

KP

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT

C-258
BWCM No. 143-345
W-6844

State Water Control Board
P. O. Box 11143
2111 North Hamilton St.
Richmond, Va. 23230

(Certification of Completion/County Permit)

County/City

Henrico County

County/City Stamp

SWCB Permit _____
 County Permit _____

Certification of inspecting official:
 This well does _____ does not _____
 meet code/low requirements.
 S. _____
 Date _____

For Office Use

Virginia Plane Coordinates
 397,808 N
 2,342,967 E
 Latitude & Longitude
 _____ N
 _____ W

Topo. Map No. _____
 Elevation 58 ft.
 Formation _____
 Lithology _____
 River Basin _____
 Province _____
 Type Logs _____
 Cuttings _____
 Water Analysis _____
 Aquifer Test _____

Owner Henrico County
 Well Designation or Number Groundwater Exploration Program
 Address Project A-11a) Bore Hole #1
Test Hole
 Phone _____

Drilling Contractor Gannon Well Co Inc.
 Address Rt 2 Box 117B
Providence Forge Va 23140
 Phone 966-2615

Tax Map I.D. No. _____
 Subdivision _____
 Section _____
 Block _____
 Lot _____
 Class Well I _____ IIA _____
 IIB _____ IIIA _____ IIIB _____
 IIIC _____ IIID _____ IIIE _____

WELL LOCATION: _____ (feet/miles _____ direction) of _____
 and _____ (feet/miles _____ direction) of _____
 (If possible please include map showing location marked)

Date started 4-21-86 • Date completed 4-30-86 Type rig Mud Air rotary Rig 12

I. WELL DATA: New Reworked _____ Deepened _____

• Total depth 385 ft.
 • Depth to bedrock _____ ft.
 • Hole size (Also include reamed zones)
 • 8 3/4 inches from 0 to 50 ft.
 • 7 7/8 inches from 50 to 385 ft.
 _____ inches from _____ to _____ ft.
 • Casing size (I.D.) and material see diagram
 • _____ inches from _____ to _____ ft.
 Material _____
 Wt. per foot _____ or wall thickness _____ in.
 • _____ inches from _____ to _____ ft.
 Material _____
 Wt. per foot _____ or wall thickness _____ in.
 • _____ inches from _____ to _____ ft.
 Material _____
 Wt. per foot _____ or wall thickness _____ in.
 • Screen size and mesh for each zone (where applicable) see diagram
 • _____ inches from _____ to _____ ft.
 • Mesh size _____ Type _____
 • _____ inches from _____ to _____ ft.
 • Mesh size _____ Type _____
 • _____ inches from _____ to _____ ft.
 • Mesh size _____ Type _____
 • _____ inches from _____ to _____ ft.
 • Mesh size _____ Type _____

• Gravel pack
 • From _____ to _____ ft.
 • From _____ to _____ ft.

• Grout
 • From _____ to _____ ft., Type _____
 • From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature _____ of _____
 • Static water level (unpumped level measured) 31.4 ft
 • Stabilized measured pumping water level _____ ft
 • Stabilized yield _____ gpm after _____ hours
 Natural Flow: Yes _____ No _____, flow rate _____ gpm
 Comment on quality _____

3. WATER ZONES: From _____ To _____
 From _____ To _____ From _____ To _____
 From _____ To _____ From _____ To _____

4. USE DATA:
 Type of use: Drinking _____, Livestock Watering _____
 Irrigation _____, Food processing _____, Household _____
 Manufacturing _____, Fire safety _____, Cleaning _____
 Recreation _____, Aesthetic _____, Cooling or heating _____
 Injection _____, Other _____
 • Type of facility: Domestic _____, Public water supply _____
 Public institution _____, Farm _____, Industry _____
 Commercial _____, Other _____

5. PUMP DATA: Type _____ Rated H.P. _____
 • Intake depth _____ Capacity _____ at _____ head

6. WELLHEAD: Type well seal _____
 Pressure tank _____ gal, Loc. _____
 Sample tap _____, Measurement port _____
 Well vent _____, Pressure relief valve _____
 Gate valve _____, Check valve (when required) _____
 Electrical disconnect switch on power supply _____

7. DISINFECTION: Well disinfected _____ yes _____ no _____
 Date _____, Disinfectant used _____
 Amount _____, Hours used _____

8. ABANDONMENT (where applicable) • yes _____ no _____
 Casing pulled yes _____ no _____ not applicable _____
 Plugging grout From _____ to _____ material _____

77 Samples

OVER

REC 6/28/86

9. State law requires submitting to the Virginia State Water Control Board information about groundwater and wells for every well made in the State intended for water, or any other non-exempt well. This information must be submitted whether the well is completed, on standby, or abandoned. Information required includes: an accurately and completely prepared water well completion report, full data from any aquifer pumping tests, drill cuttings taken at ten foot intervals (unless exemption is secured), the results of any chemical analyses, and copies of any geophysical logs. Quarterly pumpage and use reports are required from owners of public supply and industrial wells. County or State permits to drill may be required in some parts of the state. Some counties require submission of a water well completion report. The Virginia State Health Department requires a water well completion report for public supply wells.

10. DRILLERS LOG (use additional Sheets if necessary)

11.

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)

| DEPTH (feet) | | TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.) | REMARKS (water, caving, cavities, broken, core, shot, (etc.)) | Drilling Time (Min.) |
|--------------|----|--|--|----------------------|
| From | To | | | |
| | | <i>see attached</i> | | |

see attached

13. Well lot dedicated? _____; Size _____ ft. X _____ ft., Well house? _____
Distance to nearest pollutant source _____ ft., Type _____
Distance to nearest property line _____ ft., Building _____ ft.

14. WATER SERVICE PIPE: Checked under _____ p.s.i. for _____ minutes. Pipe size _____ inches, Material _____
Installer _____
Date _____

15. I certify that the information contained herein is true and correct and that this well and/or system has been installed and constructed in accordance with the requirements for well construction as specified in compliance with appropriate county or independent city ordinances and the laws and rules of the Commonwealth of Virginia.

State Water Control Board Regional Offices

Valley Reg. Off.
116 North Main Street
P. O. Box 268
Bridgewater, Va. 22812
703-828-2595

Piedmont Reg. Off.
4010 West Broad Street
P. O. Box 6616
Richmond, Va. 23230
804-257-1006

Southwest Reg. Off.
403 East Main Street
P. O. Box 476
Abingdon, Va. 24210
703-628-5183

Tidewater Reg. Off.
287 Pembroke Office Park
Suite 310 Pembroke No. 2
Va. Beach, Va. 23462
804-499-8742

West Central Reg. Off.
Executive Park
3312 Peters Creek Road
Roanoke, Va. 24019
- 982-7432

Northern Virginia Reg. Off.
5515 Cherokee Avenue
Suite 404
Alexandria, Va. 22312
703-750-9111

Signature *Kay Richards* (Seal), Date 5-27-86
(Well driller or authorized person) License No. 15648

GAMMON WELL CO., INC.

WELL DRILLING • PUMPS & WATER SYSTEMS
INDUSTRIAL - COMMERCIAL - RESIDENTIAL
RT 2 BOX 117B PROVIDENCE FORGE, VA 23140
(804) 966-2615

Submittal #7

Page 1 of 1

GROUND WATER EXPLORATION PROGRAM

PROJECT A-1(a)

BORE HOLE # 1 DRILLER'S LOG

DEPTH

TYPE OF ROCK OR SOIL

| | | |
|---------|-----------|--|
| 4-21-86 | 0 - 5 | Topsoil, orange clay |
| | 5 - 10 | Orange clay, white clay |
| | 10 - 15 | White clay, orange clay, orange sand |
| | 15 - 20 | Orange sand, orange clay |
| | 20 - 25 | Orange sand, gravel (formation change & coarse gravel) |
| | 25 - 30 | Coarse gravel, orange clay |
| | 30 - 35 | Coarse gravel, orange clay (gray clay formation change) |
| | 35 - 40 | Gray clay, some gravel |
| | 40 - 45 | Some gravel, gray clay |
| | 45 - 50 | Gray clay, fine sand, small gravel |
| | 50 - 55 | Small flaky gravel, some green clay (formation change) |
| | 55 - 60 | Green sandy clay, small flaky gravel |
| | 60 - 65 | Small flaky gravel, green sandy clay |
| | 65 - 70 | Green sandy clay, gravel |
| | 70 - 75 | Gravel, sand, green sandy clay |
| | 75 - 80 | Green & white sandy clay, gravel |
| | 80 - 85 | Gravel |
| | 85 - 90 | Gravel |
| | 90 - 95 | Gravel |
| | 95 - 100 | Small gravel, green clay |
| | 100 - 105 | Green clay, white clay, small gravel, sand |
| | 105 - 110 | Greenish gray clay, small gravel (formation change) |
| | 110 - 115 | Green sandy clay, some small gravel |
| | 115 - 120 | Green sandy clay, small gravel |
| 4-22-86 | 120 - 125 | Small gravel, green sandy clay |
| | 125 - 130 | Green sandy clay, small gravel |
| | 130 - 135 | Green & white sandy clay, small gravel (formation change) |
| | 135 - 140 | White & Green sandy clay, small gravel |
| | 140 - 145 | Small gravel, white sandy clay |
| | 145 - 150 | White sandy clay, small gravel, green sandy clay |
| | 150 - 155 | White sandy clay, larger gravel (formation change) |
| | 155 - 160 | Coarse gravel, dark gray clay (formation change) |
| | 160 - 165 | Dark gray clay |
| | 165 - 170 | Gray clay, gravel, sand (formation change 168 ft) |
| | 170 - 175 | Gravel sand |
| | 175 - 180 | Gravel sand |
| | 180 - 185 | Gravel sand |
| | 185 - 190 | Gravel, sand, tough green clay (formation change 185ft) |
| | 190 - 195 | Green clay, gravel, sand |
| | 195 - 200 | Gravel, sand, green clay (formation change dark gray clay 198ft) |
| | 200 - 205 | Dark gray clay, gravel (little more sand, green sandy clay, light gray cl. |
| | 205 - 210 | Light gray clay, gravel, sand |
| | 210 - 215 | Gravel, light gray clay, sand |

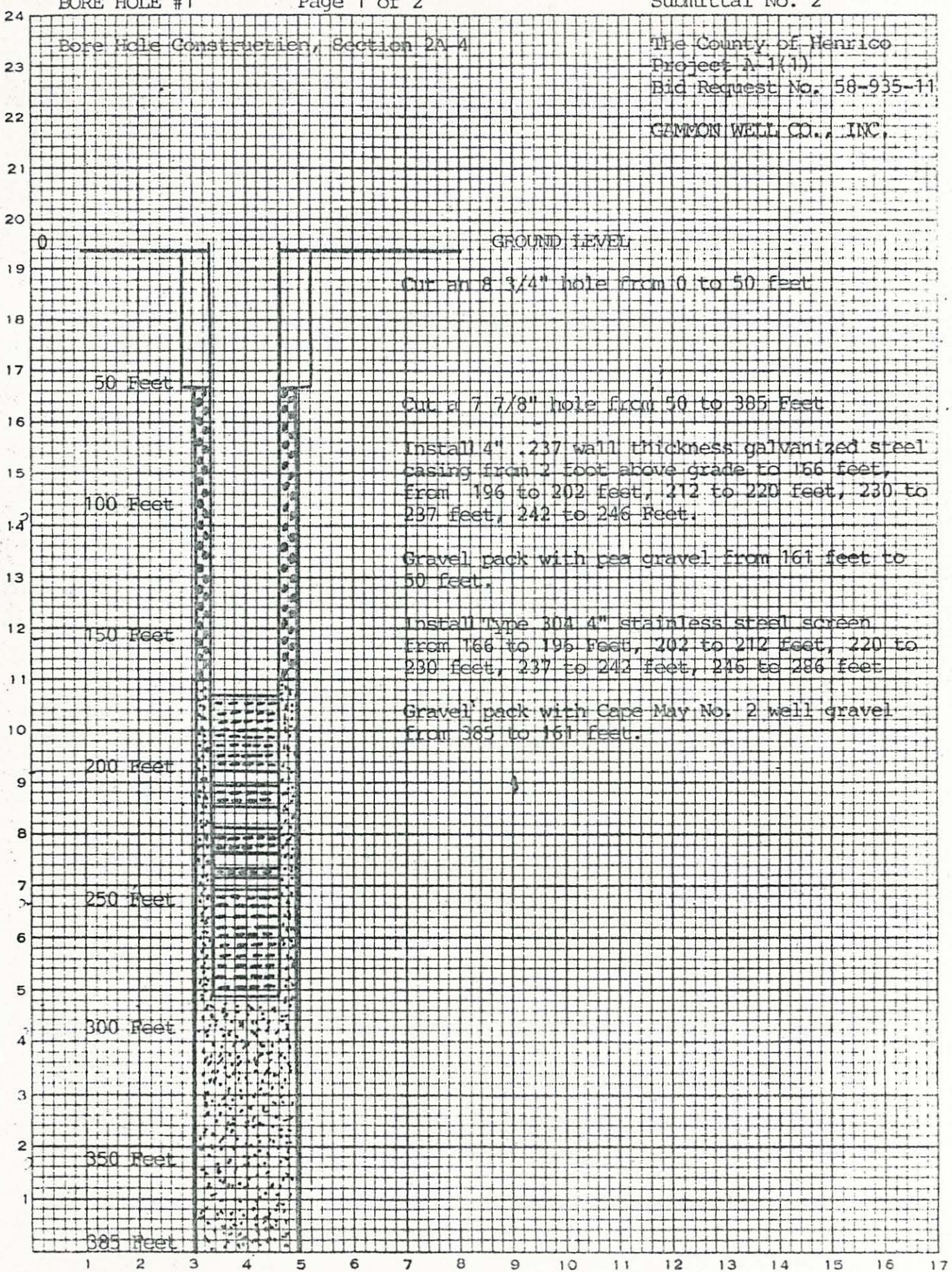
GROUND WATER EXPLORATION PROGRAM
PROJECT A-1(a)
BORE HOLE # 1 DRILLER'S LOG CONTINUED

| <u>DEPTH</u> | <u>TYPE OF ROCK OR SOIL</u> |
|-------------------|---|
| 215 - 220 | Sand, gravel, more gray clay than before |
| 220 - 225 | Gray clay, gravel sand |
| 225 - 230 | Light gray clay, gravel, sand (dark gray clay, formation change 232 ft) |
| 230 - 235 | Dark gray clay, sand gravel |
| 235 - 240 | Dark gray clay, sand, small gravel |
| 240 - 245 | Dark gray clay, sand, small gravel |
| 4-24-86 245 - 250 | Dark gray clay, sand, small gravel, light greenish gray clay |
| 250 - 255 | Small gravel, sand light & greenish gray clay |
| 255 - 260 | Small gravel, coarse gravel, white sandy clay (formation change 255ft) |
| 260 - 265 | White sandy clay, sand, gravel |
| 265 - 270 | Gravel, white sandy clay, sand |
| 270 - 275 | Sand, gravel, light gray clay |
| 275 - 280 | Light gray clay, sand, coarse gravel |
| 280 - 285 | Coarse gravel, sand, light gray clay |
| 285 - 290 | Light gray clay, sand, gravel, redish brown clay (formation change 285ft) |
| 290 - 295 | Redish brown clay |
| 295 - 300 | Redish brown clay |
| 300 - 305 | Redish brown clay |
| 305 - 310 | Redish brown clay, some gravel |
| 310 - 315 | Redish brown clay, some gravel |
| 315 - 320 | Redish brown clay, some small gravel |
| 320 - 325 | Redish brown clay |
| 325 - 330 | Redish brown clay, gravel, hard dry black clay |
| 330 - 335 | Redish brown clay, gravel |
| 335 - 340 | Redish brown clay, small gravel, decomposed granite (formation change) |
| 340 - 345 | Redish brown clay, decomposed granite |
| 345 - 350 | Redish brown clay, decomposed granite |
| 350 - 355 | Redish brown clay, red sand stone, decomposed granite |
| 355 - 360 | Redish brown clay, red sand stone, coarse gravel |
| 360 - 365 | Redish brown clay, coarse gravel, red sandstone |
| 365 - 370 | Red sandstone, gravel, redish brown clay |
| 370 - 375 | Redish brown clay |
| 375 - 380 | Brown sandy clay, gravel |
| 380 - 385 | Brown sandy clay, gravel |

Bore Hole Construction, Section 2A-4

The County of Henrico
Project A-1(1)
Bid Request No. 58-935-11

GAMMON WELL CO., INC.



GROUND LEVEL

Cut an 8 3/4" hole from 0 to 50 feet

Cut a 7 7/8" hole from 50 to 385 Feet

Install 4" .237 wall thickness galvanized steel casing from 2 foot above grade to 166 feet, from 196 to 202 feet, 212 to 220 feet, 230 to 237 feet, 242 to 246 feet.

Gravel pack with pea gravel from 161 feet to 50 feet.

Install Type 304 4" stainless steel screen from 166 to 196 feet, 202 to 212 feet, 220 to 230 feet, 237 to 242 feet, 246 to 286 feet

Gravel pack with Cape May No. 2 well gravel from 385 to 161 feet.

50 Feet

100 Feet

150 Feet

200 Feet

250 Feet

300 Feet

350 Feet

385 Feet

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

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

INTERVAL SHEET

Page 1 of 1

Well Repository No.: W- 6844

Date rec'd: 6/28/86 Date Processed: 7/1/86

Sample Interval: from 0 to: 385

PROPERTY: Henrico Co. Groundwater Exploration Program Project A-La. (Bore Hole #1)

Number of samples: 77

COMPANY: Hamman Well Co., Inc.

Total Depth: 385'

COUNTY: Henrico

Oil or Gas: Water: Exploratory

| From-To | From-To | From-To | From-To | From-To |
|---------|---------|---------|---------|---------|
| 0-5 | 150-155 | 300-305 | - | - |
| 5-10 | 155-160 | 305-310 | - | - |
| 10-15 | 160-165 | 310-315 | - | - |
| 15-20 | 165-170 | 315-320 | - | - |
| 20-25 | 170-175 | 320-325 | - | - |
| 25-30 | 175-180 | 325-330 | - | - |
| 30-35 | 180-185 | 330-335 | - | - |
| 35-40 | 185-190 | 335-340 | - | - |
| 40-45 | 190-195 | 340-345 | - | - |
| 45-50 | 195-200 | 345-350 | - | - |
| 50-55 | 200-205 | 350-355 | - | - |
| 55-60 | 205-210 | 355-360 | - | - |
| 60-65 | 210-215 | 360-365 | - | - |
| 65-70 | 215-220 | 365-370 | - | - |
| 70-75 | 220-225 | 370-375 | - | - |
| 75-80 | 225-230 | 375-380 | - | - |
| 80-85 | 230-235 | 380-385 | - | - |
| 85-90 | 235-240 | - | - | - |
| 90-95 | 240-245 | - | - | - |
| 95-100 | 245-250 | - | - | - |
| 100-105 | 250-255 | - | - | - |
| 105-110 | 255-260 | - | - | - |
| 110-115 | 260-265 | - | - | - |
| 115-120 | 265-270 | - | - | - |
| 120-125 | 270-275 | - | - | - |
| 125-130 | 275-280 | - | - | - |
| 130-135 | 280-285 | - | - | - |
| 135-140 | 285-290 | - | - | - |
| 140-145 | 290-295 | - | - | - |
| 145-150 | 295-300 | - | - | - |

Both Washed & unwashed samples.

OWNER: Henrico County
Groundwater Exploration Program, #1
DRILLER: Gammon Well Co., Inc.
COUNTY: Henrico

W# 6844
C# 258
TOTAL DEPTH: 385
QUAD: Dutch Gap
ELEV: 58'

GEOLOGIC LOG

Depth
(feet)

- 0- 5 Sand, grayish orange (10YR 7/4), fine - to medium-grained, subangular to subrounded, moderately - well sorted; quartz (clear), clay, illmenite(?).
- 5- 10 Sand, as above.
- 10- 15 Sand, as above with 10-15% coarse granules.
- 15- 20 Gravel, multicolored - white to light brown (5YR 5/6), medium-gained to very coarse granule, angular to subrounded; poorly sorted; quartz feldspar, rock fragments, illmenite, clay; sand about 40-50% of sample.
- 20- 25 Gravel, as above with no sand; base of Windsor Formation.
- 25- 30 Sand, moderate yellowish brown (10YR 5/4), very fine - to fine-grained, subangular to rounded, moderately well sorted; quartz, gypsum (selenite), glauconite (20-25%); gravel is contamination from above.
- 30- 35 Sand, as above with 30% glauconite and moderate clay; sample 25-30 and 30-35 are weathered.
- 35- 40 Sand, as above with 40% glauconite and moderate clay.
- 40- 45 Sand, as above with 40% glauconite, moderate clay, Mollusca fragments, forams; base of the Aquia Formation.
- 45- 50 Sand with pea gravel, very pale orange (10YR 8/2), fine - to coarse-grained, angular to subrounded, poorly sorted; quartz (milky with white clay), feldspar, garnet, gravel (15-20%).
- 50- 55 Gravel with sand, very pale orange (10YR 8/2), pea gravel, about 60-70% of sample; sand same as 45'-50'.
- 55- 60 Gravel with sand, same as 50'-55'.
- 60- 65 Gravel with sand, same as 50'-55'.
- 65- 70 Gravel with sand, same as 50'-55'.
- 70- 75 Sand with pea gravel, same as 45'-50'.
- 75- 80 Gravel with sand, same as 50'-55'.

Depth
(feet)

80- 85 Gravel, multicolored, pea size, variety of rock type - mainly quartz, Quartzite, pegmatite; no sand.

85- 90 Gravel, same as above.

90- 95 Gravel with sand, same as 50'-55'.

95-100 Gravel, same as 80'-85'.

100-105 Gravel with sand, same as 50'-55'.

105-110 Gravel, same as 80'-85'.

110-115 Sand with pea gravel, same as 45'-50'.

115-120 Sand with pea gravel, same as 45'-50'.

120-125 Sand with pea gravel, same as 45'-50'.

125-130 Sand with pea gravel, same as 45'-50'.

130-135 Sand with pea gravel, same as 45'-50'.

135-140 Sand with pea gravel, same as 45'-50'.

140-145 Gravel with sand, same as 50'-55'.

145-150 Sand with pea gravel, same as 45'-50'.

150-155 Gravel with sand, same as 50'-55', minor clay.

155-160 Gravel with sand, same as 50'-55'; abundant gray, sandy clay.

160-165 Gravel, same as 80'-85'; abundant gray sandy clay.

165-170 Gravel, same as 80'-85'; minor clay.

170-175 Gravel, same as 80'-85'; minor clay.

175-180 Sand with pea gravel, same as 45'-50'.

180-185 Gravel with sand, same as 50'-55'.

185-190 Gravel with sand, same as 50'-55', with minor clay.

190-195 Gravel with sand, same as 50'-55'.

195-200 Gravel with sand, same as 50'-55'; abundant gray, sandy clay.

200-205 Sand with pea gravel, same as 45'-50', with minor clay.

Depth
(feet)

| | |
|---------|--|
| 205-210 | Sand with pea gravel, same as 45'-50', with minor clay. |
| 210-215 | Sand with pea gravel, same as 45'-50'; abundant gray, sandy clay. |
| 215-220 | Sand with pea gravel, same as 45'-50'; abundant gray, sandy clay. |
| 220-225 | Sand with pea gravel, same as 45'-50'; abundant gray, sandy clay. |
| 225-230 | Gravel with sand, same as 50'-55'. |
| 230-235 | Sand with pea gravel, same as 45'-50', abundant gray, sandy clay. |
| 235-240 | Sand with pea gravel, same as 45'-50', abundant gray, sandy clay. |
| 240-245 | Sand with pea gravel, same as 45'-50', abundant gray, sandy clay. |
| 245-250 | Sand with pea gravel, same as 45'-50', abundant gray, sandy clay. |
| 250-255 | Sand with pea gravel, same as 45'-50', abundant gray, sandy clay. |
| 255-260 | Sand with pea gravel, same as 45'-50'. |
| 260-265 | Sand with pea gravel, same as 45'-50', gray, sandy clay. |
| 265-270 | Sand with pea gravel, same as 45'-50', minor clay. |
| 270-275 | Sand with pea gravel, same as 45'-50', minor clay. |
| 275-280 | Sand with pea gravel, same as 45'-50', minor clay. |
| 280-285 | Gravel with sand, same as 50'-55'. |
| 285-290 | Gravel with sand, same as 50'-55'; siltstone, dark reddish brown (10R 3/4) to greenish gray (5GY 6/1), brown color result of weathering; top of Triassic in this sample. |
| 290-295 | Siltstone and clay, dark reddish brown (10R 3/4) to greenish gray (5GY 6/1); gravel is contamination. |
| 295-300 | Sandstone with clay matrix, framework grains quartz and feldspar, medium - to coarse-grained, angular to subrounded, moderately sorted; some dark reddish brown siltstone. |
| 300-305 | Sandstone, same as above. |
| 305-310 | Sandstone, same as above. |
| 310-315 | Sandstone, same as above. |
| 315-320 | Sandstone, same as above. |

OWNER: Henrico County
Groundwater Exploration Program, #1

-4-

W# 6844

Depth
(feet)

320-325 Sandstone, same as above.
325-330 Sandstone, same as above.
330-335 Sandstone, same as above.
335-340 Sandstone with clay matrix, greenish gray (5GY 6/1) with faint reddish tint; framework grains quartz and feldspar, fine - to medium-grained, angular to subangular, moderately sorted.
340-345 Sandstone, same as above.
345-350 Sandstone, same as above, more reddish brown color.
350-355 Sandstone, same as 295'-300'.
355-360 Sandstone, same as 295'-300'.
360-365 Sandstone, same as 295'-300'.
365-370 Sandstone, same as 295'-300'.
370-375 Sandstone, same as 335'-340'.
375-380 Sandstone, same as 335'-340'.
380-385 Sandstone, same as 335'-340'.

GEOLOGIC SUMMARY

| | Rock Unit | |
|---------|-------------------|-------------|
| 0-25 | Windsor Formation | Pliocene(?) |
| 25-145 | Aquia Formation | Paleocene |
| 145-290 | Potomac Group | Cretaceous |
| 290-385 | Newark Supergroup | Triassic |

Virginia Division of Mineral Resources
Eugene K. Rader, Geologist
August 27, 1986