

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

W 3574
C 207

MAILING ADDRESS:
P. O. Box 3667
Charlottesville, VA 22903

DIVISION OF MINERAL RESOURCES
JAMES L. CALVER, COMMISSIONER
WATER WELL COMPLETION REPORT

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

OWNER: County of Henrico Mailing Address: P.O. Box 273032, Richmond, Va. 23261

TENANT: Memorial Drive Test Hole Mailing Address: Seven Pines, Virginia

DRILLER: Sydnor Hydrodynamics, Inc. Mailing Address: P.O. Box 27186, Richmond, Va. 23261

WELL LOCATION: County Henrico Approx. 325 ^{feet}~~xxxx~~ East (direction) of
Memorial Drive (Seven Pines) and 550 ^{feet}~~xxxx~~ South (direction) of Rt. 60

(GIVE DIRECTION AND DISTANCE IN FEET OR MILES FROM TWO REFERENCE POINTS - ROADS, TOWNS, RIVERS, ETC. - ON COUNTY HIGHWAY OR OTHER MAP.)

DATE STARTED: 4-24-72 DATE COMPLETED: 5-5-72

TYPE OF DRILL RIG USED: Rotary TOTAL DEPTH 610 feet

WATER LEVEL: Stands * feet below surface OR
has NATURAL flow of _____ gallons per minute.

YIELD TEST: Method *
Drawdown _____ feet
Rate * gal. per min. _____
Duration _____ hrs., _____ min.
HOLE SIZE: 10 inches from 0 to 64 feet
8 3/4 inches from 64 to 610 feet

WATER ZONES: from * to _____ feet
from _____ to _____ feet
from _____ to _____ feet
SCREEN SIZE: _____ inches from _____ to _____ feet
_____ inches from _____ to _____ feet

WATER: Color _____ Taste _____
Odor _____ Temp. _____ °F
CASE SIZE: 10 inches from 0 to 64 feet
_____ inches from _____ to _____ feet
_____ inches from _____ to _____ feet

WELL TO SUPPLY: (check one) Home _____
Farm _____ Town _____ School _____
Industry _____ Other Test hole
GROUTING: Method *
Material _____ Depth _____ feet

WATER ANALYSIS AVAILABLE: Yes _____ No _____
DRILL CUTTINGS SAVED: Yes 64 No _____
Capacity _____ gal per min
Depth of intake _____ feet

(DRILL CUTTINGS SHOULD BE COLLECTED AT 10 FOOT INTERVALS. THESE SAMPLES MAY BE SHIPPED TO THIS OFFICE EXPRESS COLLECT. SAMPLE BAGS ARE FURNISHED FREE OF CHARGE UPON REQUEST.)

REMARKS: * Test hole only. Collect formation samples. Ran Electric Log and Gamma Log.
(driller)

LOG

FURNISHED BY: Sydnor Hydrodynamics, Inc.

DATE: 5/5/72

DEPTH (feet)		TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.)	REMARKS (water, caving, shot, screen, sample, etc.)
FROM	TO		
0	1	Top Soil	
1	5	Yellow Clay	
5	10	Hard Red Clay	
10	30	Yellow Clay	
30	60	Brown Sand and Gravel	
60	62	Blue Marl	
62	113	Gray Clay	
113	158	Gray Sand Clay with shell streaks	
158	160	Pink Clay	
160	180	Gray Clay	
180	198	Gray Clay and shells mixed	
198	215	Rock-Clay Streaks	
215	230	Gray and White Sand	
230	263	Gray Sand	
263	278	Gravel	
278	283	Pink-Gray Clay Mixed	
283	291	Gray Sand-Gravel	
291	293	Gray-Pink Clay	
293	304	White-Gray Sand	
304	308	Green, Gray Clay	
308	320	White, Gray Sand	
320	333	Green, Gray Clay with sand - Gravel Mixed	
333	353	Gray Clay - Gravel Mixed	
353	368	Gray Clay-Gravel	
368	403	Graysand-Clay	
403	413	Blue Clay	
413	428	Gray Sand Clay	
428	447	Gray Clay	
447	454	Gray Sand	
454	460	Gray Clay	
460	475	Hand Brown Clay	
475	503	Gray Clay	
503	518	Gray Sand-Clay	
518	522	Gray Clay	
522	593	Gray Sand Clay	
593	603	Gray Sand	
603	606	Red Sand - Clay	
606	610	Red-Green, Gray Shale Rock	

(Driller)

COMMONWEALTH OF VIRGINIA
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W-3574
C-207

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DIVISION OF MINERAL RESOURCES
JAMES L. CALVER, COMMISSIONER
WATER WELL COMPLETION REPORT

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

OWNER: COUNTY OF HENRICO Mailing Address: P. O. BOX 273032, Richmond, Va. 232

TENANT: MEMORIAL DRIVE TEST HOLE Mailing Address: SEVEN PINES, VIRGINIA

DRILLER: SYDNOR HYDRODYNAMICS, INC. Mailing Address: P. O. BOX 27186, Richmond, Va. 2326

WELL LOCATION: County HENRICO Approx. 325 feet East (direction) of
MEMORIAL DRIVE and 550 feet South (direction) of Rt. 60

(GIVE DIRECTION AND DISTANCE IN FEET OR MILES FROM TWO REFERENCE POINTS - ROADS, TOWNS, RIVERS, ETC - ON COUNTY HIGHWAY OR OTHER MAP.)

DATE STARTED: 4-24-72 DATE COMPLETED: 5-5-72

TYPE OF DRILL RIG USED: Rotary TOTAL DEPTH 610 feet

WATER LEVEL: Stands feet below surface OR
has NATURAL flow of gallons per minute.

YIELD TEST: Method
Drawdown feet
Rate * gal. per min.
Duration hrs., min.

HOLE SIZE: 10 inches from 0 to 64 feet
8-3/4 inches from 64 to 610 feet

WATER ZONES: from * to feet
from to feet
from to feet

SCREEN SIZE: inches from to feet
inches from to feet
inches from to feet

WATER: Color Taste
Odor Temp. °F

CASE SIZE: 10 inches from 0 to 64 feet
inches from to feet
inches from to feet

WELL TO SUPPLY: (check one) Home
Farm Town School
Industry Other Test hole

GROUTING: Method
Material Depth feet

WATER ANALYSIS AVAILABLE: Yes No

PUMP: Type
Capacity gal per min
Depth of intake feet

DRILL CUTTINGS SAVED: Yes ⁶⁴X No

(DRILL CUTTINGS SHOULD BE COLLECTED AT 10 FOOT INTERVALS. THESE SAMPLES MAY BE SHIPPED TO THIS OFFICE EXPRESS COLLECT. SAMPLE BAGS ARE FURNISHED FREE OF CHARGE UPON REQUEST)

REMARKS: Test Hole Only. Collect formation samples. Ran Electric Log and Gamma Log. (driller)

ELEV.: 160'

SEVEN PINES QUADRANGLE

REFER: W-1291, -2071, -2683

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

INTERVAL SHEET

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C 207
 Well Repository No: 3574

Date rec'd: 5/15/72 Date Processed: 8/10/72

Sample Interval: from 0 to: 610'

PROPERTY: County of Henrico
 (Memorial Drive Test Hole)

Number of samples: 59

COMPANY: Sydnor Hydrodynamics, Inc.

Total Depth: 610'

COUNTY: Henrico (Seven Pines)

Oil or Gas: Water: * Exploratory:

From-To	From-To	From-To	From-To
0 - 10	250 - 260	500 - 510	-
10 - 20	260 - 270	510 - 520	-
20 - 30	270 - 280	520 - 530	-
30 - 40	280 - 290	530 - 540	-
40 - 50	290 - 300	540 - 550	-
50 - 60	300 - 310	550 - 560	-
60 - 70	310 - 320	560 - 570	-
70 - 80	320 - 330	570 - 580	-
80 - 90	330 - 340	580 - 590	-
90 - 100	340 - 350	590 - 600	-
100 - 110	350 - 360	-	-
110 - 120	-	-	-
120 - 130	370 - 380	-	-
130 - 140	380 - 390	-	-
140 - 150	390 - 400	-	-
150 - 160	400 - 410	-	-
160 - 170	410 - 420	-	-
170 - 180	420 - 430	-	-
180 - 190	430 - 440	-	-
190 - 200	440 - 450	-	-
200 - 210	450 - 460	-	-
210 - 220	460 - 470	-	-
220 - 230	470 - 480	-	-
230 - 240	480 - 490	-	-
240 - 250	490 - 500	-	-

All intervals have both washed and unwashed samples.

OWNER: County of Henrico (Memorial Dr. TH)
DRILLER: Sydnor Hydrodynamics, Inc.
COUNTY: Henrico (Seven Pines)

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TOTAL DEPTH:610'

GEOLOGIC LOG

Depth in
feet

COLUMBIA GROUP (0-60')

- 0-10 Silt and Sand - pale orange, clayey, with very thin laminations of bright-red, purple, bright-yellow, and white; silt to fine-grained sand, well-sorted; mineralogy undeterminable (poorly washed sample)
- 10-20 As above, except: clay is more abundant than coarser material
- 20-30 Sand and Gravel - brown; deeply stained (iron); no clay, silt, or fine sand; coarse- to very coarse-grained sand and granule gravel (about 50 percent of each); sediment is well-sorted, subangular to rounded; chemically stable detritus - various types of quartz, with small amounts of detrital chert and quartzitic rock fragments
- 30-40 Sand - brown; deeply stained (iron); no clay, silt, or fine sand; medium- to very coarse-grained, well-sorted, subangular to subrounded; various types of quartz, and some siliceous rock fragments, with 3 to 5 percent highly decomposed potassic feldspar
- 40-50 Gravel and Sand - brown, deeply stained (iron); very coarse-grained sand and fine-grained gravel (up to 3 mm); well-sorted; subangular to subrounded; various types of quartz and chemically resistant rock fragments; 3 to 5 percent highly decomposed potassic feldspar
- 50-60 As above, except: with 5 to 10 percent decomposed potassic feldspar; fragments of ferricrete are common

CALVERT FORMATION (60-100')

- 60-70 Sand - bluish-gray, slightly clayey; fine- to very fine-grained, very well-sorted, angular; trace of glauconite

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70-80 Clay - gray, compact, sand-free; a few plant fragments and small pyrite concretions

80-90 As above

90-100 As above, except: slightly sandy

NANJEMOY FORMATION (100-160')

100-110 Sand - sparse matrix of drab brownish-gray clay; fine- to very fine-grained, fairly well-sorted; about 40 percent each of clear to pale-green angular quartz, and dark-green glauconite; about 10 percent medium- to coarse-grained, well-rounded to very well-rounded quartz; micaceous; fragments and nodules of brown phosphorite are common; minor amount of concretionary pyrite; trace of red garnet

110-120 As above, except: with less well-rounded quartz sand, and with 2 to 3 percent small chalky shell fragments

120-130 Sand - moderately abundant to abundant matrix of medium-gray micaceous clay; fine- to very fine-grained, fairly well-sorted; about 45 percent each of clear to pale-green, angular to subangular quartz, and blackish- to medium-green glauconite; 5 percent medium- to coarse-grained, very well-rounded quartz sand (many grains have secondary overgrowths, also rounded); numerous phosphorite fragments, mainly reworked bone; a few shell fragments; secondary pyrite present

130-140 As above, except: fine- to very fine-grained, well-sorted

140-150 As above, except: fine- to very fine-grained, well-sorted

150-160 Clay - interlaminated salmon-pink and light-gray clays, with a few small lenses of dark-gray glauconitic silt

MATTAPONI FORMATION (160-210')

160-170 Sand and Silt - dark-gray, with many pockets and lenses of pink and light-gray clay, slightly to moderately clayey; a few decomposed molluscan shells and shell fragments; mainly coarse-grained silt to very fine-grained sand, very well-sorted; about 75 percent clear to green-tinted angular quartz, and 25 percent very fine- to medium-grained dark-green glauconite; muscovite common; Robulus sp. and Nodosaria sp. present

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- 170-180 As 160-170, except: with much less pink and light-gray clays
- 180-190 As 160-170, except: with no pink and light-gray clays; with 15 to 20 percent chalky pelecypod and gastropod shells and shell fragments
- 190-200 Sand, Silt, and Limestone - dark-gray quartz-glaucanite silt to fine-grained sand with about 35 percent chalky shells and shell fragments and 10 percent dense gray silty and sandy limestone. Fossil assemblage includes pelecypods, gastropods (including Turritella sp.), worm tubes, vertebrate remains (including scales, teeth, and otoliths), solitary corals, bryozoans, and foraminifers (Robulus sp.). Trace of glauconite stained coarse detritus described below also is present
- 200-210 Gravel - sparse matrix of gray clay and coarse- to very coarse-grained sand of same composition as the gravel; gravel is 2 to 10 mm in diameter, sub-rounded to well-rounded (reangularized in part); various types of quartz, siliceous rock fragments, feldspar, and fragments of aphanitic igneous rock, and some calcitic (shell) fragments and phosphorite nodules; many grains of all types are permeated with submicroscopic glauconite; garnet common

PATUXENT FORMATION (210-460')

- 210-330 This interval, represented by 12 samples, consists mainly of medium- to very coarse-grained sand and fine-grained gravel in various proportions - either sand or gravel may be volumetrically dominant. Matrix is sparse, consisting of gray, tan, or, more rarely, reddish clays; discrete clay lenses are present, but uncommon.

The gravels range up to 10 mm in size, and larger pebbles are relatively rare; rounding is fair to good, but most samples are poorly rounded. Compositionally, the beds are moderately feldspathic to very feldspathic (arkosic), and most contain at least a small percentage of rock fragments of various types (quartzitic, other siliceous types, and aphanitic igneous rock fragments are most abundant); garnet is a constant accessory.

- 330-340 Sand and Gravel - moderately abundant matrix of light-tan to white clay, with a few lenses of light grayish-green clay; sand is mainly medium- to very coarse-grained, with about 15 percent well-rounded gravel 4-10 mm or more in diameter; sorting overall is poor; feldspathic; slightly lithic, trace of fine-grained glauconite

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- 340-350 As 330-340, except: coarser, better sorted
- 350-360 Sand and Gravel - sparse matrix of yellowish-white clay; about 50 percent medium- to very coarse-grained, fairly well-sorted sand (skewed coarse); about 50 percent fine-grained 2-10 mm gravel; mainly subrounded to well-rounded; total sediment is very feldspathic, gravel is moderately lithic; traces of muscovite, garnet, fine-grained glauconite
- 360-370 No sample
- 370-380 Sand and Gravel - sparse matrix of yellowish-white clay; about 50 percent medium- to very coarse-grained, fairly well-sorted sand; about 50 percent fine-grained 2 to 10 mm gravel; mainly subrounded to well-rounded; total sediment is very feldspathic, gravel is moderately lithic; trace amounts of garnet, muscovite, fine-grained glauconite; a very few plant fragments
- 380-390 Sand - sparse to moderately abundant matrix of yellowish-white clay, locally white or brown; about 10 percent 2 to 10 mm gravel; fine- to very coarse-grained, rather poorly sorted, subangular to subrounded; moderately feldspathic; blue quartz common; numerous plant fragments; small amount (lenses) of dark-gray silty glauconitic clay
- 390-400 As above, except: clay has a greenish cast
- 400-410 Clay - dark-gray, carbonaceous, locally pale-yellow; silty, micaceous, variously sandy (mainly quartz); recognizable plant fragments (wood, leaves, roots) are common; pyrite is present, including some pyritized roots or root casts; slightly glauconitic
- 410-420 As above, except: with considerable fine-grained gravel (much of this has yellowish-clay coatings; it probably is caved material)
- 420-430 Sand - comprehensive moderately abundant matrix of white to pale-gray clay with 25 to 30 percent black carbonaceous coaly material, both disseminated and in pocket and seams; sediment has an ashen appearance, and is fairly micaceous especially within the coaly lenses; about 10 percent laminae of dark brownish-gray, micaceous (muscovite and biotite) very slightly glauconitic clay with primitive fissility (tends to split into plates). Sand is mainly fine- to coarse-grained, moderately sorted; moderately feldspathic; garnet relatively abundant

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430-440 As 420-430, except: with less coaly material

440-450 Sand - very sparse matrix of white to pale-gray clay and silt; coarse-grained sand to granule gravel, fairly well-sorted, subangular to subrounded; feldspathic; very slightly glauconitic; garnet common

450-460 As above, except: poorly sorted (ranges from fine-grained sand to 6 mm gravel)

NEWARK GROUP (460-600')

460-470 Clay and Sand - brownish-red in hand specimen; finely and complexly interlaminated; sand (30 to 50 percent) is mainly coarse-grained, fairly well-sorted, angular to subrounded, moderately feldspathic; clay (50 to 70 percent) is mainly brick-red and pale-green and ranges from sand-free to very silty and sandy; pockets of gray clay and gray glauconitic silt also occur. Additional constituents are glauconite, subrounded pebbles up to 8 mm, including phosphorite nodules, rock fragments, and plant fragments

470-480 As above, except: 70 to 80 percent sand (-gravel) and 20 to 30 percent clay; clay occurs both as matrix and lenses

480-490 Sand - matrix of pale-gray to tan silty clay; medium- to coarse-grained, moderately sorted, subangular to subrounded; feldspathic; very slightly glauconitic; traces of muscovite and garnet; a few plant fragments

490-500 As above, except: fine- to coarse-grained, poorly sorted; with lenses of (or in contact with) brick-red and pale-green clay shales

500-510 Sand, Clay, and Gravel - purplish-red in hand specimens; medium- to very coarse-grained, moderately sorted, subangular quartz sand, and fine rounded quartz gravel up to 10 mm; abundant matrix of multi-colored clay, with brick-red dominant; lithic (red, green, and gray shale, and many types of highly decomposed igneous and metamorphic rock); very little feldspar; pockets of glauconitic silt and fine sand are common

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- 510-520 Sand - matrix of pale-gray to tan clay; about 5 percent granule gravel; medium- to very coarse-grained, moderately sorted, angular to subrounded; feldspathic
- 520-530 As above, except: with about 10 percent granule gravel
- 530-540 Sand and Gravel - matrix of variegated clay (appears tan in hand specimen); about 20 percent gravel, (2 to 10 mm) including many shards or broken rounds of quartzite, other metamorphic rock fragments, pale-green, and gray shale; about 80 percent fine- to very coarse-grained feldspathic, slightly glauconitic sand; garnet common
- 540-550 As above, except: 50 percent gravel
- 550-560 Sand - sparse matrix of tan and light-gray clay; 5 to 10 percent granule gravel; fine- to very coarse-grained, poorly sorted, angular to subrounded; feldspathic; fragments of decomposed crystalline rock common in gravel fraction
- 560-570 As above, except: much coarser, with 15 percent gravel up to 6 mm
- 570-580 As above, except: fine- to very coarse-grained, poorly sorted, with less than 5 percent granule gravel
- 580-590 As above, except: with about 10 percent granule gravel
- 590-600 Sand and Gravel - gray, clean; coarse- to very coarse-grained sand grading into granule gravel; well-sorted, subangular to subrounded; very feldspathic
- 600-610 No sample

GEOLOGIC SUMMARY

<u>Rock Unit</u>	<u>Age</u>	
0-60'	Columbia Group	post-Miocene
60-100'	Calvert Formation	Miocene
100-160'	Nanjemoy Formation	Eocene
160-210'	Mattaponi Formation	Paleocene - Late Cretaceous
210-460'	Patuxent Formation	Early Cretaceous
460-600'	Newark Group	Triassic
600-610'	No sample	

Virginia Division of Mineral Resources
Robert H. Teifke, Geologist
March 8, 1973