

County: James City

VDMR Well # 6036

Well: "A"
Property Owner: Richard Austin
Driller: Va Dept. Highways (VDMR)
Location: rt 614 (340,310m. East; 4,128,020m. North)

Altitude Top of Hole: 89.0'
Total Depth: 61.0'
Started Drilling: 21 March 79
Completed Drilling: " "
Sample Description by: Becky Darnton

GEOLOGIC SUMMARY

Depth	Thickness	Formation	Age
0-45.4'	45.4'	Columbia Group?	Pleistocene?
45.4'-61.0'	15.6'	Yorktown Fm.	Pliocene

Depth
(feet)

GEOLOGIC LOG

W-6036

5.0-5.3	Clay - yellowish brown 10YR-5/6 & red 10R-4/8; abundant sand; fine grained; moderate sorting; subangular; slightly mottled; small pocket of ferricrete; some heavy minerals.
5.3-5.6	Same as above; no ferricrete.
5.6-6.0	Same as above; streaks of heavy mineral concentration.
6.0-6.3	Same as above; some ferricrete; no streaks of heavy mineral concentration.
6.3-6.6	Clay & Sand; yellowish brown 10YR-5/6, red 10R-4/8 & some light brownish gray 10YR-6/2; very fine to medium grained; moderately poor sorting; subangular; mottled; few heavy minerals.
6.6-7.0	Same as above; some heavy minerals.
10.0-10.3	Same as above; dark gray fuzzy deposit-mold?
10.3-10.6	Same as above; mostly light brownish gray; no dark gray fuzzy deposit.
10.6-11.0	Same as above; some ferricrete.
11.0-11.3	Same as above.
11.3-11.6	Same as above; no ferricrete; moderate sorting; slightly mottled.
11.6-12.0	Same as above.
15-15.3	Sand - light brownish gray 10YR-6/2, yellowish brown 10YR-5/8; & red 10R-4/8; laminated; some to moderate clay, fine grained, moderate sorting; subangular; 1% heavy minerals.
15.3-15.6	Sand - light brownish gray 10YR-6/2, yellowish brown 10YR-5/8 & red 10R-4/8, some clay; fine grained; moderately well sorted; subangular, 1% heavy minerals.
15.6-16.0	Same as above; some to moderate clay; some heavy minerals; mottled.
16.0-16.3	Clay - light brownish gray 10YR-6/2; moderately abundant sand; Sand - yellowish brown 10YR-5/8 & red 10R-4/8; same clay; fine grained; moderate sorting; subangular; some heavy minerals.
16.3-16.6	Same as above; light brownish gray & red clay w/ abundant sand.
16.6-17.0	Sand - yellowish brown 10YR-5/8, light brownish gray 10YR-6/2 & red 10R-4/8; some clay; fine grained; moderately sorted; subangular; 1% heavy minerals.

Depth
(feet)

- 20.0-20.3 Clay - light brownish gray 10YR-6/2 & red 10R-4/8; moderately abundant sand; fine to very fine grained; moderately well sorted; subangular; laminated; 1% heavy minerals.
- 20.3-20.6 Same as above; laminated - trough like structure.
- 20.6-21.0 Same as above.
- 21.0-21.3 Same as above; some heavy minerals; 1/4 in layer sand; moderate amount clay; medium grained; moderate - poor sorting; subangular.
- 21.5-21.6 Clay - light brownish gray 10YR-6/2 & red 10R-6/2; moderate amount sand; fine to very fine grained; moderately well sorted; subangular; laminated; 1% heavy minerals.
- 21.6-22.0 Same as above - some heavy minerals.
- 25.0-25.3 Sand - light brownish gray 10YR-6/2 & red 10R-6/2; some to moderate clay; medium grained; moderate sorting; subangular; laminated; 1% heavy minerals.
- 25.3-25.6 Same as above; also yellowish brown color 10YR-5/8; laminations indistinct.
- 25.6-26.0 Same as above.
- 26.0-26.3 Same as above; moderate amount clay.
- 26.3-26.6 Same as above; some to moderate clay; medium to coarse grained; poor sorting.
- 26.6-27.0 Same as above; not laminated.
- 30.0-30.3 Sand - light brownish gray 10YR-6/2 & red 10R-6/2 & yellowish brown 10YR-5/8; moderately abundant clay; medium grained; moderate to poor sorting; subangular; some heavy minerals. Sand - some to moderate clay; medium grained; moderate to poor sorting; subangular; 1% heavies.
- 30.3-30.6 Same as above; some heavy minerals.
- 30.6-31.0 Sand - red 10R-6/2 & yellowish brown 10YR-5/8; some to moderate clay; medium to coarse grained; poor sorting; subrounded; laminae of gray clay; some sand; some heavy minerals.
- 31.0-31.3 Sand - red 10R-6/2; yellowish brown 10YR-5/8; & light brownish gray 10YR-6/2; moderate amount clay; medium grained; moderately poor sorting; subangular; some heavy minerals.
- 31.3-31.6 Same as above.
- 31.6-32.0 Same as above; gray clay thin laminae; some sand.

Depth
(feet)

-3-

- 35.0-35.3 Sand - yellow brown 10YR-5/8 & some red 2.5YR4/8 - Same as above - no gray laminae.
- 35.3-35.6 Same as above w/ thin gray clay laminae.
- 35.6-36.0 Top - Same as above.
Bottom-Clay - light brownish gray 10YR-6/2 & brownish yellow 10YR-6/6.
- 36.0-36.3 Sand - red 5R-5/8 & yellow brown 10YR-5/8; some clay; medium to coarse grained; moderately poor sorting; subangular; some heavies.
Clay - red 10R-4/8 & light brownish gray; laminae.
- 36.3-36.6 Same as above; Sand & clay laminated; streaks of heavy mineral concentrations.
- 36.6-37.0 Same as above; no streaks but 2% heavy mineral concentration; some glauconite.
- 40.0-40.3 Sand - yellowish brown 10YR-5/8; some clay; medium to coarse grained; poor sorting; subangular; some heavy minerals.
- 40.3-40.6 Same as above.
- 40.6-41 Sand - same as above 3/4 inches of Clay laminae; light brownish gray; some sand.
- 41.0-41.3 Sand - strong brown 7.5YR-5/6; some to moderate clay; medium grained; moderate to poor sorting; subrounded; few heavy minerals.
Clay laminae - light brownish gray; some sand.
- 41.3-41.6 Same as above; some heavy minerals.
- 41.6-42.0 Same as above; globs of grey clay w/ moderate amount sand - not laminae.
- 45.0-45.3 Same as above; no clay laminae; some glauconite.
- 45.3-45.6 Top - same as above; few grains ferrcrete
Bottom: Clay (globs) strong brown w/ abundant sand; medium grained; moderate to poor sorting; some glauconite; 1% heavy minerals.
- 45.6-46.0 Top - same as above (sand & clayey globs)
Bottom-Clay - light brownish gray 10YR-6/2 & yellowish red 5YR-5/8; abundant sand; medium grained; poor sorting; subangular; laminated; 5% glauconite.

Depth
(feet)

- 46.0-46.3 Clay - strong brown 7.5YR-5/6, red 2.5YR-5/8; & light brownish gray 10YR-6/2; moderate amount sand; fine to coarse grained; poor sorting; subangular; laminated; 10% glauconite.
- 46.3-46.6 Same as above; 10-15% glauconite.
- 46.6-47.0 Same as above; light red 7.5R-6/8; moderate to abundant sand; 3-5% few heavies glauconite.
- 50.0-50.3 Clay - reddish brown 5YR-4/4; moderate - amount sand, fine to medium grained; poor sorting; subangular; abundant ferricrete; some heavies.
- 50.3-50.6 Same as above - moderate amount sand; very fine to fine grained; moderate sorting.
- 50.6-51.0 Same as above; vien of ferricrete & some clay.
- 51.0-51.3 Top - same as above; abundant sand; fine to medium grained; poor sorting; some ferricrete; 1% heavies.
Bottom-Clay - brown 7.5YR-4/4; moderate sand; fine to medium grained; moderately poor sorting; subangular; some to moderate ferricrete; 1% heavies; crossbedding.
- 51.3-51.6 Clay - yellowish brown 10YR-5/6; abundant sand; medium grained; moderate to poor sorting; subrounded; some heavy minerals; some glauconite.
- 51.6-52.0 Same as above; 1% heavy minerals.
- 55.0-55.3 Sand - light olive brown 2.5Y-5/6; moderate to amount clay; fine to medium grained; moderate to poor sorting; subangular; some (1%) glauconite; 3% heavy minerals.
- 55.3-55.6 Same as above; some to moderate clay.
- 55.6-56.0 Same as above; moderate amount clay 5% heavy minerals; some glauconite.
- 56.0-56.3 Same as above; yellowish brown colored sand also, fine grained; moderately well sorted; little glauconite; 1% heavy minerals.
- 56.3-56.6 Same as above, some to moderate clay; 3-5% heavy minerals.
- 56.6-57.0 Same as above, medium grained, moderate sorting; some ferricrete; 1% heavy minerals.
- 57.0-57'2" Same as above; no ferricrete; shell large fragments - Ostrea?

Depth
(feet)

- 60.0-60.3 Sand - light yellowish brown 2.5Y-6/4; some clay; medium grained; moderat to poor sorting; subangular; small shell fragments; echinoderm spine; 3% heavy minerals; some glauconite.
- 60.3-60.6 Same as above; 5% heavy minerals.
- 60.6-61.0 Same as above; 3% heavy minerals.

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VDMR Well # 6036

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Altitude Top of Hole: ~~89.0~~ 89.0'

Total Depth: 61.0'

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Sample Description by: Becky Darnton

GEOLOGIC SUMMARY

Depth	Thickness	Formation	Age
0 - 45.4'	45.4'	Columbia Group?	Pleistocene?
45.4' - 61.0'	15.6'	Yorktown Fm.	Pliocene

CR Bergquist

"A"

VIRGINIA DIVISION OF MINERAL RESOURCES
Box 3667, Charlottesville, VA 22903

INTERVAL SHEET

Page 1 of _____ Well Repository No: 6036
 Date rec'd: 21 March 1979 Date Processed: June 14 1979 Sample Interval: from: 5.0 to: 61.0
 PROPERTY: Richard Austin - rt. 614 Number of samples: 70
 COMPANY: _____ Total Depth: 61.0
 COUNTY: James City Oil or Gas: Water: Exploratory:

From-To	From-To	From-To	From-To
5.0 - 5.3	25.3 - 25.6	43.6 - 46.0	-
5.3 - 5.6	25.6 - 26.0	46.0 - 46.3	-
5.6 - 6.0	26.0 - 26.3	46.3 - 46.6	-
6.0 - 6.3	26.3 - 26.6	46.6 - 47.0	-
6.3 - 6.6	26.6 - 27.0	50.0 - 50.3	-
6.6 - 7.0	30.0 - 30.3	50.3 - 50.6	-
7.0 - 10.3	30.3 - 30.6	50.6 - 51.0	-
10.3 - 10.6	30.6 - 31.0	51.0 - 51.3	-
10.6 - 11.0	31.0 - 31.3	51.3 - 51.6	-
11.0 - 11.3	31.3 - 31.6	51.6 - 52.0	-
11.3 - 11.6	31.6 - 32.0	55.0 - 55.3	-
11.6 - 12.0	32.0 - 32.3	55.3 - 55.6	-
12.0 - 15.3	32.3 - 32.6	55.6 - 56.0	-
15.3 - 15.6	32.6 - 36.0	56.0 - 56.3	-
15.6 - 16.0	36.0 - 36.3	56.3 - 56.6	-
16.0 - 16.3	36.3 - 36.6	56.6 - 57.0	-
16.3 - 16.6	36.6 - 37.0	57.0 - 57'2"	-
16.6 - 17.0	40.0 - 40.3	60.0 - 60.3	-
20.0 - 20.3	40.3 - 40.6	60.3 - 60.6	-
20.3 - 20.6	40.6 - 41.0	60.6 - 61.0	-
20.6 - 21.0	41.0 - 41.3	-	-
21.0 - 21.3	41.3 - 41.6	-	-
21.3 - 21.6	41.6 - 42.0	-	-
21.6 - 22.0	45.0 - 45.3	-	-
25.0 - 25.3	45.3 - 45.6	-	-

GEOLOGIC LOG

Depth
(feet)

~~Hole A~~

- 5.0-5.3 Clay - yellowish-brown 10YR-5/6 & red 10R-4/8; abundant sand; fine grained; moderate sorting; subangular; slightly mottled; small pocket of ferricrete; some heavy minerals
- 5.3-5.6 Same as above; no ferricrete
- 5.6-6.0 Same as above; streaks of heavy mineral concentration
- 6.0-6.3 Same as above; some ferricrete; no streaks of heavy mineral concentration
- 6.3-6.6 Clay & Sand; yellowish brown 10YR-5/6, red 10R-4/8 & some light brownish gray 10YR-6/2; very fine to medium grained; moderately poor sorting; subangular; mottled; few heavy minerals
- 6.6-7.0 Same as above; some heavy minerals
- 10.0-10.3 Same as above; dark gray fuzzy deposit - mold?
- 10.3-10.6 Same as above; mostly light brownish gray; no dark gray fuzzy deposit
- 10.6-11.0 Same as above; some ferricrete
- 11.0-11.3 Same as above
- 11.3-11.6 Same as above; no ferricrete; moderate sorting; slightly mottled
- 11.6-12.0 Same as above

Depth in
feet

Hole A

15 - 15.3

Sand; light brownish gray 10YR-6/2, yellowish brown 10YR-5/8 & red 10R-4/8; laminated; some to moderate clay; fine grained; moderate sorting; subangular; 1% heavy minerals

15.3 - 15.6

Sand; light brownish gray 10YR-6/2, yellowish brown 10YR-5/8 & red 10R-4/8; some clay; fine grained; moderately well sorted; subangular; 1% heavy minerals

15.6 - 16.0

Same as above; some to moderate clay; some heavy minerals; mottled

16.0 - 16.3

Clay - light brownish gray 10YR-6/2; moderately abundant sand; Sand - yellowish brown 10YR-5/8 & red 10R-4/8; some clay; fine grained; moderate sorting; subangular; some heavy minerals

16.3 - 16.6

Same as above; light brownish gray & red Clay w/ abundant sand

16.6 - 17.0

Sand; yellowish brown 10YR-5/8; light brownish gray 10YR-6/2 & red 10R-4/8; some clay; fine grained; moderately sorted; subangular; 1% heavy minerals

20.0 - 20.3

Clay; light brownish gray 10YR-6/2 & red 10R-4/8; moderately abundant sand; fine to very fine grained; moderately well sorted; subangular laminated; 1% heavy minerals

20.3 - 20.6

Same as above; laminated - trough like structure

Depth in feet	Hole A
20.6 - 21.0	Same as above
21.0 - 21.3	Same as above; some heavy minerals; 1/4 in layer sand; moderate amount clay; medium grained; moderate - poor sorting; subangular
21.3 - 21.6	Clay - light brownish gray 10YR-6/2 & red 10R-6/2; moderate amount sand; fine to very fine grained; moderately well sorted; subangular; laminated; 1% heavy minerals
21.6 - 22.0	Same as above - some heavy minerals
25.0 - 25.3	Sand - light brownish gray 10YR-6/2 & red 10R-6/2; some to moderate clay; medium grained; moderate sorting; subangular; laminated; 1% heavy minerals
25.3 - 25.6	Same as above; also yellowish brown color 10YR-5/8; laminations indistinct
25.6 - 26.0	Same as above
26.0 - 26.3	Same as above; moderate amount clay
26.3 - 26.6	Same as above; some to moderate clay; medium to coarse grained; poor sorting
26.6 - 27.0	Same as above; not laminated
30.0 - 30.3	Sand - light brownish gray 10YR-6/2 & red 10R-6/2 & yellowish brown 10YR-5/8; moderately abundant clay; medium grained; moderate to poor sorting; subangular; some heavy minerals

Depth in feet

Hole A

- 30.0-30.3 continued Sand - some to moderate clay, medium grained; moderate to poor sorting; subangular; 1% heavies
- 30.3-30.6 Same as above; some heavy minerals
- 30.6-31.0 Sand - red 10R-6/2 & yellowish brown 10YR-5/P; some to moderate clay; medium to coarse grained; poor sorting; subrounded; laminae of gray clay; some sand; some heavy minerals
- 31.0-31.3 Sand; red 10R-6/2, yellowish brown 10YR-5/P, & light brownish gray 10YR-6/2; moderate amount clay; medium grained; moderately poor sorting; subangular; some heavy minerals
- 31.3-31.6 Same as above
- 31.6-32.0 Same as above; gray clay thin laminae; some sand
- 35.0-35.3 Sand - yellow brown 10YR-5/P & some red 2.5YR 4/P - Same as above - no gray laminae
- 35.3-35.6 Same as above w/ thin gray clay laminae
- 35.6-36.0 Top - Same as above
Bottom - Clay - light brownish gray 10YR-6/2 & brownish yellow 10YR-6/6
- 36.0-36.3 Sand - red 5R-5/P & yellow brown 10YR-5/P; some clay; medium to coarse grained; moderately poor sorting; subangular; some heavies

Depth in
feet

Hole A

- 36.0 - 36.3
Continued Clay - red. 10R - 4/8 & light brownish gray;
laminae
- 36.3 - 36.6 Same as above; Sand & clay laminated;
streaks of heavy mineral concentrations
- 36.6 - 37.0 Same as above; no streaks but 2%
heavy mineral concentration; some glauconite
- 40.0 - 40.3 Sand - yellowish brown 10YR - 5/8; some clay,
medium to coarse grained; poor sorting; sub
angular; some heavy minerals
- 40.3 - 40.6 Same as above
- 40.6 - 41. Sand - same as above
3/4 inches of Clay laminae; light brownish
gray; some sand
- 41.0 - 41.3 Sand - strong brown 7.5YR - 5/6; some to
moderate clay; medium grained; moderate to
poor sorting; subrounded; few heavy minerals
Clay laminae - light brownish grey; some sand
- 41.3 - 41.6 Same as above; some heavy minerals
- 41.6 - 42.0 Same as above; globs of grey clay w/ moderate
amount sand - not laminae
- 45.0 - 45.3 Same as above; no clay laminae; some
glauconite
- 45.3 - 45.6 Top - Same as above; few grains ferricrete
(interval continued next page)

Depth in
feet

Hole A

- 45.3-45.6 Bottom: Clay (globs) strong brown w/ abundant sand; medium grained; moderate to poor sorting; some glauconite; 1% heavy minerals
Continued
- 45.6-46.0 Top - same as above (Sand & clayey globs)
Bottom - Clay - light brownish grey 10YR-6/2 & yellowish red 5YR-5/8; abundant sand; medium grained; poor sorting; subangular; laminated; 5% glauconite
- 46.0-46.3 Clay - strong brown 2.5YR-5/6, red 2.5YR-5/8, & light brownish gray 10YR-6/2; moderate amount sand; fine to coarse grained; poor sorting; subangular; laminated; 10% glauconite
- 46.3-46.6 Same as above; 10-15% glauconite
- 46.6-47.0 Same as above; light red 7.5R-6/8; moderate to abundant sand; 3-5% glauconite
few heavies
- 50.0-50.3 Clay - reddish brown 5YR-4/4; moderate amount sand; fine to medium grained; poor sorting; subangular; abundant ferricrete; some heavies
- 50.3-50.6 Same as above - moderate amount sand; very fine to fine grained; moderate sorting
- 50.6-51.0 Same as above; view of ferricrete & some clay
- 51.0-51.3 Top - same as above; abundant sand; fine to medium grained; poor sorting; some ferricrete; 1% heavies

Depth in
feet

Hole A

51.0-51.3

Bottom - Clay - brown 7.5YR-4/4; moderate sand; fine to medium grained; moderately poor sorting; subangular; some to moderate Ferricrete; 1% heavies; cross bedding

51.3-51.6

Clay - yellowish brown 10YR-5/6; abundant sand; medium grained; moderate to poor sorting; subrounded; some heavy minerals; some glauconite

51.6-52.0

Same as above; 1% heavy minerals

55.0-55.3

Sand - light olive brown 2.5Y-5/6; moderate to amount clay; fine to medium grained; moderate to poor sorting; subangular; some glauconite (1%); 3% heavy minerals

55.3-55.6

Same as above; some to moderate clay

55.6-56.0

Same as above; moderate amount clay; 5% heavy minerals; some glauconite

56.0-56.3

Same as above; yellowish brown colored sand also; fine grained; moderately well sorted; little glauconite; 1% heavy minerals

56.3-56.6

Same as above, some to moderate clay; 3-5% heavy minerals - some glauconite

56.6-57.0

Same as above, medium grained, moderate sorting; some ferricrete; 1% heavy minerals

57.0-57.2"

Same as above; no ferricrete; shell fragments - larger Ostraea?

Depth in feet

Hole A

60.0-60.3

Sand - light yellowish brown 2.5% - 6/4; some clay; medium grained; moderate ^{to poor} sorting; subangular; small shell fragments; echinoderm spines; 3% heavy minerals; some glauconite

60.3-60.6

Same as above; 5% heavy minerals

60.6-61.0

Same as above; 3% heavy minerals