orange 10YR8/2 with a few chips of leached brittle medium gray N5 claystone, largest 3X5 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly glauconitic (very few pieces, probably cave), slightly phosphatic (very few pieces), limestone cement (very few pieces, with quartz and silt-sized grains). Poorly sorted, fine to coarse grained (1/8-1.0 mm) average medium grained, sand with 5% claystone, cave or interbedded?
- 3210-3220. Fresh, hard, very pale orange, with few chips of medium gray N5 leached brittle claystone, largest 3X10 mm. Frosted, colorless, or iron stained quartz. Slightly arkosic (few pieces), slightly phosphatic (few pieces). Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained, sand with 5% claystone chips. cave or interbedded?
- 3220-3230. As above.  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand, with 5% claystone chips. Cave or interbedded?
- 3230-3240. Fresh, hard, very pale orange 10YR8/2 with a few chips of leached brittle medium gray N5 claystone, largest is 3X5 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly micaceous (1 piece). Poorly sorted, fine to coarse grained (1/8-1.0 mm) (mainly coarse grained) sand, with 13% claystone chips. cave or interbedded?  
Colorless, iron stained, locally rose quartz, polished, smooth or frosted, subangular to subrounded, equant to elongate, anhedral to subhedral, fine to coarse grained (1/8-1.0 mm) quartz grains.
- 3240-3250. Fresh, hard, very pale orange 10YR8/2 with a few chips of leached brittle medium gray N5 claystone, largest 2X7 mm. Frosted, colorless or iron stained quartz grains. Slightly arkosic (few pieces). Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand, with 2% claystone. cave or interbedded?
- 3250-3260. As above. Slightly phosphatic (few pieces)  
poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 2% clay. cave or interbedded?
- 3260-3270. As above.  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 2% claystone chips. Cave or interbedded?
- 3270-3280. As above.  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 2% claystone chips. Cave or interbedded?
- 3280-3290. As above.  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 1% claystone chips. cave or interbedded?

- 3290-3300. As above.  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 1% claystone chips. Cave or interbedded?  
1 piece of very shiny black mineral-like obsidian?
- 3300-3310. As above. includes 1 piece of shiny black mineral also.  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 1% claystone chips. Cave or interbedded?
- 3310-3320. Fresh, hard, very pale orange 10YR8/2 with a few chips of brittle leached medium gray N5 claystone, largest 1X3 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), 1 piece of garnet (probably the dark reddish brown mineral seen above in several samples), 1 piece of possibly ilmenite (black shiny mineral above could be ilmenite). Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with less than 1% claystone chips. Cave or interbedded?
- 3320-3330. Fresh, hard very pale orange 10YR8/2 with a few chips of leached brittle claystone medium gray N5 largest 2X5 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly pyritic (1 piece). Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 2% claystone chips. Cave or interbedded?
- 3330-3340. Fresh, hard, very pale orange 10YR8/2 with a few chips of leached brittle medium gray N5 claystone, largest 4X4 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly phosphatic (1 piece), one piece of possible ilmenite. Poorly sorted, fine to coarse grained (1/8-1.0 mm) (mostly coarse grained) sand, with 2% claystone chips. Cave or interbedded?
- 3340-3350. Fresh, hard very pale orange with a few chips of leached, brittle medium gray N5 claystone, largest 4X9 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces). Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand with 2% claystone chips. Cave or interbedded?
- 3350-3360. Fresh, hard, very pale orange 10YR8/2 with a few chips of leached brittle claystone medium gray N5, largest 3X10 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), 1 piece (possibly) of ilmenite. Poorly sorted, fine to coarse grained (1/8-1.0 mm) mostly coarse grained, sand, with 1% claystone chips. Cave or interbedded?
- 3360-3370. \*\*\* change in grain size \*\*\*\*\*  
Fresh, hard, very pale orange 10YR 8/2 with a very few chips of leached brittle medium gray N5 claystone, largest 1X2 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), 2-3 pieces probably garnet. Medium sorted, coarse grained (1/4-1.0 mm) (mainly coarse grained) sand, with 1% clay stone chips. Cave or interbedded?



- 3370-3380. As above. glauconitic (cave?)  
Medium sorted, medium to coarse grained (1/4-1.0 mm) (mostly coarse grained) sand, with 1% claystone chips. Cave or interbedded?
- 3380-3390. Fresh, hard very pale yellow 10YR8/2 with a few chips of leached brittle medium gray N5 claystone, largest 2X7 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), 2-3 pieces of garnet (probably). Poorly sorted, fine to coarse grained (1/8-1.0 mm) (mostly coarse grained) sand with 3% claystone chips. Cave or interbedded?
- 3390-3400. As above.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) (mostly coarse grained) sand with less than 1% claystone chips. Cave or interbedded?  
maybe the fine grains are washed away?
- 3400-3410. As above.
- 3410-3420. As above, with very slight pyrite
- 3420-3430. As above, no pyrite.
- 3430-3440. As above.  
Medium sorted, medium grained (1/4-1.0 mm) sand with 1% claystone chips. Cave or interbedded?
- 3440-3450. Fresh, hard, very pale orange 10YR8/2 with a few chips of leached brittle medium gray N5 claystone, largest 3X9 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), 1 piece of glauconite (cave?). Poorly sorted, fine to coarse grained (1/8-1.0 mm) mostly coarse grained sand, with 2% claystone chips, cave or interbedded?
- 3450-3460. As above.  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand, with 2% claystone chips, cave or interbedded.
- 3460-3470. As above.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 3% claystone chips. Cave or interbedded?
- 3470-3480. As above.  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) mostly coarse grained sand with 1% claystone. cave or interbedded?
- 3480-3490. As above.  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) mostly coarse grained sand with 3% claystone. Cave or interbedded?

3490-3500\* Fresh, hard, very pale orange 10YR 8/2 with many chips of leached brittle medium gray N5 claystone, largest 5X10 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), limestone cement (several pieces with colorless quartz) slightly fossiliferous (3 pieces of fossil material). Poorly sorted, fine to coarse grained (1/8-1.0 mm) mostly coarse grained sand with 7% claystone chips. Cave or interbedded?

\*\*\*large fossil? and weird looking black, vesicular particle.  
limestone cement fossiliferous, but mighty big--could be cave.

the next three samples all have a lot of cave or else passing through some claystone beds.

3500-3510. Fresh, hard, very pale orange 10YR8/2 with a great many chips of leached brittle medium gray N5 claystone, largest 5X7 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly fossiliferous (very few pieces) pretty good sized limestone cement (few pretty big chip with colorless quartz, mostly loose quartz grains. Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 15% claystone chips. cave or interbedded?

Also a few large pieces of fossil material, pretty big--probably cave??

3510-3520\* As above.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained, sand with 5% claystone chips. Cave or interbedded?  
\*\*\* another piece of black, vesicular rock-shiny. \*\*\*

3520-3530. As above.  
Medium sorted, medium to coarse grained mostly coarse grained sand with 10% claystone chips. Cave or interbedded?  
2 pieces of garnet and 1 piece of pyrite.

now back to nice clean sand.

3530-3540. Fresh, hard, very pale orange 10YR 8/2. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), very slightly phosphatic (2-3 pieces), 1 piece possible garnet. Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand. Good clean living sand!

3540-3550. As above.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 1% claystone chips. Cave or interbedded.

3550-3560. As above.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 1% claystone chips. Cave or interbedded?

3560-3570. As above, slightly pyritic  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 2% claystone chips. Cave or interbedded?

- 3570-3580. As above, no pyrite, slightly phosphatic (2-3 pieces), one piece of possible garnet.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 1% claystone chips. Cave or interbedded?
- 3580-3590. As above, no phosphate  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 1% claystone chips.
- 3590-3600. As above. few pieces of garnet.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with less than 1% claystone chips. Cave or interbedded.
- 3600-3610. As above.  
Medium sorted medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 1% claystone chips. Cave or interbedded?
- 3610-3620. As above.
- 3620-3630. As above. Includes rose quartz.
- 3630-3640. As above. moderate pink 5R 7/4 quartz.
- 3640-3650. As above. Slightly phosphatic.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 10% claystone chips. Cave or interbedded?
- 3650-3660. As above.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 1% claystone chips. Cave or interbedded?
- 3660-3670. Mixed up washed and unwashed sample.  
As above. Slightly arkosic (few pieces), 1 piece of garnet.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse grained sand with 5% claystone chips. Cave or interbedded?
- 3670-3680. As above.  
Slightly arkosic, medium sorted, medium to coarse grained, mostly coarse grained sand with 5% claystone chips. Cave or interbedded?
- 3680-3690. As above, includes moderate pink 5R 7/4 quartz.  
Medium sorted, medium to coarse grained, mostly coarse grained sand with with 3% claystone chips. Cave or interbedded.
- 3690-3700. As above, includes 1 piece of mica.  
Medium sorted, medium to coarse grained mostly coarse grained sand, with 2% claystone chips. Cave or interbedded?
- 3700-3710.\*\*\*\*\* change in grain size \*\*\*\*\*  
Fresh, hard, very pale orange 10YR 8/2, with a few chips of leached brittle medium gray N5 claystone, largest 4x5 mm. Frosted, colorless, iron stained, or moderate pink 5R 7/4 quartz. Poorly sorted, fine to coarse grained, slightly arkosic (few pieces) (1/8-1.0 mm) mostly coarse grained sand with 1% claystone chips. Cave or interbedded?

- 3710-3720. Small sample.  
As above. No rose quartz  
Poorly sorted, fine to coarse grained, mostly coarse grained sand,  
with 5% claystone chips. Cave or interbedded?
- 3720-3730. Very small sample.  
As above.
- 3730-3740. Fresh, hard, very pale orange 10YR8/4 with many chips of leached  
brittle claystone medium gray N5, largest is 5X8 mm. Frosted,  
colorless or iron stained quartz. Slightly arkosic (few pieces),  
few pieces of possible garnet. Poorly sorted, fine to coarse grained,  
(mostly coarse grained with most fine grained-clay particles, coarse  
to medium grains are quartz sand grains) sand, with 5% claystone  
chips. Cave or interbedded?
- 3740-3750. Small sample.  
As above.  
Medium sorted, medium to coarse grained (1/4-1.0 mm) mostly coarse  
grained sand with 1% claystone chips. Cave or interbedded?
- 3750-3760. As above.  
Poorly sorted, fine to coarse grained (mostly coarse grained except  
fine grains are clay particles) sand with 3% claystone chips.  
Cave or interbedded?
- 3760-3770. As above.
- 3770-3780. As above, no rose quartz, slightly phosphatic.  
Poorly sorted, fine to coarse grained, mostly coarse grained but  
fine grained is clay particles) sand, with 3% claystone chips. Cave  
or interbedded?
- 3780-3790. As above, no phosphate, 1 piece of garnet.  
Poorly sorted, fine to coarse grained (mostly coarse grained,-  
no visible clay particles) sand, with 1% claystone chips. Cave or  
interbedded?
- 3790-3800. \*\*\* change in grain size \*\*\*  
Fresh, hard, very pale orange 10YR8/2 with 2-3 chips of brittle,  
leached medium gray N5 claystone, largest 1x5 mm. Frosted, colorless  
or iron stained quartz. Slightly arkosic (few pieces). Poorly  
sorted, medium to very coarse grained (1/8-2.0 mm) (mostly coarse  
grained) sand, with 1% claystone chips. Cave or interbedded?
- 3800-3810. Fresh, hard, very pale orange 10YR 8/2 with 3-4 chips of leached,  
brittle medium gray N5 claystone, largest 5X5 mm. has the mold of  
a shell on it--pelecypods or clam?. Frosted, colorless quartz.  
Slightly arkosic (few pieces). Medium sorted, coarse to very coarse  
grained (1/2-2.0 mm) (mostly coarse grained) sand with 1% claystone  
chips. Cave or interbedded?

- 3810-3820. As above. no fossils 1 piece of garnet.  
Poorly sorted, medium to very coarse grained (1/4-2.0 mm) (mostly coarse grained) sand with 1% claystone chips. Cave or interbedded?
- 3820-3830. Small sample.  
As above, includes rose quartz.  
Poorly sorted, medium to very coarse grained (1/4-2.0 mm) mostly coarse grained sand, with 1% claystone chips. Cave or interbedded?
- 3830-3840. As above, with 2 pieces of limestone cemented colorless quartz grains.  
Poorly sorted, fine to very coarse grained (1/8-2.0 mm) sand with 1% claystone chips. Cave or interbedded.
- 3840-3850. As above, but with no limestone-cemented sand.  
Poorly sorted, medium to very coarse grained (1/8-2.0 mm) (mostly coarse grained) sand, with 1% claystone chips. Cave or interbedded?
- 3850-3860. As above, but more arkosic.  
Poorly sorted, medium to very coarse grained (1/4-2.0 mm) (mostly coarse grained) sand with 1% claystone chips. Cave or interbedded?
- 3860-3870. As above, slightly arkosic  
Poorly sorted, fine to very coarse grained (1/8-2.0 mm) (mostly coarse grained with a few grains of clay) sand with 5% claystone chips. Cave or interbedded?
- 3870-3880\* \*\*\*\*very poor sample, very small sample \*\*\*\*\*  
As above. <sup>very</sup>  
1 fossil fragment, clam? Poorly sorted, fine to/coars e grained (1/8-2.0 mm) mostly coarse grained with some fine grains of clay) sand with 10% claystone chips. Cave or interbedded?
- 3880-3890. Small sample  
As above.
- 3890-3900. As above
- 3900-3910. Extremely small sample.  
As above, 1 piece of phosphate.
- 3910-3920. As above. 1 piece of garnet, no phosphate  
Poorly sorted, medium to very coarse grained (1/4-2.0 mm) (mostly coarse grained) sand with 2% claystone chips. Cave or interbedded?
- 3920-3930. As above. Poorly sorted,  
Fine to very coarse grained (1/8-2.0 mm) (mostly coarse grained) sand with 5% claystone chips. Cave or interbedded?
- 3930-3940. Small sample.  
As above.

- 3940-3950. As above.  
Poorly sorted, fine to very coarse grained (1/8-2.0 mm) (mostly coarse grained) sand with 1% claystone chips. Cave or interbedded?
- 3950-3960. As above. 1 piece of phosphate  
Poorly sorted, fine to coarse grained (1/8-1.0 mm) sand, with 10% claystone chips. Cave or interbedded? Most claystone seen in a long time.
- 3960-3970. As above, slightly phosphatic (very few pieces)  
Medium sorted, medium to coarse grained (1/4-1.0 mm) sand with 1% claystone chips. Cave or interbedded?
- 3970-3980. As above. 1 piece of green feldspar-microcline?  
Medium sorted, medium-coarse grained (1/4-1.0 mm) sand with 2% claystone chips. Cave or interbedded
- 3980-3990. As above.  
Poorly sorted, fine to very coarse grained (1/8-2.0 mm) (mostly coarse grained with a few fine grains of clay) sand, with 10% claystone chips. Cave or interbedded?
- 3990-4000. As above.  
Poorly sorted, medium to very coarse grained (1/4-2.0 mm) (mostly coarse grained) sand with 2% claystone chips.
- 4000-4010. Sample missing. Sept. 17, 1975
- 4010-4020. Fresh, hard, very pale orange 10YR8/2 with a great many chips of leached, brittle, medium gray N5 claystone, largest 7x12 mm. Frosted, colorless and iron stained quartz, or moderate pink 5R 7/4. Slightly arkosic (few pieces). Poorly sorted, fine to very coarse grained (1/8-2.00 mm) (mostly coarse grained) sand with 15% claystone chips. Cave or interbedded?
- 4020-4030\* Fresh, hard, very pale orange 10YR8/2 with many chips of leached, brittle medium gray N5 claystone, largest 7x10 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces), slightly fossiliferous (2 fossils--ostracode and a sponge?? probably cave from above. Poorly sorted, fine to very coarse grained (1/8-2.0 mm) mostly coarse grained with a few grains of clay, sand. with 15% claystone chips.
- 4030-4040\* Fresh, hard, very pale orange 10YR 8/2 with a few chips of leached, brittle, medium gray N5 claystone, largest 7x12 mm. Frosted, colorless, iron stained or moderate pink 5R 7/4 quartz. Slightly arkosic (few pieces), slightly fossiliferous (few pieces--cave from above or in place?). Poorly sorted, fine to very coarse grained (1/8-2.0 mm) sand with 5% claystone chips.
- 4040-4050. As above, 1 piece of pyrite, and a few pieces of limy-cemented quartz grains.  
Poorly sorted, fine grained to very coarse grained (1/8-2.0 mm) sand with 10% claystone chips. Cave or interbedded.

- 4050-4060. As above., no pyrite
- 4060-4070. As above, slightly fossiliferous (3-4 chips)
- 4070-4080. As above, no fossils.
- 4080-4090. As above
- 4090-4100. As above, 1 piece of pyrite, 100% clean sand with 1% claystone chips.
- 4100-4110. As above, no pyrite.
- 4110-4120. As above.
4110. Circulated 1 hour. ?  
As above.
- 4110-4120. Fresh, hard, very pale orange 10YR8/2 with many chips of leached, brittle, medium gray N5 claystone, largest 5x10 mm. Frosted, colorless, or iron stained quartz. Slightly arkosic (few pieces, some whole, some tan, some pink), slightly fossiliferous (chips and fragments), limestone cement (few pieces--mostly loose quartz grains), Poorly sorted, medium to very coarse grained (1/4-2.0 mm) (mostly coarse grained ) sand with 5% claystone chips. Cave or interbedded.
- 4120-4130\* Fresh, hard, very pale orange 10YR8/2 with several chips of leached, brittle, medium gray claystone N5, largest 8x8 mm. Frosted, colorless or iron stained, or moderate pink 5R 7/4 quartz. Slightly arkosic (few pieces --pink, white, tan), very slightly pyritic (2 pieces). Poorly sorted, fine to very coarse grained (1/8-2.0 mm) mostly coarse grained, sand, with 10% claystone chips. Cave or interbedded?
- \*\*\*\*\*a few chips of very dusky red 10R 2/2 hard, basement rock?
- 4130-4135. Sample missing September 17, 1975.
- 4135-4140. As above, no pyrite.  
More very dusky red 10R 2/2 chips, basement
- 4140-4145. As above.  
more very dusky red 10R2/2 chips--basement.
- 4145-4150. Sample missing. September 17, 1975.
- 4150-4160. As above.  
more very dusky red 10R2/2 chips, basement?
- 4160-4165. Fresh, hard, very pale orange 10YR 8/2 with many chips of dark reddish brown 10R3/4 brittle, leached sandstone? and a few chips of leached brittle medium gray N5 claystone, largest 3x8 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (pink, tan or white, few pieces). Fine to very coarse grained (1/8-2.0 mm) mostly coarse grained sand with 5% claystone and 5% red sandstone?--claystone cave or interbedded?
- \*\*\*\*\* 1 piece of hard, dark reddish brown 10R3/4 sandstone, with igneous quartz intrusion. basement?

4165. Circulated 1/2 hour.  
Fresh hard quartz, very pale orange 10YR 8/2 with chips of leached brittle, medium gray N5 claystone and leached brittle reddish brown 10R 3/4 sandstone? largest claystone chip 7x10 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces-white). Poorly sorted, fine to very coarse grained (1/8-2.0 mm) mostly coarse grained sand. 50%, with 30% claystone chips and 20% red sandstone chips.
4165. Circulated 1 hour.  
Fresh, hard quartz, very pale orange 10YR 8/2, with a few chips of leached, brittle, medium gray N5 claystone and a few chips of leached, brittle dark reddish brown 10R 3/4 sandstone, largest claystone chip 4x8 mm. Frosted, colorless, iron stained or moderate pink 5R 7/4 quartz. Slightly arkosic (white, few pieces), limestone cemented (few pieces-mostly loose quartz grains). Poorly sorted, fine to very coarse grained (1/8-2.0 mm) mostly medium grained sand, with 5% claystone chips and 5% red sandstone.
- 4165 Circulation 1 1/2 hours  
\*\*\*color change.  
Fresh, hard, moderate orange pink 5YR 8/4 with a few chips of leached brittle medium gray N5 claystone, largest 5x5 mm and a few chips of dark reddish brown 10R 3/4 sandstone? Frosted, colorless iron stained or moderate pink 5R 7/4 quartz. Slightly arkosic (few pieces, white). Poorly sorted, fine to very coarse grained (1/8-2.0 mm) mostly coarse grained sand, with 3% claystone chips and 3% red sandstone chips.
- 4160-4170. Fresh, hard, very pale orange quartz, dark reddish brown 10R 3/4 sandstone?, brittle, leached--50% of sample, a few chips of leached, brittle, medium gray N5 claystone, largest 1x5 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces, white and tan). Poorly sorted, fine to very coarse grained (1/8-2.0 mm) mostly coarse grained sand 50%, with 45% of the sample red sandstone chips and 5% claystone chips.
- 4165-4170. Fresh, hard, very pale orange 10YR 8/2 with a great many chips of leached, brittle medium gray N5 claystone, largest 5x8 mm, with a few chips of dark reddish brown 10R 3/4 leached, brittle sandstone? Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces white and tan). Poorly sorted, fine to very coarse grained, mostly coarse grained sand. 18% claystone chips cave or interbedded, and 2% reddish brown sandstone.
- 4170-4180. leached, brittle, dark reddish brown 10R 3/4 sandstone? with very pale orange 10YR 8/2 quartz, colorless, frosted, or iron stained, and a few chips of leached, brittle medium gray N5 claystone, largest is 3x7 mm. Slightly arkosic (few pieces-white, pink and tan), Poorly sorted, fine to very coarse grained, mostly coarse grained sand. 50% red sandstone, 49% quartz grains, and 1% claystone chips.
- 4180-4190. Sample missing. September 17, 1975.



- 4190-4200. Fresh, hard, very pale orange 10YR 8/2 with many chips of leached, brittle, medium gray N5 claystone, largest 5x10 mm, and many chips of dark reddish brown 10R 3/4 sandstone? Frosted, colorless, iron stained and moderate pink 5R7/4 quartz. Slightly arkosic (few pieces, white tan and pink). Poorly sorted, fine to very coarse grained, mostly coarse grained sand, with 5% sandstone? and 5% claystone chips.
- 4200-4210. As above.  
Poorly sorted, fine to very coarse grained mostly coarse grained sand, with 5% sandstone and 5% claystone chips.
- 4210-4220. As above, 1 mica flake.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 5% sandstone chips and 6% claystone chips.
- 4220-4230. As above, no mica.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand, with 5% red sandstone chips and 5% claystone chips. Cave or interbedded.
- 4230-4240. As above, 1 piece of pyrite.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 5% red sandstone chips and 5% claystone chips. Cave or interbedded?
- 4240-4250. As above, no pyrite  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand, with 5% red sandstone chips and 5% claystone chips. Cave or interbedded.
- 4250-4260. As above.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 3% red sandstone chips and 5% claystone chips. Cave or interbedded?
- 4260-4270. As above.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand, with 2% red sandstone chips and 3% claystone chips. Cave or interbedded?
- 4270-4280. As above, 1 flake of mica.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand, with 5% red sandstone chips and 5% claystone chips. Cave or interbedded?
- 4280-4290. As above, no mica.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand, with 3% red sandstone chips and 7% claystone chips. Cave or interbedded?
- 4290-4300. As above, no rose quartz.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 7% claystone chips, Cave or interbedded, and 1% red sandstone chips. Some of the fine grains are clay particles.

- 4300-4310. As above, with rose quartz  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 7% claystone chips, cave or interbedded and 1% red sandstone chips.
- 4310-4320. Sample missing.
- 4320-4330. Sample missing.
- 4330-4340. Sample missing. September 18, 1975.
- 4340-4350. As above.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 5% claystone chips, cave or interbedded? and 1% red sandstone chips.
- 4350-4360\* As above, fossiliferous--a tooth and part of a jaw attached?  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 5% claystone chips, cave or interbedded, and 1% red sandstone chips.
- 4360-4370. As above.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand, with 15% claystone chips, cave or interbedded? and 1% red sandstone chips.
- 4370-4380. As above, no rose quartz, 1 small piece of an oyster shell.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with a few grains of clay, with less than 1% red sandstone and 10% claystone chips--cave or interbedded?
- 4380-4390. As above, with rose quartz.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 5% claystone chips--cave or interbedded? and less than 1% red sandstone chips.
- 4390-4400. As above.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 5% claystone chips--cave or interbedded and less than 1% red sandstone.
- 4400-4410. As above.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 3% claystone chips--cave or interbedded and less than 1% red sandstone.
- 4410-4420. As above.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 3% claystone chips--cave or interbedded, and less than 1% sandstone chips.
- 4420-4430. As above, no rose quartz.  
Poorly sorted, fine to very coarse grained, mostly coarse grained, sand with 5% claystone--cave or interbedded, and less than 1% red sandstone chips.

- 4430-4440. As above, with rose quartz.  
Poorly sorted, fine to very coarse grained sand with 5% claystone chips--cave or interbedded?
- 4440-4450. As above.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 10% claystone chips--cave or interbedded and less than 1% red sandstone chips.
- 4450-4460. As above, 1 piece of garnet.  
Poorly sorted, fine to very coarse grained, mostly coarse grained sand with 10% claystone chips--cave or interbedded and less than 1% red sandstone chips.
- 4460-4470. As above, no garnet
- 4470-4480. As above. 1 oyster shell fragment, cave from above. 1 piece of garnet.
- 4480-4490. As above. no garnet or shells
- 4490-4500. As above, 1 piece of garnet.
- 4500-4510. Fresh, hard, very pale orange 10YR 8/2, with a few chips of leached brittle, dark reddish brown 10R3/4 sandstone and several chips of leached, brittle, medium gray N5 claystone, largest 2x5 mm. Frosted, colorless or iron stained quartz. Slightly arkosic (few pieces, tan white and orangish). Poorly sorted, fine to very coarse grained, mostly coarse grained with some fine grains of clay, sand, with 3% claystone chips, cave or interbedded and 1% sandstone chips.  
Shell fragment, probably cave.
- 4510-4520. As above, 1 piece of phosphate.
- 4520-4530\* As above, 1 piece of a chain coral.
- 4530-4540. As above, but with clay and claystone.  
Poorly sorted, fine to very coarse grained, (mostly coarse grained quartz with lots of fine grained gray clay particles) sand with 20% clay and claystone and 3% sandstone.
- 4540-4555. Samples missing. September 19, 1975.
- 4555-4560. As above.
- 4560-4565. Same as above. largest clay chip is 4x5 mm. Also moderate pink 5R 7/4 quartz. More quartz than rest of sample. 15% clay and claystone, 1% sandstone.
- 4565-4570. As above.  
Poorly sorted, fine to very coarse grained (mostly coarse grained with fine grains as clay) sand, with 20% claystone and 1% sandstone.

- 4570-4575. As above. 1 oyster shell fragment.  
Sand with 10% claystone and clay, and 1% sandstone.
- 4575-4580. As above.  
Poorly sorted, fine to very coarse grained (mostly coarse grained with many fine grains clay) sand, with 10% claystone chips cave or interbedded, and 1% red sandstone.
- 4580-4585. Same as above, largest claystone chip 3x4 mm. Moderate pink 5R7/4 quartz.
- 4585-4590. As above.  
Poorly sorted, fine to very coarse grained (mostly coarse grained with fine grains clay) sand with 20% claystone and clay and 1% sandstone.  
1 oyster shell fragment--cave?
- 4590-4595. Same as above, but not as many fine clay grains, largest claystone chip 6x15 mm. Sand 100% with 10% claystone and clay and 1% red sandstone.
- 4595-4600. As above. 2 oyster shell fragments cave?  
Sand with 15% claystone and clay and 1% sandstone.
- 4600-4610. Small sample. 1 oyster shell fragment  
As above.  
Sand with 10% claystone and clay and 10% red sandstone.
- 4610-4615. Same as above, with 10% sandstone chips and 10% clay and claystone chips. 1 piece of phosphate and 1 piece with pyrite crystals on it.
- 4615-4620. Same as above, with 10% sandstone chips and 10% clay and claystone, largest chip 3.5x5.0 mm. Few oyster shell fragments.
- 4620-4625. Same as above, with 5% sandstone chips and 10% clay and claystone, largest claystone chip 2x8 mm. Few oyster shell fragments.
- 4625-4630. Same as above with 5% sandstone chips and 10% claystone chips and clay. largest chip 4x5 mm. few shell fragments, 1 piece of phosphate.
- 4630-4635. Same as above, with 5% sandstone chips and 15% clay and claystone chips, largest claystone chip 3x4 mm, also moderate pink 5R 7/4 quartz. Some oyster shell fragments.
- 4635-4640. As above.  
Sand with 10% claystone chips--cave or interbedded, and 5% red sandstone chips.

- 4640-4645. Same as above, with 5% sandstone chips and 10% claystone chips, largest is 2x4 mm. Oyster shell fragments.
- 4645-4650. Same as above, with 5% sandstone chips and 10% claystone chips, largest 2x5 mm. 1 piece of phosphate, 1 oyster shell fragment.
- 4650-4655. Same as above, with 2% sandstone chips and 5% claystone chips, largest 2x3 mm. 1 oyster shell fragment.
- 4655-4660. Same as above, with 5% sandstone chips and 10% claystone chips, largest is 3x3.5 mm. 1 piece with pyrite crystals on it, 1 oyster shell fragment.
- 4660-4665\* Same as above, with 7% sandstone chips and 10% claystone chips, largest is 1x8 mm. Few oyster shell fragments.
- 4665-4670. Same as above. Sand with 10% clay and claystone chips and 10% red sandstone chips
- 4670-4675. Same as above, with 10% sandstone chips and 10% claystone chips and clay. largest chip is 13x3 mm. 1 piece of garnet.
- 4675-4680. Same as above, with 5% sandstone chips and 10% claystone chips and clay, largest chip 2x7 mm. Few oyster shell fragments, 1 piece of phosphate.
- 4680-4685. Same as above, with 5% sandstone chips and 10% claystone chips and clay, largest chip 2x4 mm.
- 4685-4690. Same as above, with 10% sandstone chips and 10% claystone chips and clay, largest chip 4x5 mm. 1 piece of garnet.
- 4690-4695. Same as above, with 5% sandstone chips and 10% claystone chips and clay, largest chip 2x6 mm.
- 4695-4700. Same as above, with 5% sandstone chips and 10% claystone chips and clay, largest chip 4x5 mm.
- 4700-4705. Fresh, hard, very pale orange 10YR 8/2 with many chips of leached, brittle dark reddish brown 10R 3/4 sandstone, many chips of leached, brittle medium gray N5 claystone, largest 3x5 mm. Frosted, colorless, iron stained, or moderate pink 5R 7/4 quartz. Slightly arkosic (few pieces, tan and white). Poorly sorted, fine to very coarse grained, (mostly coarse grained with fine grained clay and sandstone) sand with 5% sandstone chips and 10% claystone chips and clay.
- 4705-4710. Same as above, with 5% sandstone chips and 10% claystone chips and clay, largest chip 4x6 mm.
- 4710-4715. Same as above, few pieces of pink feldspar, 2% sandstone chips and 15% claystone chips and clay. largest chip 4x5 mm.

- 4715-4720. Same as above, with lots of iron stained quartz, and 2% sandstone chips and 15% claystone chips and clay, largest chip 4x4 mm.
- 4720-4725. Same as above, 2% sandstone chips and 10% claystone chips and clay, largest chip 5x5 mm.
- 4725-4730. Same as above, with 1% sandstone chips and 7% claystone chips and clay, largest chip 5x6 mm. 1 piece of phosphate.
- 4730-4735. Same as above, with 1% sandstone chips and 5% claystone chips and clay (not many fine particles of sand), largest claychip 3x5 mm. 1 oyster shell fragment.
- 4735-4740\* Same as above with 1% sandstone chips and 5% claystone chips and clay. Largest chip 3x5 mm. 1 piece of sponge, 1 piece of garnet.
- 4740-4745. Fresh, hard, very pale orange 10YR 8/2 with a few chips of leached, brittle, dark reddish brown 10R3/4 sandstone and many chips of leached, brittle, medium gray N5 claystone and clay, largest chip 3x4 mm. Frosted, colorless, iron stained or moderate pink 5R7/4 quartz. Slightly arkosic (few pieces, tan and white). Poorly sorted, fine to very coarse grained (mostly coarse grained with the fine grains clay) sand with 10% sandstone chips and 10% claystone and clay.
- 4745-4750. Same as above, with 10% sandstone and 20% clay and claystone chips, largest chip 4x5 mm. 1 piece of phosphate.
- 4750-4755. Same as above with less than 1% sandstone chips and 30% claystone chips and clay, largest chip 1x4 mm. More claystone than seen in quire a while, medium gray N5 with quartz grains. clay 30%, sand 70%
- 4755-4760. Same as above, with less than 1% sandstone chips and 40% claystone chips and clay--largest chip 3.5x4 mm. Much more claystone (40%), really a clayey sand. overall color is medium gray N5.  
\*\*\*\* color change \*\*\*\*
- 4760-4765. Leached, brittle, medium gray N5 claystone-45% claystone, largest chip 2.5x4 mm. less than 1% red sandstone. 2 pieces of pyrite. quartz grains and arkose--overall color medium gray N5. clayey sand.
- 4765-4770. Leached, brittle, medium gray N5 claystone-30%, largest chip 3x13 mm, and quartz grains. overall color medium gray N5.

- 4770-4775. Fresh, hard, very pale orange quartz and feldspar grains, and leached, brittle medium gray N5 claystone chips, and leached brittle dark reddish brown 10R 3/4 sandstone--a few pieces. Frosted, colorless, or iron stained quartz. Slightly arkosic (few pieces, tan and white). Poorly sorted, fine to very coarse grained (1/8-2.0 mm) clayey (35%) sand. largest claystone chip 2x3 mm.
- 4775-4780. Same as above, with 20% claystone chips and 1% red sandstone chips. largest claystone chip 1.5x3.0 mm, and quartz and feldspar grains, few fine grains of clay.
- 4780-4785. Same as above, with 25% claystone chips and 1% red sandstone chips, largest claystone chip 3x3.5 mm.
- 4785-4790. Same as above, but much sandier. 15% claystone chips, largest 3x4 mm and 1% red sandstone chips. few pieces of phosphate.
- 4790-4795. Same as above, even sandier, 7% claystone chips, largest 2x3 mm. 1% red sandstone chips. Quartz grains are colorless, iron stained, frosted or moderate pink 5R 7/4.
- 4795-4800. Same as above, even more sandy. 5% claystone chips, largest 1.5x3 mm, quartz grains include pink, less than 1% red sandstone, 1 piece of pyrite.
- 4800-4805. Same as above, but a little clayier-10% claystone chips, largest 3x13 mm. Quartz grains, no pink, less than 1% red sandstone, 1 piece of phosphate, 1 piece of garnet.
- 4805-4810. Fresh, hard, very pale orange 10YR 8/2 quartz and feldspar, and leached, brittle medium gray N5 claystone, largest chip 3x5 mm. 15% claystone chips and clay. Slightly arkosic (few pieces, tan and white), fine-very coarse grained sand. clay 15% sand 85% 1 oyster shell fragment.
- 4810-4815. Same as above, with 25% claystone chips, largest 4x4.5 mm), quartz grains, no pink, less than 1% red sandstone, 1 piece of pyrite, 1 piece phosphate.
- 4815-4820. Same as above, except sandier. 10% claystone chips, largest 3x4 mm. quartz grains with pink (rose) and 1% red sandstone chips. 1 piece of glauconite and 1 piece of phosphate.
- 4820-4825. Much clayier, and bigger chips than above, also much more and larger red sandstone chips than above, largest claystone chip (many large ones) 5x5 mm)--quartz, no pink; feldspar pieces. 50% claystone chips and 5% red sandstone chips. 1 piece of mica.
- 4825-4830. Less clayey and fewer sandstone chips than last sample, largest claystone chip 5x6 mm. 20% claystone and clay, 3% red sandstone chips, quartz grains and feldspar chips (few), no pink quartz.

- 4830-4835. Claystone and more red sandstone chips than last sample, largest claystone chip (mostly pretty large) 4x5 mm. Quartz and feldspar grains. 30% claystone chips and clay, 10% red sandstone chips, 60% quartz and feldspar. 1 piece of lignite.
- 4835-4840. More red sandstone chips than in last sample, fewer claystone chips than in the last sample-largest claystone chip 4x4 mm. Quartz grains and feldspar (white, tan, and pink). 50% red sandstone chips, 25% claystone chips, 25% quartz and feldspar. 1 piece of mica.
- 4840-4845. Fresh, hard, colorless, frosted, or iron stained quartz, leached brittle, medium gray N5 claystone, dark reddish brown 10R3/4 sandstone. Slightly arkosic (few pieces, tan white and pink). Poorly sorted, fine to very coarse grained (fine particles of clay, and mostly coarse grains of quartz), clayey (30%) sand, of which 30% is quartz grains and feldspar and 40% is red sandstone chips.
- 4845-4850. Same as above, with 30% claystone chips, 40% sandstone chips and 30% quartz and feldspar grains. largest claystone chip is 4x7 mm.
- 4850-4855. Same as above, with more red sandstone chips and fewer claystone chips. 50% sandstone chips, 20% claystone chips, 25% quartz and feldspar grains, largest claystone chip 3x3.5 mm.
- 4855-4860. Same as above, with many red sandstone chips, fewer claystone chips. 50% sandstone chips, 10% claystone chips, 40% quartz and feldspar, largest claystone chip 4x4 mm.
- 4860-4865. Same as above with many red sandstone chips, fewer claystone chips. 50% sandstone chips, 7% claystone chips and 43% quartz and feldspar grains. largest claystone chip 4x4 mm.
- 4865-4870. Same as above, with more red sandstone chips. 60% red sandstone chips, 5% claystone chips and clay, largest chip 5x5 mm, 35% quartz and feldspar. 1 flake of mica.
- 4870-4875. Same as above, with less red sandstone chips-50%. 10% claystone chips, largest 3x4 mm, and 40% quartz and feldspar. 1 piece of pyrite.
- 4875-4880. Fresh, hard, colorless, frosted or iron stained quartz and leached brittle medium gray N5 claystone, largest chip 5x7 mm and leached brittle dark reddish brown 10R3/4 sandstone chips. Slightly arkosic (few pieces, tan and white). Poorly sorted, fine to very coarse grained clayey (15%) sand, of which 55% is sandstone and 30% quartz grains and feldspar. 1 piece of lignite.
- 4880-4885. Same as above, with more red sandstone chips-60%, 10% claystone chips largest 4x5 mm, and 30% quartz and feldspar grains.
- 4885-4890. Same as above with more red sandstone chips--70%, and 7% claystone chips, largest 3.5x6 mm, and 23% quartz grains and feldspar chips.



- 4890-4895. Same as above with slightly fewer red chips --60%, and 10% claystone chips, largest 3x3 mm, and 30% quartz and feldspar chips.
- 4895-4900. Same as above with more red sandstone chips than above--75%, a few pieces of claystone--5%, largest 3x3mm, and 20% quartz and feldspar chips.
- 4900-4905. Same as above, with same amount of red sandstone chips--75%, few pieces of claystone--5%, largest 2.5x3 mm, and 20% quartz and feldspar chips.  
1 piece of glauconite.
- 4905-4910. Sample missing Sept. 23, 1975
- 4910-4915. Same as above, with more claystone and clay and fewer red sandstone chips, largest claystone chip 3x3 mm. 30% quartz and feldspar pieces, 30% red sandstone chips, and 40% claystone chips and clay.  
1 mica flake.
- 4915-4920. Fresh, hard, frosted, colorless or iron stained quartz, very pale orange 10YR 8/2, leached brittle medium gray N5 claystone, and leached brittle, dark reddish brown 10R3/4 sand. Slightly arkosic, (few pieces, tan and white). Poorly sorted, fine to very coarse grained, clayey (5%) sand, of which 85% is red sandstone chips and 10% is quartz and feldspar pieces. largest claystone chip is 3x3 mm.
- 4920-4930. Samples missing. September 23, 1975.
4930. Same as above--85% red sandstone chips, 7% claystone chips, largest 3x4 mm, and 8% quartz and feldspar pieces.
- 4930-4945 Samples missing. September 23, 1975
4945. Same as above. 85% red sandstone chips, 7% claystone chips, largest 4x4 mm, and 8% quartz and feldspar pieces.
- 4945-4960. Samples missing. September 23, 1975.
- 4960-4965. Same as above with 70% red sandstone chips, 10% claystone chips, largest 4x4 mm, and 20% quartz and feldspar chips.  
1 piece of hornblende?  
1 piece has the red sandstone and gray claystone coming right together.
- 4965-4970. Same as above, with 55% red sandstone chips, 10% claystone chips, largest 3x4 mm, and 35% quartz and feldspar pieces.
- 4970-4975. Same as above, with 60% red sandstone chips, 10% claystone chips 3.5x3 mm, and 30% quartz and feldspar pieces.  
1 mica flake.
- 4975-5010. Samples missing. September 23, 1975.
- 5010-5015. Much sandier than any sample in quite a while. 5% red sandstone chips, and 5% gray claystone chips, largest 2x3 mm, tan and white feldspar, few pieces. Poorly sorted, fine to very coarse grained (1/8-2.0 mm) sand.