APPENDIX D - GROUNDWATER WELL AND QUALITY DATA

STOKES ENVIRONMENTAL ASSOCIATES, LTD. • 4101 Granby Street, Suite 404, Norfolk, Virginia 23504 • TEL (757) 623-0777 • FAX (757) 623-2785

PRIVATE WATER SUPPLY WELL DATA

Information provided by the City of Chesapeake for the following properties

1104 Centerville Turnpike

1020 Centerville Turnpike

1101 Murray Road

1104 Murray Road

1204 Murray Road

1208 Murray Road

1215 Murray Road

1305 Murray Road

1313 Murray Road

1317 Murray Road

1325 Murray Road

1329 Murray Road

1300 Murray Road

1316 Murray Road

1320 Murray Road

1324 Murray Road

1328 Murray Road

1403 Whittamore Road

1405 Whittamore Road

1407 Whittamore Road

1469 Whittamore Road

Note: According to the City of Chesapeake's Health Department, of the approximate seventy (70) properties within the subject site vicinity, only the above properties had well data.

Form GW-2
1978-10,000

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

RECEIVED DEC 1987 CHESAPEAKE HEALTH DEPT.

NS 61 6+95
1104 Centerville Trpk

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT
(Certification of Completion/County Permit)

• BWCM No. _____

County/City _____

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
____ N
____ E

Latitude & Longitude
____ N
____ W

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

• Owner JOHN VAN LUECK
• Well Designation or Number _____
Address _____
Phone 547-1433

• Drilling Contractor YODER & CO.
Address 3416 B N LANDING RD
VA BEACH VA 23456
Phone 427 9002

Tax Map I.D. No. _____
Subdivision _____
Section _____
Block _____
Lot _____
Class Well: I ____, IIA ____, IIB ____, IIIA X, 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 11-2-87 • Date completed 11-2-87 Type rig ROTARY MUD

WELL DATA: New X Reworked ____ Deepened ____
• Total depth _____ ft.
Depth to bedrock _____ ft.
Hole size (Also include reamed zones)
• 3 inches from 0 to 105 ft.
• ____ inches from ____ to ____ ft.
• ____ inches from ____ to ____ ft.

Casing size (I.D.) and material
• 1¼" inches from 0 to 105 ft.
Material PVC SCH 200PSI
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)
• 1¼" inches from 95' to 105' ft.
• Mesh size 0.10 Type PVC SLOT
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____

Gravel pack
• From 90' to 105' ft.
• From ____ to ____ ft

Grout
• From 0' to 20' ft., Type CEMENT.
• From ____ to ____ ft., Type ____

2. WATER DATA • Water temperature ____ °F
• Static water level (unpumped level-measured) ____ ft.
• Stabilized measured pumping water level ____ ft.
• Stabilized yield 20 gpm after 2 hours
Natural Flow: Yes ____ No ____, flow rate ____ gpm
Comment on quality GOOD

3. WATER ZONES: From ____ To ____
From 15 To 53 From 72 To 76
From 90 To 105 From ____ To ____

4. USE DATA:
Type of use: Drinking X, Livestock Watering ____
Irrigation ____ Food processing ____, Household ____
Manufacturing ____, Fire safety ____, Cleaning ____
Recreation ____, Aesthetic ____, Cooling or heating ____
Injection ____, Other ____
• Type of facility Domestic X, 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 X yes ____ no
Date ____, Disinfectant used CLORINE
Amount ____, Hours used ____

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

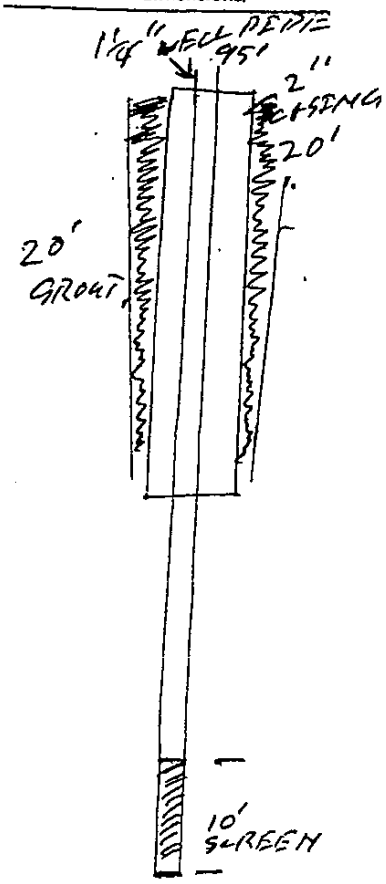
Owner _____ BWCM No. _____

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)

DEPTH (feet) From	DEPTH (feet) To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	3	TOP SOIL		
3	30	FINE WHITE SAND	WATER LOSS	
30	53	COARSE " "	WATER LOSS	
53	72	GRAY CLAY		5 MIN PER 5 FT.
72	76	WHITE SHELL SOME SAND		
76	80	GRAY CLAY		
80	90	SAND & CLAY		
90	105	COARSE SAND SOME SHELL		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



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.

Signature _____ (Seal), Date _____
(Well driller or authorized person)
License No. _____

State Water Control Board Regional Offices

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

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

Central Reg. Off.
Executive Park
2 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

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

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

Health Department
Identification Number 234-87-0034

Schematic drawing of sewage disposal system and topographic features.

PAGE 2 OF 2

Show the lot lines of the building lot and building site, sketch of property showing any topographic features which may impact on the design of the system, all existing and/or proposed structures including sewage disposal systems and wells within 100 feet of sewage disposal system and reserve area. The schematic drawing of the sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance system, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be located on the same lot show all sources of pollution within 100 feet.

Scale 1" 100'

☐ The information required above has been drawn on the attached copy of the sketch submitted with the application. Attach additional sheets as necessary to illustrate the design.

5-2' x 70' ditches

Keep the well 100' minimum

GRADE BOARDS REQUIRED

The sewage disposal system is to be constructed as specified by the permit ☐ or attached plans and specifications ☐.

This sewage disposal system construction permit is null and void if (a) conditions are changed from those shown on the application (b) conditions are changed from those shown on the construction permit.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon the direction of the Department.

Date: 9/2/87 Issued by: [illegible] Sanitarian

Date: 9-28-87 Reviewed by: W R Holdmott Supervisory Sanitarian

This Construction Permit Valid until

If FHA or VA financing

Reviewed by Date _____ _____ Supervisory Sanitarian Date _____ _____ Regional Sanitarian

C.H.S. 202B Revised 6/84

II-2A

Form GW-2
9/78-10,000

NW 1
1/16/01

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT

(Certification of Completion/County Permit)

*SWCM No. _____

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

SWCB Permit _____
County Permit _____

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

For Office Use

County/City: Chesapeake

County/City Stamp

*Virginia Plane Coordinates
_____ N
_____ E
Latitude & Longitude
_____ N
_____ W
*Topo. Map No. _____
*Elevation _____ ft.
Formation _____
*Lithology _____
*River Basin _____
Province _____
Type Logs _____
*Cuttings _____
Water Analysis _____
Aquifer Test _____

*Owner: McGinnis Farms
*Well Designation or Number
Address: 1020 Centerville Turnpike South
Chesapeake, Va.
Phone _____

*Drilling Contractor: JOHNSON WELL DRILLING
Address: 1538 SHELL RD.
CHESAPEAKE, VA. 23323
Phone: 487-0561

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: 9/20/01 * Date completed _____ Type rig: ROTARY

WELL DATA: New ✓ Reworked _____ Deepened _____
*Total depth: 80 ft.
*Depth to bedrock _____ ft.
Hole size (Also include reamed zones)
* 5 3/4 inches from 0 to 80 ft.
* _____ inches from _____ to _____ ft.
* _____ inches from _____ to _____ ft.
Casing size (I.D.) and material
* 2 inches from 0 to 70 ft.
Material: PVC
Wt. per foot _____ or wall thickness Sch 40 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)
* 1/4 inches from 70 to 80 ft.
* Mesh size .010 Type PVC
* _____ inches from _____ to _____ ft.
* Mesh size _____ Type _____
* _____ inches from _____ to _____ ft.
* Mesh size _____ Type _____
* _____ inches from _____ to _____ ft.
* Mesh size _____ Type _____
Gravel pack
* From 70 to 80 ft.
* From _____ to _____ ft.
Grout
* From -1 to 20 ft., Type Bentonite
* From _____ to _____ ft., Type _____

2. WATER DATA * Water temperature _____ °F
*Static water level (unpumped level-measured) 7 ft.
*Stabilized measured pumping water level 30 ft.
*Stabilized yield 5 gpm after 1 hours
Natural Flow: Yes _____ No _____, flow rate: _____ gpm
Comments on quality _____

3. WATER ZONES: From 6 To 15
From 18 To 25, From 37 To 55
From 70 To 80, 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 9/20/00, Disinfectant used _____
Amount _____, Hours used _____

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

OVER

Virginia farms

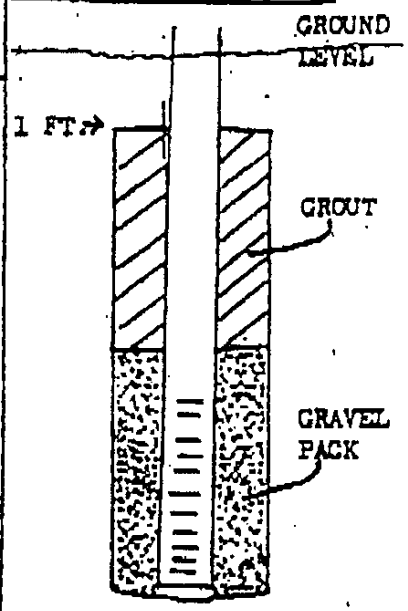
SWCM No. _____

law requires submitting to the Virginia State Water Control Board information about groundwater and wells for every well made in the State ed for water, or any other non-exempt well. This information must be submitted whether the well is completed, on standby, or abandoned. mation required includes: an accurately and completely prepared water well completion report, full data from any aquifer pumping tests, drill ings taken at ten foot intervals (unless otherwise is secured), the results of any chemical analyses, and copies of any geophysical logs. Quarterly ntage 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 state. Some counties require submission of a water well completion t for public supply wells.

. DRILLERS LOG (use additional Sheets if necessary)

H (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, wave, shale, (etc.)	11. Drilling Time (Min.)
0	6	clay		
6	15	yellow sand		
15	18	clay		
18	25	sand		
25	37	clay		
37	55	sand		
55	70	clay		
70	80	sand		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



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.

Signature _____ (Seal), Date 1/12/01
(Well driller or authorized person)

License No. 2705000425

e Water Control Board Regional Offices

Reg. Off.	Piedmont Reg. Off.
th Main Street	4411 West Broad Street
ite 262	P. O. Box 5616
ewater, Va. 23612	Richmond, Va. 23230
476-2595	804-257-1806
west Reg. Off.	Tidewater Reg. Off.
st Main Street	287 Pembroke Office Park
Box 476	Suite 310 Pembroke No. 2
nson, Va. 24210	Va. Beach, Va. 23462
676-5163	804-499-6742
ntral Reg. Off.	Northern Virginia Reg. Off.
ive Park	5515 Cherokee Avenue
2 Peters Creek Road	Suite 404
noke, Va. 24019	Alexandria, Va. 22312
982-7452	703-750-9111

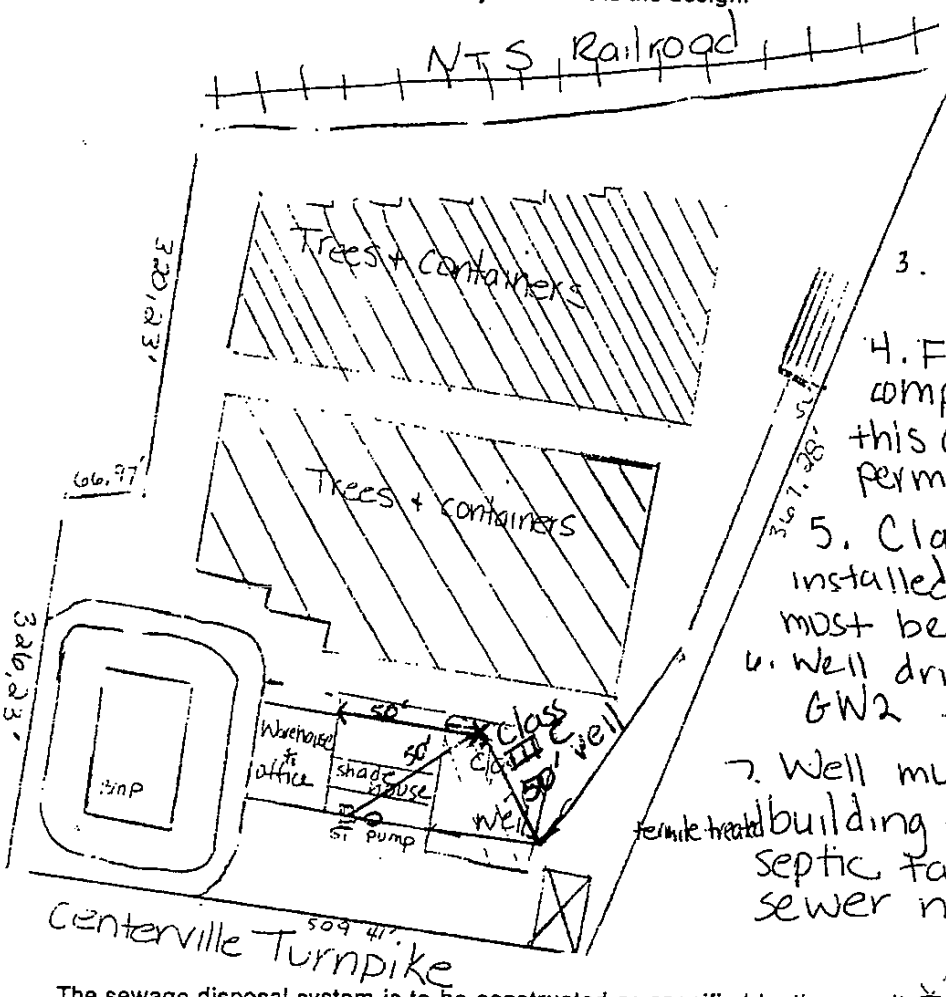
Health Department Identification Number 234-00-3004

Schematic drawing of sewage disposal system and topographic features.

PAGE 2 OF 2

Show the lot lines of the building lot and building site, sketch of property showing any topographic features which may impact on the design of the system, all existing and/or proposed structures including sewage disposal systems and wells within 100 feet of sewage disposal system and reserve area. The schematic drawing of the sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance system, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be located on the same lot show all sources of pollution within 100 feet.

☐ The information required above has been drawn on the attached copy of the sketch submitted with the application. Attach additional sheets as necessary to illustrate the design.



1. This permit is good for 15 employees.
2. Install 5 - 2' x 100' drainfield lines.
3. Depth of trenches is 18"
4. Final grade must be completed and approved before this office can issue an operating permit.
5. Class III well to be installed for drinking & irrigation. Well must be cased and grouted 20
6. Well driller must submit a GW2 to this office.
7. Well must be located 50' from building foundation, 50' from septic tank and 50' from sewer main.

The sewage disposal system is to be constructed as specified by the permit ☒ or attached plans and specifications ☐.

This sewage disposal system construction permit is null and void if (a) conditions are changed from those shown on the application (b) conditions are changed from those shown on the construction permit.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon the direction of the Department.

Date: 1-21-00 Issued by: Ashley Lynch
Sanitarian

Date: _____ Reviewed by: _____
Supervisory Sanitarian

This Construction Permit Valid until 4/01

If FHA or VA financing

Reviewed by Date _____ _____ Date _____ _____
Supervisory Sanitarian Regional Sanitarian

C.H.S. 202B Revised 6/84

II-2A

FILE COPY

MS 62A
GGO B/k 4
1/24/96 Lot 1B

Class III B
Well
drinking water

Commonwealth for Virginia
Uniform Water Well Completion Report

Owner Willie Phillips
Address 1401 Louis Drive
Chesapeake VA
Phone 543-7698
Location well was at 1405 Whitamore Rd

Tax Map ID M5062100400006
VDH Permit
VWCB Permit
VWCB ID 234-95-2035
County

Well Data

Drilling Method rotary Date Completed 8-12-95 Total Dept of Well 55 ft
Depth to Bedrock NA Yield 10 (GPM) Length of Test 1 hour
Static Water Level 12 Stabilized Water Level NA Natural Flow NA
Well Disinfected(Y/N) Yes Disinfectant Used Chlorine Amount Used 1 gal

15 ft. wellpoint

Casing
From 0 ft To 55 ft From To From To
Size Material Size Material Size Material
Weight/Schedule Weight/Schedule Weight/Schedule

Gravel Pack
From 40 ft To 55 ft From To From To

Grout
From 0 ft To 40 ft From To From To
Bore Hole Size 4 3/4 Bore Hole Size Bore Hole Size
Type Neat cement Type Type
Method pour pump Method Method
Water Zones or Screened Intervals
From To From To From To
Mesh Size .010 Diam Mesh Size Diam Mesh Size Diam
From To From To From To
Mesh Size Diam Mesh Size Diam Mesh Size Diam

Class III B *Use Data*
Private Well: Domestic Agriculture Industrial Monitoring
Public Well: Community Non Community

Abondonment Information

Bored or Dug Wells
Casing Removed, Y/N?
If Y Depth to which casing was removed
Depth and Type of Fill:

Source of Fill:
Bentonite Plugs: From To
From To
Method of permanently marking location N/A could not find old

Wells other than Bored Wells
Casing removed Y/N?
If Y Depth to which casing was removed
If Applicable, depth(s), and type of gravel/sand fill:
Source of gravel or sand
Cement: From to
Form to

DRILLERS LOG

Depth	Description of Formation or Sediment	Remarks
55ft	0-2ft Top soil	
	2-10ft Clay	
	10-30ft sugar sand	
	30-55ft coarse sand	55ft water bearing

JAN 1996 RECEIVED CHESAPEAKE HEALTH DEPT

(Use additional sheets if necessary)

I certify that the information contained here is true and that this well was installed and constructed in accordance with the permit and further that the well complies with all applicable state and local regulations, ordinances and laws.

WILLETTS WELL DRILLING SERVICE
2121 CEDAR ROAD
CHESAPEAKE, VA 23323
(804)487 8755

DRILLERS SIGNATURE John H. Willetts
DATE 1-22-96 REPRESENTING WILLETTS WELL DRILLING SERVICE

VIRGINIA CONTRACTORS LICENSE NUMBER [illegible] 1995

Ches MS 624 / Contact Locov 10-1.??
Lot 12

Commonwealth for Virginia
Uniform Water Well Completion Report

Owner: Willie Phillips
Address: 1401 Louis Drive
Chesapeake VA
Phone: 543-7698
Location: well was done at 1405 Whitamore Rd

Tax Map ID: M50621004000012
VDH Permit:
VWCB Permit:
VWCB ID: 234-95-2035
County: [redacted]

Well Data

Drilling Method: rotary
Date Completed: 8-12-95
Total Depth of Well: 41 ft
Depth to Bedrock: NA
Yield: 10 (GPM) Length of Test: 1 hour
Static Water Level: 12
Stabilized Water Level: NA
Natural Flow: NA
Well Disinfected (Y/N): Yes
Disinfectant Used: Chlorine
Amount Used: 1 gal

10 ft. wellpoint

Casing
From: To: 20 ft
Size: 1 1/4 Material: PVC
Weight/Schedule: PR200
From: To:
Size: Material:
Weight/Schedule:
From: To:
Size: Material:
Weight/Schedule:

Gravel Pack
From: To: 41 ft
From: To:
From: To:

Grout
From: To: 20 ft
Bore Hole Size: 4 3/4
Type: Neat Cement
Method: pour pump
From: To:
Bore Hole Size:
Type:
Method:
From: To:
Bore Hole Size:
Type:
Method:

Water Zones or Screened Intervals
From: To:
Mesh Size: 10/0 Diam:
From: To:
Mesh Size: Diam:
From: To:
Mesh Size: Diam:
From: To:
Mesh Size: Diam:
From: To:
Mesh Size: Diam:
From: To:
Mesh Size: Diam:

[redacted] *Use Data*

Private Well: Domestic [redacted] Agriculture: Industrial: Monitoring:
Public Well: Community: Non Community:

Abandonment Information

Bored or Dug Wells
Casing Removed, Y/N?:
If Y Depth to which casing was removed:
Depth and Type of Fill:
Source of Fill:
Bentonite Plugs: From: To:
From: To:
Method of Permanently Marking Location:

Wells other than Bored Wells
Casing Removed Y/N?:
If Y Depth to which casing was removed:
If Applicable, Depth(s), and type of gravel/sand fill:
Source of gravel or sand:
Cement: From: To:
From: To:

DRILLERS LOG

Depth	Description of Formation or Sediment	Remarks
41 ft	0-2 ft top soil 2-8 ft clay 8-20 ft sugar sand 20-41 ft coarse sand	41 ft. water bearing

(Use additional sheets if necessary)

I certify that the information contained here is true and that this well was installed and constructed in accordance with the permit and further that the well complies with all applicable state and local regulations, ordinances and laws.

WILLETTS WELL DRILLING SERVICE
2121 CEDAR ROAD
CHESAPEAKE, VA 23323
(804)487 8755

DRILLERS SIGNATURE John H. Willetts
DATE 8-15-95 REPRESENTING WILLETTS WELL DRILLING SERVICE

VIRGINIA CONTRACTORS LICENSE NUMBER 9506423 1995

SEP 1995
RECEIVED
CHESAPEAKE HEALTH DEPT

1.GGU
1/17/96

B1 H
Lot 1A

Class III B well
drinking water

Commonwealth for Virginia
Uniform Water Well Completion Report

Owner Willie Phillips
Address 1401 Louis Drive
Chesapeake VA
Phone 543-7698
Location well at 1405 Whitamore Rd

Tax Map ID M5062100400012
VDH Permit
VWCB Permit
VWCB ID 234-95-2035
County

Well Data

Drilling Method rotary Date Completed 8-12-95 Total Dept of Well 55 ft
Depth to Bedrock NA Yield 10 (GPM) Length of Test 1 hour
Static Water Level 12 Stabilized Water Level NA Natural Flow NA
Well Disinfected(Y/N) YES Disinfectant Used Chlorine Amount Used 1 gal

10 ft. wellpoint

Casing
From To 30 ft From To From To
Size 1 1/4 Material PVC Size Material Size Material
Weight/Schedule PR200 Weight/Schedule Weight/Schedule

Gravel Pack
From To 55 ft From To From To

Grout
From To 30 ft From To From To
Bore Hole Size 4 3/4 Bore Hole Size Bore Hole Size
Type Neat cement Type Type
Method pour pump Method Method

Water Zones or Screened Intervals
From To From To From To
Mesh Size 100 Diam Mesh Size Diam Mesh Size Diam
From To From To From To
Mesh Size Diam Mesh Size Diam Mesh Size Diam

Use Data
Class III B
Private Well: Domestic Agriculture Industrial Monitoring
Public Well: Community Non Community

Abondonment Information

Bored or Dug Wells
Casing Removed, Y/N?
If Y Depth to which casing was removed
Depth and Type of Fill:

Source of Fill:
Bentonite Plugs: From To
From To
Method of permanently marking location

Wells other than Bored Wells
Casing removed Y/N?
If Y Depth to which casing was removed
If Applicable, depth(s), and type of gravel/sand fill:
Source of gravel or sand
Cement: From to
From to

RECEIVED
JAN - 2

JAN 1996
RECEIVED
CHESAPEAKE
HEALTH DEPT

DRILLERS LOG

Depth	Description of Formation or Sediment	Remarks
55 ft	0-2 ft top soil	
	2-10 ft Clay	
	10-30 ft Sugar sand	
	30-55 ft coarse sand	55 ft Water bearing

(Use additional sheets if necessary)

I certify that the information contained here is true and that this well was installed and constructed in accordance with the permit and further that the well complies with all applicable state and local regulations, ordinances and laws.

WILLETTS WELL DRILLING SERVICE
2121 CEDAR ROAD
CHESAPEAKE, VA 23323
(804)487 8755

DRILLERS SIGNATURE John H. Willetts
DATE 12-28-95 REPRESENTING WILLETTS WELL DRILLING SERVICE

GW-2

PERMIT No. 234-91-006 W

Commonwealth of Virginia
Uniform Water Well Completion Report

1/9/91

Owner Willie Rogers
Address 1469 Whitakers Rd Ches.
MAP Section 62-A Lot 11-A
Phone 482-1023

Tax Map ID
VDH Permit
VWCB Permit
VWCB ID

* Well Data *

Total Depth of Well 42'
Static Water Level 8'
Natural Flow (Y or N)

Depth to Bedrock
Stabilized Water Level
Yield 30 (GPM)

Drilling Method Mud Rotary
Date Completed 1/8/90
Length of Test

Casing
From 0 to 37'
Size 12 Weight 200 PSI
Material PVC

From to
Size Weight
Material

From to
Size Weight
Material

Grouted Zone
From 35 to 42'

From to

From to

Grout
From 0 to 35'

From to

From to

Water Zones or Screened Intervals
From 37 to 42'
Mesh Size .010 Diam. 12"
From to
Mesh Size Diam.

From to
Mesh Size Diam.
From to
Mesh Size Diam.

From to
Mesh Size Diam.
From to
Mesh Size Diam.

* Use Data *

Private Well: Domestic DRK
Public Well: Community

Agricultural
Non Community

Industrial Monitoring

* Drillers Log *
(Use additional sheets if necessary)

Depth		Description of Formation or Sediment	Remarks
0'	8'	Top Soil & clay	well set at 42' due to deeper water being to high in chlorides for drinking water purposes.
8'	22'	gray sand shell & clay	
22'	28'	coarse gray sand w/wood	
28'	37'	Fine gray sand & clay	
37'	42'	Coarse gray sand	

I certify that the information contained here is true and that the well was installed and constructed in accordance with the permit and further that the well complies with all applicable state and local laws, ordinances and laws.

Driller Signature J. Michael Hendricks Date 1/8/90 representing T.E. Gildersleeve

Virginia Contractors License Number 221427 Pump & Well Inc.

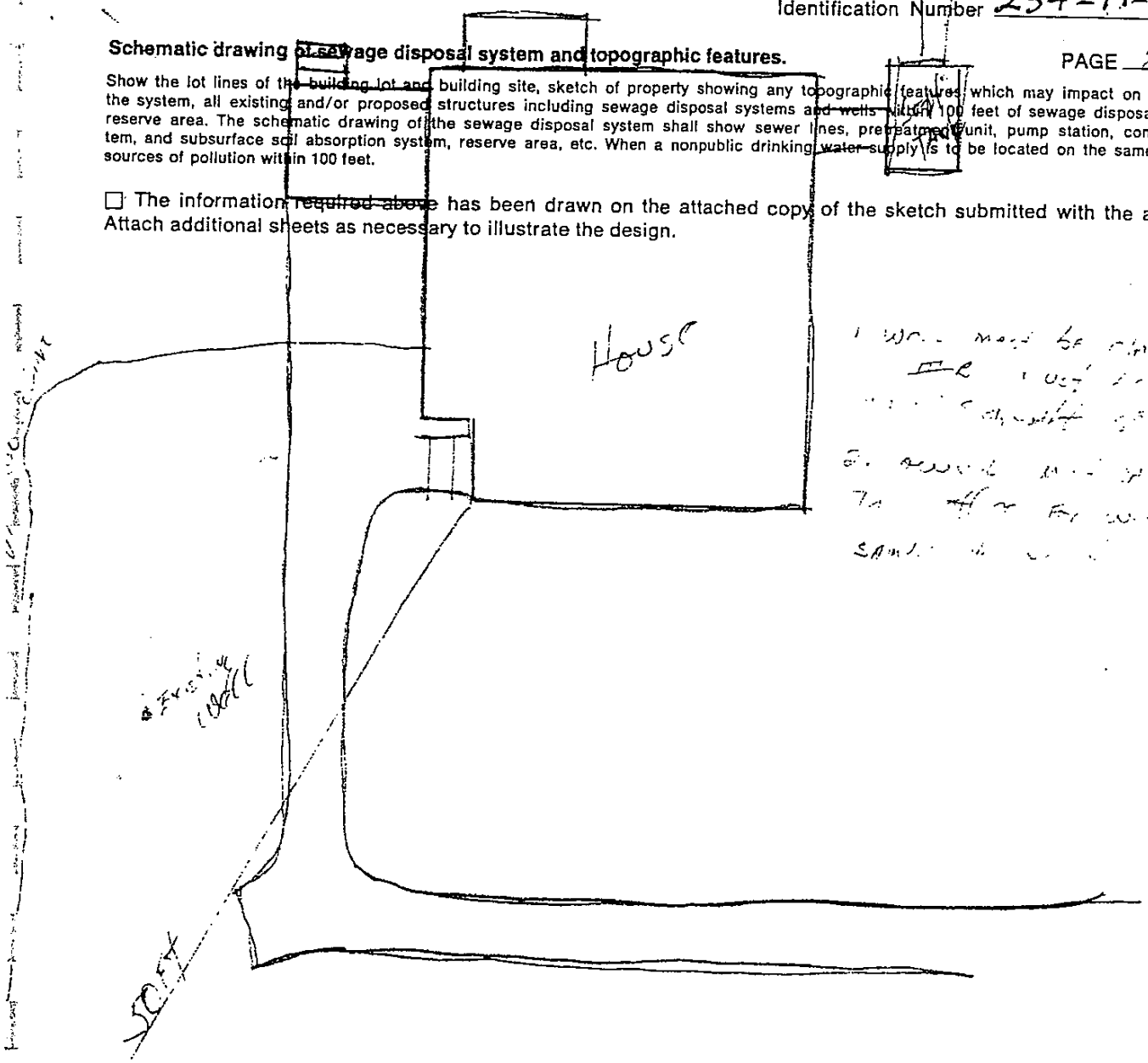
Health Department Identification Number 234-91-0005W

Schematic drawing of sewage disposal system and topographic features.

PAGE 2 OF 2

Show the lot lines of the building lot and building site, sketch of property showing any topographic features which may impact on the design of the system, all existing and/or proposed structures including sewage disposal systems and wells within 100 feet of sewage disposal system and reserve area. The schematic drawing of the sewage disposal system shall show sewer lines, preapproved unit, pump station, conveyance system, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be located on the same lot show all sources of pollution within 100 feet.

☐ The information required above has been drawn on the attached copy of the sketch submitted with the application. Attach additional sheets as necessary to illustrate the design.



The sewage disposal system is to be constructed as specified by the permit ☐ or attached plans and specifications ☐.

This sewage disposal system construction permit is null and void if (a) conditions are changed from those shown on the application (b) conditions are changed from those shown on the construction permit.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon the direction of the Department.

Date: _____ Issued by: _____ Sanitarian

Date: 1-9-91 Reviewed by: W R Hoddmott Supervisory Sanitarian

This Construction Permit Valid until _____

If FHA or VA financing

Reviewed by Date _____ _____ Supervisory Sanitarian Date _____ _____ Regional Sanitarian

C.H.S. 202B Revised 6/84

II-2A

1101 Murray Dr

Drillers Log
(Use additional sheets if necessary)

LAB
5/5/99

Commonwealth of Virginia
Uniform Water Well Completion Report

Owner William Stephenson
Address 1101 Murray Dr
Ches. Va
Phone
Location

Tax Map ID 23Y-99-71Y3
VDH Permit
VWCB Permit
VWCB ID
County

*** Well Data ***

General Information
Drilling Method MUD ROTARY
Depth to Bedrock N/A
Static Water Level 6'
Well Disinfected (Y or N) Y

Date Completed 4-27-99
Yield 5 (GPM)
Stabilized Water Level 28'
Disinfectant Used Chlorine

Total Depth of Well 123'
Length of Test 2 HRS
Natural Flow (Rate) NA
Amount Used ½ GAL

Casing
From 0 to 60'
Size 2" Material PVC
Weight/Schedule 40

From 60' to 110'
Size 1½ Material PVC
Weight/~~Schedule~~ 200 PSI

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

Gravel Pack
From 100 to 123'

From ____ to ____

From ____ to ____

Grout
From 0 to 40'
Bore Hole Size 6"
Type Bensal
Method Pump

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

Water Zones or Screened Intervals
From 110' to 123'
Mesh Size .010 Diam. 1½"
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

*** Use Data ***

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

...EAKE HEALTH DEPARTMENT
...INSPECTED AND APPROVED BASED
...ATER WELL COMPLETION REPORT

J. A. Barnett 8-5-99
SIGNATURE DATE

er Supply and/or Sewage Disposal System Construction Permit

honwealth of Virginia
tment of Health
esapeake Health Department

Health Department Identification Number 234-99-7143
Map Reference

General Information

ater Supply System: New ___ Repair ✓ Public ___ FHA ___ VA ___ Case No. ___
ewage Disposal System: New ___ Repair ___ Expanded ___ Conditional ___ Public ___ septic system
sed on the application for a sewage disposal system construction permit filed in accordance with Section 2.13 of the Sewage Handling and Disposal Regulations and/or Section 2.13 of the Private Well Regulations a onstruction permit is hereby issued to:
wner William B. Stephenson Telephone ___
dress 1101 Murray Dr. For a Type III C Sewage Disposal System or Well to
constructed on/at same
ubdivision Greenhaven Section/Block ___ Lot 1 Actual or estimated water use ___

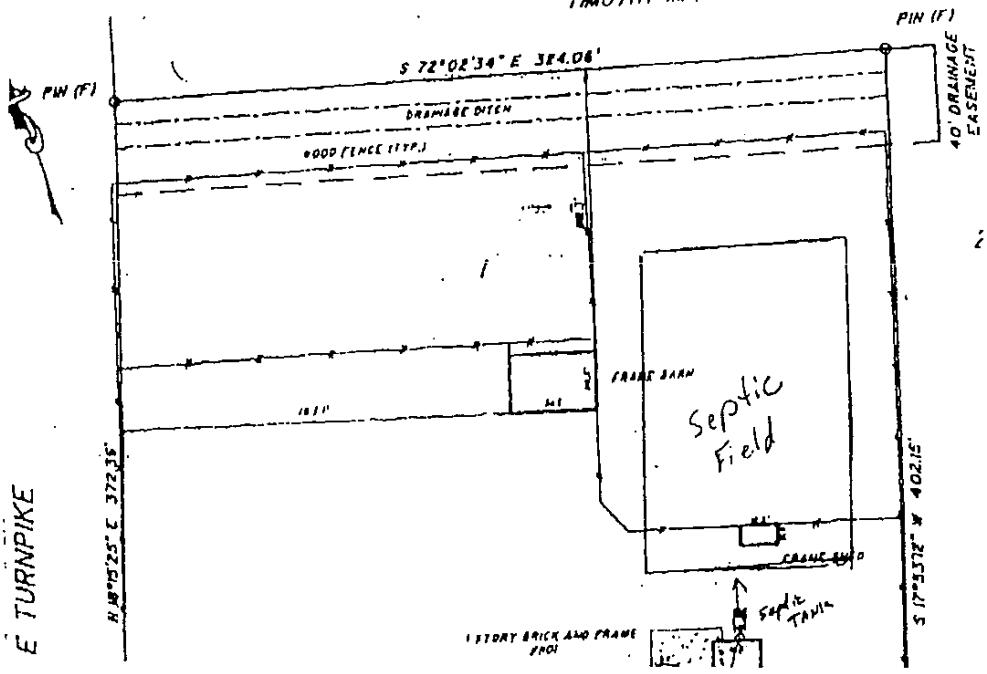
DESIGN	NOTE: SEWAGE DISPOSAL SYSTEM INSPECTION RESULTS
Water supply, existing: (describe) private	Water supply location: Satisfactory yes ☐ no ☐
be Installed; class III C	comments
ased 20' grouted 20'	Completion Report
	G. W. 2 Received: yes ☐ no ☐ not applicable ☐

TIMOTHY M. FALLON LIC. #1659

NOTES

1. ONE (1) CLASS III C WELL FOR DRINKING AS SHOWN.
2. THE WELL MUST BE CASED TO 20' & GROUTED TO 20'.
3. WELL SITE MUST BE PERMANENTLY MARKED.
4. THIS OFFICE MUST BE NOTIFIED WHEN INSTALLATION IS TO TAKE PLACE.
5. A G.W.2 MUST BE SUBMITTED TO THIS OFFICE AFTER COMPLETION OF WELL.
6. OLD WELL MUST BE PROPERLY ABANDONED AND REPORT SUBMITTED.

n ...ter sample must be



CBE
3/21/96

1104 Murray Dr

Commonwealth of Virginia
Uniform Water Well Completion Report

(1104) Owner: MICHAEL CLIFTON
Address: 1106 MURRY DR
CHESAPEAKE, VA
Phone:
Location:

Tax Map ID: Lot 13
VDH Permit: 234-93-0800
VWCB Permit:
VWCB ID:
County:

* Well Data *

General Information
Drilling Method: MUD ROTARY
Depth to Bedrock: N/A
Static Water Level: 8
Well Disinfected (Y or N): Y

Date Completed: 3-4-96
Yield: 18 (GPM)
Stabilized Water Level: 10
Disinfectant Used: Chlorine

Total Depth of Well: 122
Length of Test: 2 HRS
Natural Flow (Rate): N/A
Amount Used: ½ GAL

Casing
From 0 to 112
Size 4" Material PVC
Weight/Schedule 40

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

Gravel Pack
From 107 to 122

From ____ to ____

From ____ to ____

Grout
From 0 to 95
Bore Hole Size 7 1/2"
Type BENTONITE
Method PUMP

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

Water Zones or Screened Intervals
From 112 to 122
Mesh Size .010 Diam. 4"
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

* Use Data *

Private Well: Domestic ____ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

"NEW WELL"

Drillers Log *
*(Use additional sheets if necessary)

1106 MURRY DR.

Depth	Description of Formation or Sediment	Remarks
0-11	GRAY CLAY	
11-42	GRAY SAND	
42-65	GRAY SAND/CLAY/SHELL	
65-85	GRAY CLAY/SHELL	
85-90	GRAY SAND	WATER
90-113	GRAY CLAY	
113-122	FINE SHELL	WATER

I certify that the information contained here is true and that this well was installed and constructed in accordance with the permit and further that the well complies with all applicable state and local regulations, ordinances and laws.

Drilling Contractor Gildersleeve Pump & Well, Inc.
Address 5855-A Hargrove Street
Norfolk, Va. 23502-4636
Phone (804) 461-7867

Drillers Signature Kevin Finney Date 3-4-96
Representing Gildersleeve Pump & Well, Inc.
Virginia Contractors License Number 2701 021427

in GW-2
78-10,000

COMMONWEALTH OF VIRGINIA MS 61C Bl 1 Lot 20

WATER WELL COMPLETION REPORT

• BWCM No. _____

(Certification of Completion/County Permit)

te Water Control Board
O. Box 11143
1 North Hamilton St.
ichmond, Va. 23230

SWCB Permit _____
County Permit _____
Certification of inspecting official:
This well does _____ does not _____
meet code/low requirements.
S. _____
Date _____
For Office Use

unty/City _____

County/City Stamp

Virginia Plane Coordinates
_____ N
_____ E
Latitude & Longitude
_____ N
_____ W
Topo. Map No. _____
Elevation _____ ft.
Formation _____
Lithology _____
River Basin _____
Province _____
Type Logs _____
Cuttings _____
Water Analysis _____
Aquifer Test _____

• Owner (Builder) Don Hansen (John Munday)
• Well Designation or Number _____
Address 1204 Murray
Chesapeake Va
Phone 482 5709

• Drilling Contractor Johnson Well Drilling
Address 2326 Green St.
Chesapeake, Va
Phone 487-0561

Tax Map I.D. No. _____
Subdivision _____
Section 61C
Block 1
Lot 20
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 9/15/86 • Date completed _____ Type rig Rotary

LL DATA: New ✓ Reworked _____ Deepened _____
Total depth 80 ft.
epth to bedrock _____ ft.
ole size (Also include reamed zones)
• 3 inches from 0 to 80 ft.
• _____ inches from _____ to _____ ft.
• _____ inches from _____ to _____ ft.
asing size (I.D.) and material
• 2 inches from 0 to 20 ft.
Material PVC
Wt. per foot _____ or wall thickness Sch 40 in.
• 4 inches from 0 to 80 ft.
Material PVC
Wt. per foot _____ or wall thickness Sch 40 in.
• _____ inches from _____ to _____ ft.
Material _____
Wt. per foot _____ or wall thickness _____ in.
Screen size and mesh for each zone (where applicable)
• 4 inches from 67 to 80 ft.
• Mesh size .010 Type PVC
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
ravel pack
• From 66 to 80 ft.
• From _____ to _____ ft.
out
• From -1 to 20 ft., Type Portland
• From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature _____ °F
• Static water level (unpumped level-measured) 8 ft.
• Stabilized measured pumping water level 10 ft.
• Stabilized yield 12 gpm after 1 hours
Natural Flow: Yes _____ No _____, flow rate: _____ gpm
Comment on quality _____

3. WATER ZONES: From 7 To 45
From 65 To 80, 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 _____

OVER

Owner

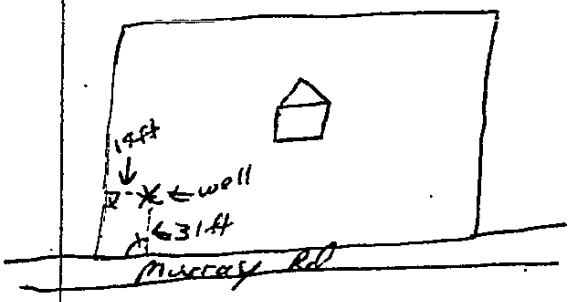
BWCM No.

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.

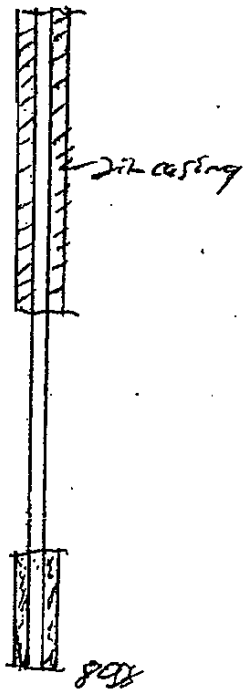
10. DRILLERS LOG (use additional Sheets if necessary)

DEPTH (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	7	clay		
7	45	gray sand		
45	65	clay		
65	80	gray sand		

Well Location



12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



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.

Signature Frederick Johnson (Seal), Date 10/26/80
(Well driller or authorized person)
License No. 033160

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.
408 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
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

CBE 4/16/98
MJ 61C Lot 2

Commonwealth of Virginia
Uniform Water Well Completion Report

Owner Paul J Romeo
Address 2 Green Lawn (Murray Drive)
Ches 23
Phone 331 0866
Location Front yard

Tax Map ID
VDH Permit 234 95 2604
VWCB Permit
VWCB ID
County

*** Well Data ***

General Information
Drilling Method Hyd Pull
Depth to Bedrock 35
Static Water Level 7
Well Disinfected (Y or N) yes

Date Completed 1.23.96
Yield 25 (GPM)
Stabilized Water Level 11
Disinfectant Used Clorine

Total Depth of Well 50
Length of Test 2 hrs
Natural Flow (Rate) No
Amount Used 85 mg/l

Casing
From 0 to 40
Size ____ Material ____
Weight/Schedule 2"

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

Gravel Pack
From 35 to 50

From ____ to ____

From ____ to ____

Grout
From 0 to 20
Bore Hole Size 6"
Type Cement + Bent Seal
Method Pour

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

Water Zones or Screened Intervals
From 40 to 50
Mesh Size .012 Diam. 2"
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

*** Use Data ***

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Remarks
0	clay	
10	clay sand	
10-20	sand clay	
20 30	clay	
30 40	clay, Bed Rock	
40 50	Bed Rock	

I certify that the information contained here is true and that this well was installed and constructed in accordance with the permit and further that the well complies with all applicable state and local regulations, ordinances and laws.

Drilling Contractor Richard Saunders Well Drilling
Address 941 Mt Pleasant Rd
Chesapeake Va 23322
Phone 482 1409

Drillers Signature Richard Saunders Date 1, 23, 96
Representing Richard Saunders Well Drilling
Virginia Contractors License Number 2705 030400

2

...n.GW-2
8-10,000

COMMONWEALTH OF VIRGINIA

WATER WELL COMPLETION REPORT

• BWCM No. 1 Dr

(Certification of Completion/County Permit)

...tate Water Control Board
...P. Box 11143
...1 North Hamilton St.
...ichmond, Va. 23230

SWCB Permit
County Permit
Certification of inspecting official:
This well does ____ does not ____
meet code/low requirements.
S.
Date
For Office Use

...unty/City Chesapeake Va
County/City Stamp

Virginia Plane Coordinates
N
E
Latitude & Longitude
N
W
Topo. Map No.
Elevation ft.
...ormation
...ithology
River Basin
...ovince
...ope Logs
Cuttings
...ater Analysis
...quifer Test

•Owner Eric C. Smith
•Well Designation or Number
Address 520 John Shirley Rd
Chesap Va
Phone 4212244
•Drilling Contractor Joe Sanders Well Drilling
Address 9410 Mt. Pleasant Rd
Chesapeake Va - 23320
Phone 482-1408

~~Tax~~Map I.D. No. 234-90-0131
Subdivision Greenhaven
Section MS-61C
Block BK-2 plat 23
Lot 1 - (23)
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 8-3-90 • Date completed 8-3-90 Type rig Hyd-Drill

...ELL DATA: New ✓ Reworked ____ Deepened ____
...otal depth 43' ft.
Depth to bedrock 35 ft.
...ole size (Also include reamed zones)
• 6 inches from 0 to 43 ft.
• ____ inches from ____ to ____ ft.
• ____ inches from ____ to ____ ft.
...asing size (I.D.) and material
• 2 inches from 0 to 38' ft.
Material PVC
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.
...creen size and mesh for each zone (where applicable)
• 2 inches from 38 to 43 ft.
• Mesh size .012 Type PVC
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type
...ravel pack
• From 35 to 43 ft.
• From ____ to ____ ft.
...rout
• From 0 to 22 ft., Type Cement
• From ____ to ____ ft., Type

2. WATER DATA • Water temperature 63° °F
• Static water level (unpumped level-measured) 5 ft.
• Stabilized measured pumping water level 16 ft.
• Stabilized yield 25 gpm after 2 hours
Natural Flow: Yes ____ No ✓, flow rate: ____ gpm
Comment on quality Good
3. WATER ZONES: From 20 To 25
From 35 To 43, 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. 3/4
• 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) at well head
Electrical disconnect switch on power supply ____
7. DISINFECTION: Well disinfected ✓ yes ____ no
Date 8-3-90, Disinfectant used Clorox
Amount 65 oz/1, Hours used 24
8. ABANDONMENT (where applicable) • yes ____ no ✓
Casing pulled yes ____ no ____ not applicable ____
Plugging grout From ____ to ____ material ____

OVER

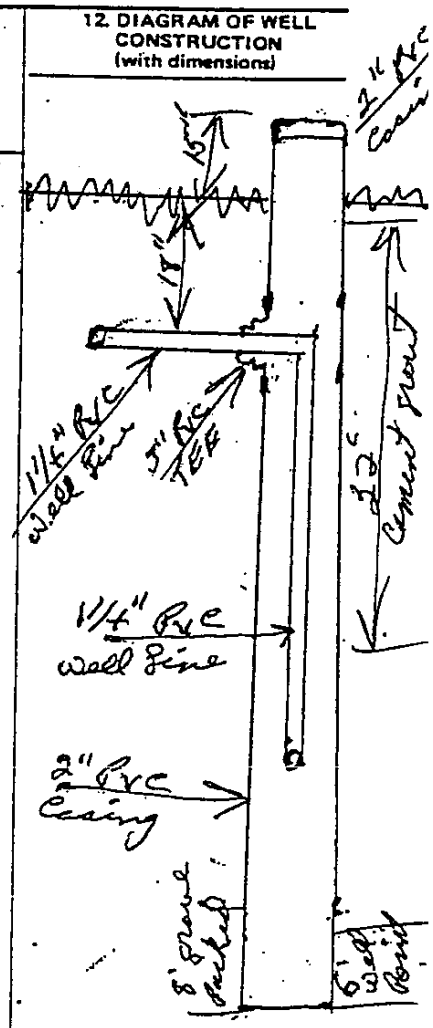
Owner: [illegible] SWCM No. _____

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)

DEPTH (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	10	Clay silt sand		120
10	20	Sand		
20	25	Bed Rock		
25	35	clay silt		
	43	Bed Rock		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



13. Well lot dedicated? _____; Size _____ ft. X _____ ft.; Well house? _____
Distance to nearest pollutant source _____ ft., Type _____
Distance to nearest property line _____ ft., Building 100 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.

Signature [illegible] (Seal), Date 8-6-90
(Well driller or authorized person)
License No. 002801

te Water Control Board Regional Offices

ley Reg. Off.
16 North Main Street
O. Box 268
gewater, Va. 22812
828-2595

outhwest Reg. Off.
08 East Main Street
. Box 476
ngdon, Va. 24210
628-5183

est Central Reg. Off.
ecutive Park
2 Peters Creek Road
noke, Va. 24019
- 982 - 7432

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

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

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

1300 Murry Dr.

...n GW-2
...78-10,000

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT

• BWCM No. _____

(Certification of Completion/County Permit)

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

SWCB Permit _____
County Permit _____
Certification of inspecting official:
This well does _____ does not _____
meet code/low requirements.
S. _____
Date _____
For Office Use

County/City: Chesapeake Va
County/City Stamp

Virginia Plane Coordinates
_____ N
_____ E
Latitude & Longitude
_____ N
_____ W
• Topo. Map No. _____
Elevation _____ ft.
• Formation _____
• Lithology _____
River Basin _____
Province _____
• Type Logs _____
Cuttings _____
Water Analysis _____
• Aquifer Test _____

• Owner: Eric C Smith
• Well Designation or Number: 1300 Murry Drive
Address: 229 Mt Pleasant Rd
Chesapeake Va
Phone: 4212244
• Drilling Contractor: Joe Saunders - Well Drilling
Address: 941 Mt Pleasant Rd
Chesapeake Va 23320
Phone: 4821408

Tax Map I.D. No. 234-90-0050
Subdivision: Green Haven
Section: ~~Green~~ 61C
Block: 61G
Lot: ~~8~~ 13 & 35 Da
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 5-10-90 • Date completed 5-10-90 Type rig Hyd-Drill

WELL DATA: New ✓ Reworked _____ Deepened _____
• Total depth 80 ft.
Depth to bedrock 70 ft.
Hole size (Also include reamed zones)
• 6 inches from 0 to 80 ft.
• _____ inches from _____ to _____ ft.
• _____ inches from _____ to _____ ft.
• Casing size (I.D.) and material
• 2 inches from 0 to 75 ft.
Material PVC
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)
• 2 inches from 75 to 80 ft.
• Mesh size .012 Type PVC
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
Gravel pack
• From 70 to 80 ft.
• From _____ to _____ ft
Grout
• From 0 to 22 ft., Type Cement
• From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature 62° °F
• Static water level (unpumped level-measured) 18 ft.
• Stabilized measured pumping water level 26 ft.
• Stabilized yield 14 gpm after 2 hours
Natural Flow: Yes _____ No ✓, flow rate _____ gpm
Comment on quality good

3. WATER ZONES: From 30 To 40
From 70 To 80 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. 3/4
• Intake depth _____ • Capacity _____ at _____ head

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

7. DISINFECTION: Well disinfected ✓ yes _____ no
Date 5-10-90, Disinfectant used chlorine
Amount 65/49/1, Hours used 24

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

OVER

Owner Eric Smith

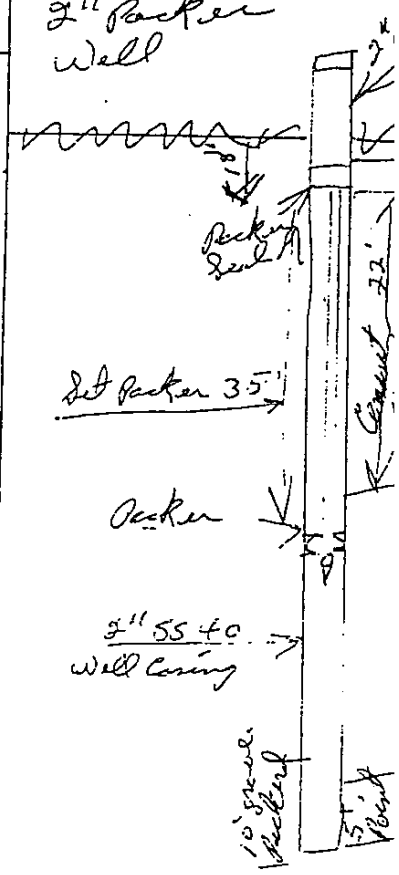
BWCM No. _____

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)

DEPTH (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	10	clay silt sand		120
10	20	silt sand		
20	30	silt sand clay		
30	40	Bed Rock		
40	50	clay		
50	60	clay		
60	70	silt sand		
70	80	Bedrock		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



13. Well lot dedicated? _____. Size _____ ft. X _____ ft., Well house? _____
Distance to nearest pollutant source _____ ft., Type _____
Distance to nearest property line _____ ft., Building 100 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.

Signature Joe Sandoe (Seal), Date 5-10-90
(Well driller or authorized person)

License No. 9002801

State Water Control Board Regional Offices

Valley Reg. Off.
[illegible] 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.
[illegible] 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
[illegible]12 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

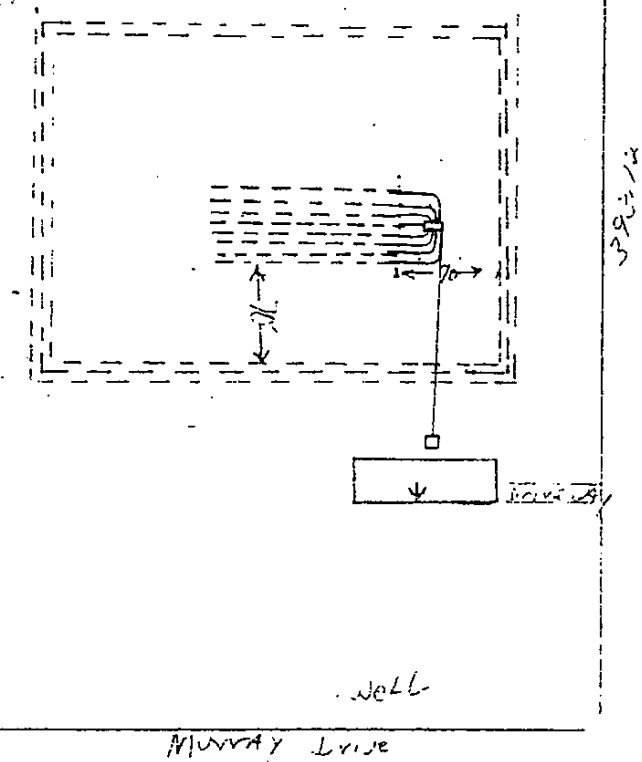
ıematic drawing of sewage disposal system and topographic features. PAGE 2 OF 2

ıow the lot lines of the building lot and building site, sketch of property showing any topographic features which may impact on the design of system, all existing and/or proposed structures including sewage disposal systems and wells within 100 feet of sewage disposal system and ırve area. The schematic drawing of the sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance sys-, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be located on the same lot show all ıurces of pollution within 100 feet.

1" = 100'

The information required above has been drawn on the attached copy of the sketch submitted with the application. ttach additional sheets as necessary to illustrate the design.

1. Drainfield will require 8-100 ft lines 2 ft wide.
2. Drainfield must be in area as shown on soil drainage management plan.
3. Well must be at least 100 ft from house foundations & drainfields.
4. Drainfield area must be landscaped and graded to comply with the soil drainage management plan.
5. Designed for three (3) bedrooms



ıe sewage disposal system is to be constructed as specified by the permit ☒ or attached plans and specifications ☐.

his sewage disposal system construction permit is null and void if (a) conditions are changed from those shown on the application (b) condi- ıs are changed from those shown on the construction permit.

o part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department r unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncov- d, if necessary, upon the direction of the Department.

ate: 5-4-90 Issued by: Curtis L. Cate
Sanitarian

ate: 5-7-90 Reviewed by: W R Holdsworth
Supervisory Sanitarian

This Construction Permit Valid until 1994

If FHA or VA financing

'viewed by Date _____ _____ Date _____ _____
Supervisory Sanitarian Regional Sanitarian

.H.S. 202B Revised 6/84

11-2A

Form GW-2
1978-10,000

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT

(Certification of Completion/County Permit)

• BWCM No. _____

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

SWCB Permit _____
County Permit _____
Certification of inspecting official:
This well does ____ does not ____
meet code/low requirements.
S. _____
Date _____
For Office Use

County/City _____

County/City Stamp

Virginia Plane Coordinates
____ N
____ E
Latitude & Longitude
____ N
____ W
Topo. Map No. ____
• Elevation ____ ft.
• Formation ____
Lithology ____
River Basin ____
• Province ____
Type Logs ____
Cuttings ____
• Water Analysis ____
• Aquifer Test ____

• Owner WHITLEY
• Well Designation or Number ____
Address 1305 MURRAY DR
CHESAPEAKE
Phone ____

• Drilling Contractor PINKSTON PUMP & WELL CO
Address 2525 ONTRADA DR
VIRGINIA BEACH VA
Phone 804-426-2018

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 11/21 • Date completed 11/21/86 Type rig HRB · TOP DRIVE

WELL DATA: New ✓ Reworked ____ Deepened ____
Total depth 42 ft.
Depth to bedrock — ft.
• Hole size (Also include reamed zones)
• 4½ inches from 0 to 42 ft.
• ____ inches from ____ to ____ ft.
• ____ inches from ____ to ____ ft.
• Casing size (I.D.) and material
• 2 inches from 0 to 20 ft.
Material ____
Wt. per foot ____ or wall thickness ____ in.
• 1¼ inches from 20 to 32 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)
• 1¼ inches from 32 to 42 ft.
• Mesh size .010 Type PVC
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• Gravel pack
• From 30 to 42 ft.
• From ____ to ____ ft.
• Grout
• From 0 to 20 ft., Type PORTLAND
• From ____ to ____ ft., Type ____

2. WATER DATA • Water temperature 60 °F
• Static water level (unpumped level-measured) 8 ft.
• Stabilized measured pumping water level 10 ft.
• Stabilized yield 25 gpm after 1½ hours
Natural Flow: Yes ____ No ✓, flow rate: ____ gpm
Comment on quality 20 FE
3. WATER ZONES: From 20 To 42
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 wellseal
Pressure tank PLUMBER 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 11/21/86 Disinfectant used CHLORINE DIO
Amount 4 OZ, Hours used 48
8. ABANDONMENT (where applicable) yes ____ no ____
Casing pulled yes ____ no ____ not applicable ____
Plugging grout From ____ to ____ material ____

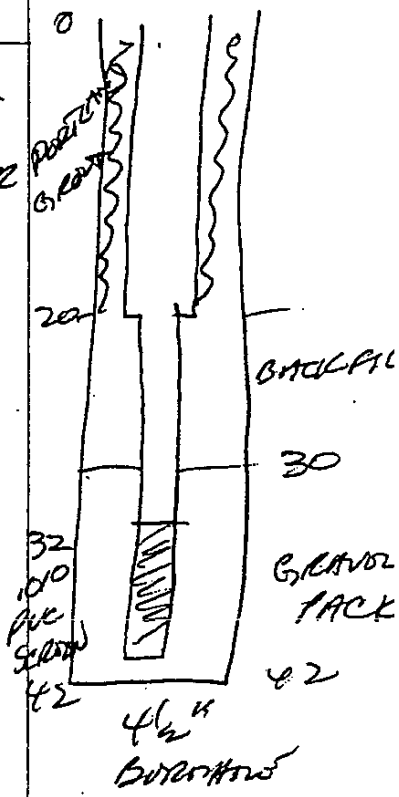
Owner _____ BWCM No. _____

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)

DEPTH (feet) From	DEPTH (feet) To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	12	TOP SOIL CLAY & SAND		1 HR
12	20	FINE SAND		
20	42	CORSE SAND GRAVEL		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



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.

Signature [illegible] (Seal), Date 11/21/84
(Well driller or authorized person)
License No. 030472

State Water Control Board Regional Offices

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

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

West Central Reg. Off.
Executive Park
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

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

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

Form GW-2
1978-10,000

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT

• BWCM No. _____

(Certification of Completion/County Permit)

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

SWCB Permit _____
County Permit _____

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

For Office Use

County/City _____

County/City Stamp

Virginia Plane Coordinates
_____ N
_____ E
Latitude & Longitude
_____ N
_____ W
Topo. Map No. _____
Elevation _____ ft.
• Formation _____
Lithology _____
River Basin _____
Province _____
Type Logs _____
Cuttings _____
Water Analysis _____
Aquifer Test _____

• Owner WHITLOW
• Well Designation or Number _____
Address 1305 MURRAY DR
CHESAPEAKE
Phone _____

• Drilling Contractor PINKSTON PUMP & WELL CO
Address 2525 ONTRADA DR
VIRGINIA BEACH VA
Phone 804-426-2018

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 11/21 • Date completed 11/21/86 Type rig HAND TOP DRIVE

WELL DATA: New ✓ Reworked ____ Deepened ____
Total depth 42 ft.
Depth to bedrock — ft.
Hole size (Also include reamed zones)
• 4½ inches from 0 to 42 ft.
• ____ inches from ____ to ____ ft.
• ____ inches from ____ to ____ ft.
Casing size (I.D.) and material
• 2 inches from 0 to 20 ft.
Material _____
Wt. per foot _____ or wall thickness _____ in.
• 1¼ inches from 20 to 32 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)
• 1¼ inches from 32 to 42 ft.
• Mesh size .010 Type PVC
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
Gravel pack
• From 30 to 42 ft.
• From ____ to ____ ft.
Grout
• From 0 to 20, Type PORTLAND
• From ____ to ____ ft., Type ____

2. WATER DATA • Water temperature 60 °F
• Static water level (unpumped level-measured) 8 ft.
• Stabilized measured pumping water level 10 ft.
• Stabilized yield 25 gpm after 1½ hours
Natural Flow: Yes ____ No ✓, flow rate ____ gpm
Comment on quality 2.0 Fe

3. WATER ZONES: From 20 To 42
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 wellseal ____
Pressure tank ✓ Gal., Loc. Pump Bar
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 11/21/86, Disinfectant used CHLORINE PELLETS
Amount 4 OZ, Hours used 48

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

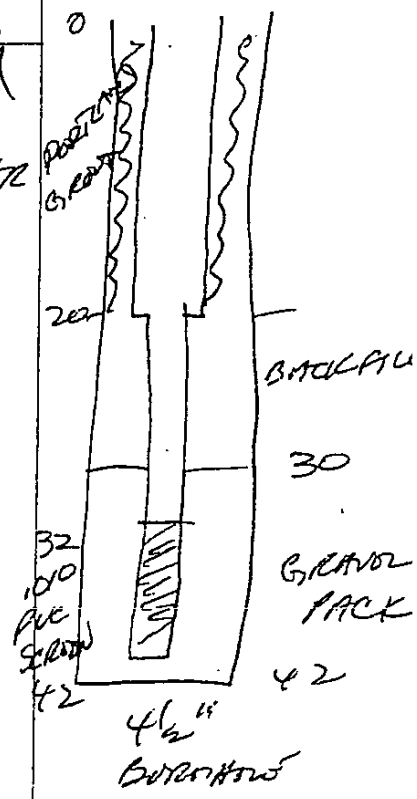
Owner _____ BWCM No. _____

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)

DEPTH (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	12	TOP SOIL CLAY + SAND		1 HR
12	20	FINE SAND		
20	42	COARSE SAND GRAVEL		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



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.

Signature [illegible] (Seal), Date 11/21/86
(Well driller or authorized person)
License No. 030472

State Water Control Board Regional Offices

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

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

West Central Reg. Off.
Executive Park
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

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

Northern Virginia Reg. Off.
9515 Cherokee Avenue
Suite 404
Alexandria, Va. 22312
703-750-9111

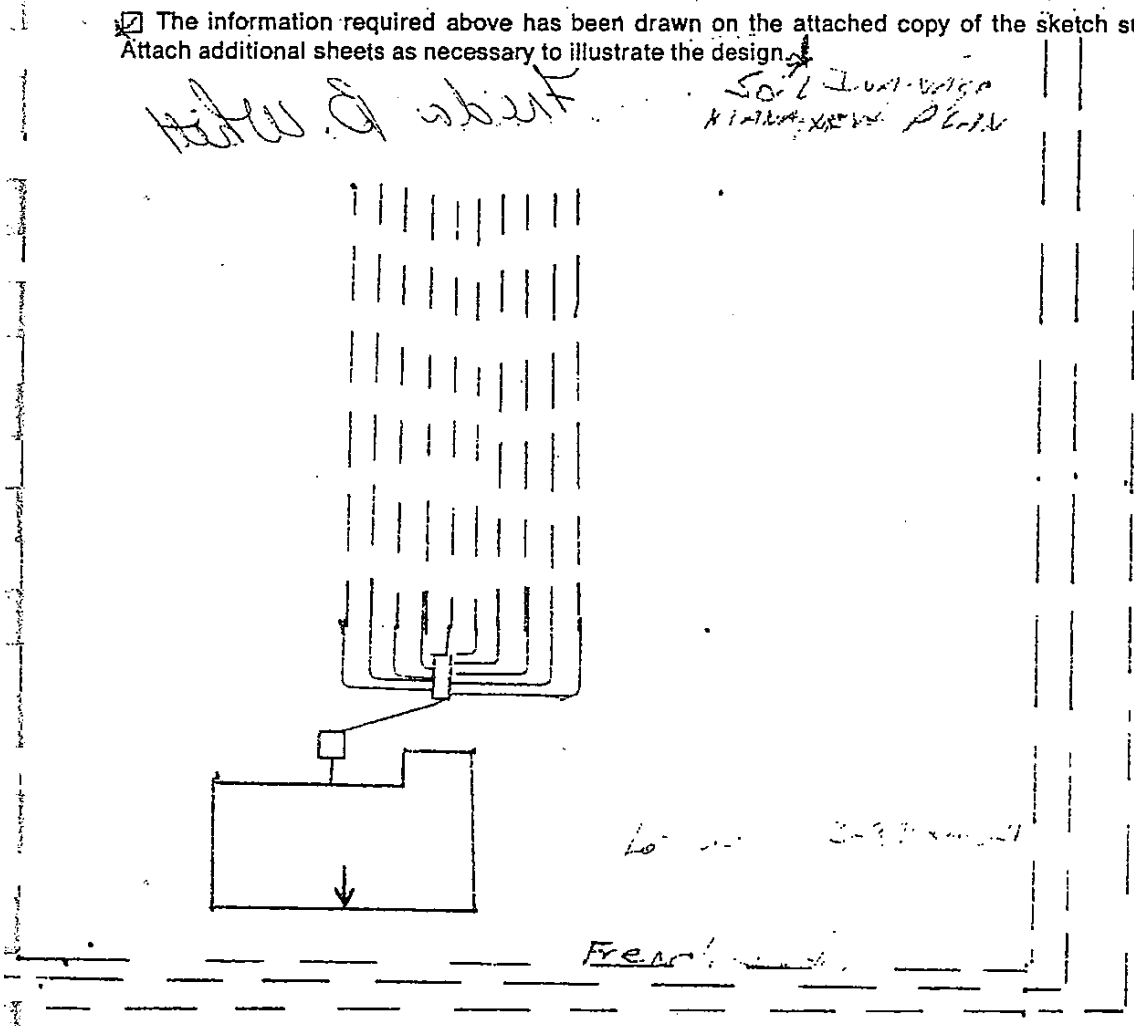
Health Department
Identification Number _____

Schematic drawing of sewage disposal system and topographic features. PAGE 1 OF 2

Show the lot lines of the building lot and building site, sketch of property showing any topographic features which may impact on the design of the system, all existing and/or proposed structures including sewage disposal systems and wells within 100 feet of sewage disposal system and reserve area. The schematic drawing of the sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance system, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be located on the same lot show all sources of pollution within 100 feet.

Not To Scale

☑ The information required above has been drawn on the attached copy of the sketch submitted with the application. Attach additional sheets as necessary to illustrate the design.



1. Drain Field will Require 10-100 ft Line 2 ft wide.
2. Septic tank will Require 900 Gal. Cap.
3. Distribution box must have 10 ft
4. [illegible] as shown on soil [illegible] plan, landscape [illegible] grading must comply with plan & be approved by [illegible] office [illegible]
5. well must [illegible]
6. Keep all [illegible]

The sewage disposal system is to be constructed as specified by the permit ☑ or attached plans and specifications ☐.

This sewage disposal system construction permit is null and void if (a) conditions are changed from those shown on the application (b) conditions are changed from those shown on the construction permit.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon the direction of the Department.

Date: 5-29-86 Issued by: [signature] Sanitarian

Date: 5-29-86 Reviewed by: [signature] Supervisory Sanitarian

This Construction Permit Valid until 11-86

If FHA or VA financing

Reviewed by Date _____ _____ Supervisory Sanitarian Date _____ _____ Regional Sanitarian

C.H.S. 202B Revised 6/84

II-2A

1313 61 M
lot 28

Commonwealth of Virginia
Uniform Water Well Completion Report

Owner GEARLD T. KANTER
Address 1346 BOXWOOD CIRCLE NORFOLK
1313 MURRAY LOT (28) (6)
Phone 588-7184
Location 234 - GREEN HAVEN (MAP

Tax Map ID
VDH Permit 234-94-0067
VWCB Permit
VWCB ID
County

* Well Data *

General Information

Drilling Method Rotary
Depth to Bedrock 70
Static Water Level 15
Well Disinfected (Y or N) Yes

Date Completed 12-27-94
Yield 20 (GPM)
Stabilized Water Level 20 15
Disinfectant Used Chlorine tablet

Total Depth of Well 80
Length of Test 1:45
Natural Flow (Rate) 20
Amount Used all

Casing

From 80 to 0
Size 2" Material PVC
Weight/Schedule 40

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

Gravel Pack

From 80 to 50

From ____ to ____

From ____ to ____

Grout

From 50 to 0
Bore Hole Size 5 1/2
Type Bensea 1
Method Pour

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

Water Zones or Screened Intervals

From 70 to 80
Mesh Size 10,000 Diam. 1 1/4
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

* Use Data *

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

Drillers Log *
(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Remarks
80 FT	TOP SOIL SAND HEAVY GRAY SAND CLAY CLAY SHELL CLAY SHELL SAND SHELL SAND SHELL 10 FT	

I certify that the information contained here is true and that this well was installed and constructed in accordance with the
that the well complies with all applicable state and local regulations, ordinances and laws.

Name Virginia Well Service
Address 82 A Lynchburg Expwy. Rt 114
Lot Bedford, Va. 24452
Phone 468-1484

Drillers Signature Tony Battell Date _____ Representing _____

Virginia Contractors License Number 2705-021830

Health Department
Identification Number 234-94-0067

Schematic drawing of sewage disposal and/or water supply system and topographic features.

Show the lot lines of the building site, sketch of property showing any topographic features which may impact on the design of the well or sewage disposal system, including existing and/or proposed structures and sewage disposal systems and wells within 200 feet. The schematic drawing of the well site or area and/or sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance system, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be permitted, show all sources of pollution within 200 feet.

☐ The information required above has been drawn on the attached copy of the sketch submitted with the application. Attach additional sheets as necessary to illustrate the design.

SCALE - 1" = 100'

8 --2' x 100' Drainfield Trench Lines.

Maximum Depth of Drainfield Trenches- 18".

Grade Boards Required

(3) THREE Bedrooms Only.

Comply with Soil Drainage Managment Plan.

Final grade must be completed and inspected before this office can issue an operation permit.

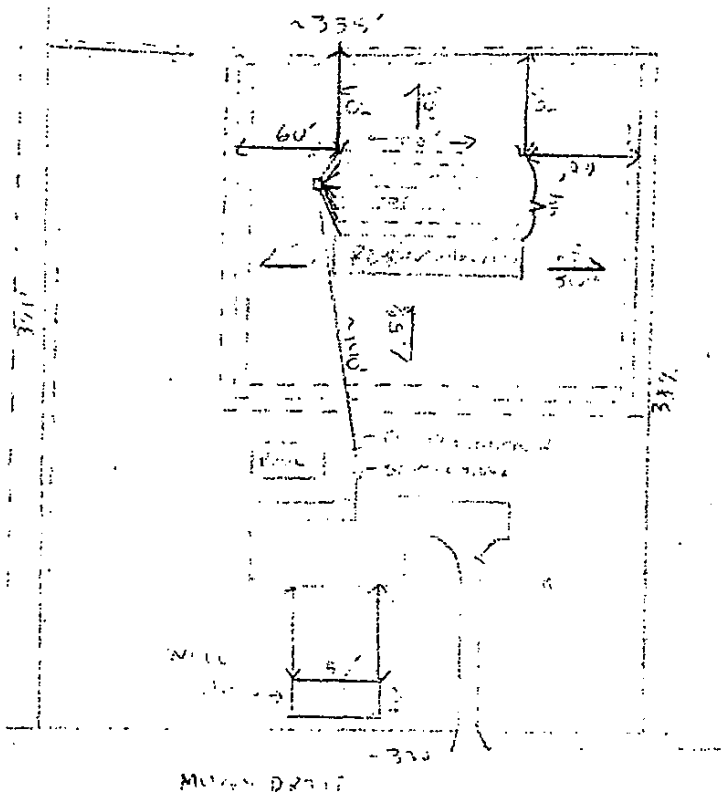
Keep well 50' from house foundation & 50' from septic tank & pump chamber.

One (1) Class III C well to be installed for drinking water. Well must be cased and grouted to 20' Minimum.

Well Driller must submit a GW2 to this office.

Pump Chamber to be installed in accordance to section 4.23B. See Page 3 of 3.

Owner must arrange to have a water sample taken and tested by an approved laboratory.



This sewage disposal system and/or water supply is to be constructed as specified by the permit X or attached plans and specifications X .

This sewage disposal system and/or well construction permit is null and void if (a) conditions are changed from those shown on the application (b) conditions are changed from those shown on the construction permit.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon the direction of the Department.

547 7213 or 5412

Date: 9/27/94 **Issued by:** [signature] REHS
Sanitarian

Date: 9-29-94 **Reviewed by:** [signature]
Supervisory Sanitarian

This Construction Permit Valid until MARCH 1996

If FHA or VA financing

Reviewed by Date _____ _____ **Date** _____ _____
Supervisory Sanitarian Regional Sanitarian

H.S. 202B

FILE COPY

Commonwealth of Virginia
Uniform Water Well Completion Report

Owner: Gerald Kanter
Address: 1313 Murray Dr
Ches
Phone:
Location:

Tax Map ID: 61 A 1-1 28
VDH Permit:
VWCB Permit:
VWCB ID: 234-94-0067
County:

*** Well Data ***

General Information

Drilling Method: Rotary
Depth to Bedrock: 70'
Static Water Level: 15'
Well Disinfected (Y or N): Y

Date Completed: 12-27-94
Yield: 20 (GPM)
Stabilized Water Level: 16'
Disinfectant Used: Chlorine

Total Depth of Well: 80
Length of Test: 20 min
Natural Flow (Rate): 16 Gpm
Amount Used: 320

Casing

From 70 to 0
Size 2" Material PVC
Weight/Schedule 40

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

Gravel Pack

From 80 to 60

From ____ to ____

From ____ to ____

Grout

From 60 to 0
Bore Hole Size 5 1/4
Type Hole Plug
Method Pour

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

Water Zones or Screened Intervals

From 80 to 70
Mesh Size 10 mm Diam. 1 1/4
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

*** Use Data ***

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

Drillers Log *
(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Remarks
10	clay	
20	Sand	
	clay	
70		
	Shell	
80		

I certify that the information contained here is true and that this well was installed and constructed in accordance with the pe
that the well complies with all applicable state and local regulations, ordinances and laws.

Name VIRGINIA WELLSERVICE
Address 829 LYNNHAVEN PKWY #114
VA BEACH, VA 23452
Phone 468-1984

Drillers Signature [signature] Date 3-30-95 Representing Va Well

Virginia Contractors License Number 2705-024830

Lot 28

Commonwealth of Virginia
Uniform Water Well Completion Report

Owner GERALD T. KANTER
Address 1346 BOXWOOD CIRCLE NORFOLK
1313 MURRAY LOT (28) (6)
Phone 588-7164
Location 234 - GREEN HAVEN (MAP

Tax Map ID
VDH Permit 234-94-0067
VWCB Permit
VWCB ID
County

*** Well Data ***

General Information

Drilling Method Rotary
Depth to Bedrock 70
Static Water Level 15
Well Disinfected (Y or N) Yes

Date Completed 12-27-94
Yield 20 (GPM)
Stabilized Water Level 20 15
Disinfectant Used Chlorine tablet

Total Depth of Well 80
Length of Test 1:45
Natural Flow (Rate) 20
Amount Used all

Casing

From 80 to 0
Size 2" Material PVC
Weight/Schedule 40

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

Gravel Pack

From 80 to 50

From ____ to ____

From ____ to ____

Grout

From 50 to 0
Bore Hole Size 5 1/2
Type Bensea 1
Method Pour

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

Water Zones or Screened Intervals

From 70 to 80
Mesh Size 10,000 Diam. 1 1/4
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

*** Use Data ***

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

Drillers Log *
(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Remarks
80 FT		
TOP SOIL		
SAND HEAVY		
GRAY SAND		
CLAY		
CLAY SHELL		
CLAY SHELL		
SAND SHELL		
SAND SHELL		
10 FT		

I certify that the information contained here is true and that this well was installed and constructed in accordance with the that the well complies with all applicable state and local regulations, ordinances and laws.

Name Virginia Well Service
Address 8207 Lynchburg Hwy. Rt 114
Va. Bedford, Va. 24523
Phone 468-1484

Drillers Signature Tony Bell Date _____ Representing _____

Virginia Contractors License Number 2705-021830

Commonwealth of Virginia
Uniform Water Well Completion Report

Owner Gerald Kanter
Address 1313 Murray Dr
Chr
Phone
Location

Tax Map ID 61 A 1 28
VDH Permit
VWCB Permit
VWCB ID 234-94-006
County

*** Well Data ***

General Information

Drilling Method Rotary
Depth to Bedrock 70'
Static Water Level 15'
Well Disinfected (Y or N) Y

Date Completed 12-27-94
Yield 20 (GPM)
Stabilized Water Level 16'
Disinfectant Used Chlorine

Total Depth of Well 80
Length of Test 20 min
Natural Flow (Rate) 16 Gpm
Amount Used 320

Casing

From 70 to 0
Size 2" Material PVC
Weight/Schedule 40

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

Gravel Pack

From 80 to 60

From ____ to ____

From ____ to ____

Grout

From 60 to 0
Bore Hole Size 5 1/4
Type Hole Plug
Method Pour

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

Water Zones or Screened Intervals

From 80 to 70
Mesh Size 10,000 Diam. 1 1/4
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

*** Use Data ***

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

Drillers Log *
(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Remarks
10	clay	
20	Sand	
70	clay	
80	Shell	

I certify that the information contained here is true and that this well was installed and constructed in accordance with the pr
that the well complies with all applicable state and local regulations, ordinances and laws.

Name VIRGINIA WELLSERVICE
Address 829 LYNNHAVEN PKWY #114
VA BEACH, VA 23452
Phone 468-1484

Drillers Signature [signature] Date 3-30-95 Representing Va Well

Virginia Contractors License Number 2705-021830

...n GW-2
1978-10,000

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT

• BWCM No. _____

(Certification of Completion/County Permit)

...te Water Control Board
...O. Box 11143
...111 North Hamilton St.
...hmond, Va. 23230

SWCB Permit _____
County Permit _____
Certification of inspecting official:
This well does _____ does not _____
meet code/low requirements.
S. _____
Date _____
For Office Use

County/City _____

County/City Stamp

...irginia Plane Coordinates
_____ N
_____ E
...atitude & Longitude
_____ N
_____ W
...opo. Map No. _____
...levation _____ ft.
Formation _____
...ithology _____
...iver Basin _____
Province _____
Type Logs _____
...uttings _____
...ater Analysis _____
Aquifer Test _____

• Owner Henry Schepers
• Well Designation or Number _____
Address 1316 Murray Ave
Chesapeake Va
Phone _____

• Drilling Contractor L.E. STILLMAN SR
Address 1513 HAWTHORNE DR
Chesapeake Va
Phone 420 0001

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

WELL LOCATION: 100 (feet/~~miles~~) North (direction) of house
and 75 feet/miles West (direction) of East property line
(If possible please include map showing location marked)

Date started 6-9-86 • Date completed 6-10-86 Type rig Mud Rotary

WELL DATA: New ✓ Reworked _____ Deepened _____
Total depth 130 ft.
...epth to bedrock _____ ft.
...ole size (Also include reamed zones)
• 6 inches from 0 to 20 ft.
• 3 inches from 20 to 130 ft.
• _____ inches from _____ to _____ ft.
Casing size (I.D.) and material
• 2 inches from +1 to [redacted]70 ft.
Material PVC
Wt. per foot _____ or wall thickness SCh40 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.
...creen size and mesh for each zone (where applicable)
• 1 1/4 inches from 70 to 130 ft.
• Mesh size 008 Type PVC
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
...vel pack
• From 70 to 130 ft.
• From _____ to _____ ft.
...t
• From 0 to 20 ft., Type Neat
• From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature 59 °F
• Static water level (unpumped level-measured) 8 ft
• Stabilized measured pumping water level 15 ft
• Stabilized yield 20 gpm after 4 hours
Natural Flow Yes _____ No ✓, flow rate _____ gpm
Comment on quality _____

3. WATER ZONES: From 15 To 25
From 40 To 50 From 70 To 130
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 6-9-86, Disinfectant used Chlorine
Amount 200 PPM, Hours used 24

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

Owner Henry Scheiler

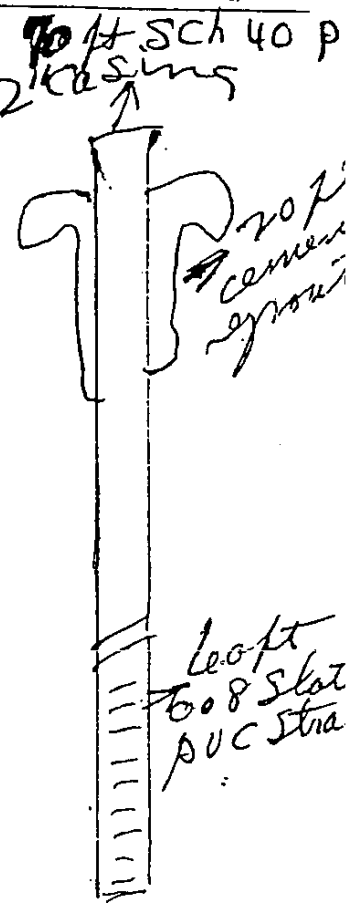
BWCM No. _____

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)

DEPTH (feet) From	DEPTH (feet) To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	5	Top Soil + clay		
5	15	Clay		
15	25	fine grey Sand		
25	40	clay Black		
40	50	Sand Coarse grey		
50	70	fine Sand + Clay		
70	130	Shell + fine Salt + pepper Sand		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



13. Well lot dedicated? _____ Size _____ ft. X _____ ft.; Well house? _____
Distance to nearest pollutant source 150 ft., Type Septic tank
Distance to nearest property line 10 ft., Building 100 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.

Signature L E Stillman (Seal), Date 6-10-86
(Well driller or authorized person)
License No. 009852

State Water Control Board Regional Offices

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

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

West Central Reg. Off.
Executive Park
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

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

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

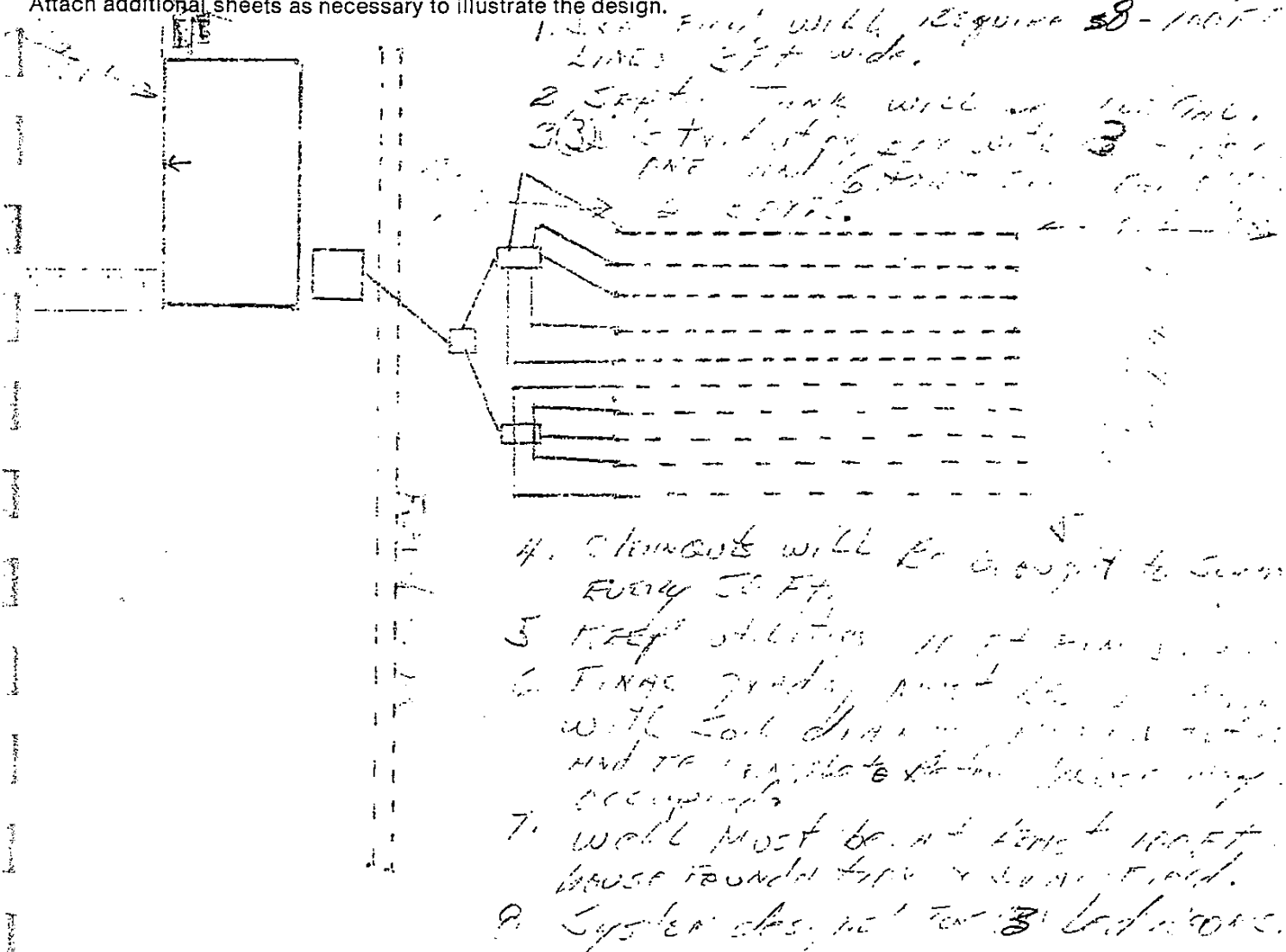
Identification Number _____

Schematic drawing of sewage disposal system and topographic features. PAGE 1 OF _

Show the lot lines of the building lot and building site, sketch of property showing any topographic features which may impact on the desigr the system, all existing and/or proposed structures including sewage disposal systems and wells within 100 feet of sewage disposal system reserve area. The schematic drawing of the sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance tem, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be located on the same lot show sources of pollution within 100 feet.

NOT TO SCALE

☐ The information required above has been drawn on the attached copy of the sketch submitted with the applicati Attach additional sheets as necessary to illustrate the design.



The sewage disposal system is to be constructed as specified by the permit ☐ or attached plans and specifications ☐

This sewage disposal system construction permit is null and void if (a) conditions are changed from those shown on the application (b) conc tions are changed from those shown on the construction permit. If construction has not commenced within ~~18~~ 30 months of date of issuance, tl construction permit must be revalidated.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health departme or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be unco ered, if necessary, upon the direction of the Department.

Date: 8-22-84 Issued by: [signature]
Sanitarian

Date: 8-22-84 Reviewed by: WR Hoadmott
Supervisory Sanitarian

If FHA or VA financing

Reviewed by Date _____ _____ Date _____ _____
Supervisory Sanitarian Regional Sanitarian

C.H.S. 202B Revised 4/83

n GW-2
1:10,000

COMMONWEALTH OF VIRGINIA

WATER WELL COMPLETION REPORT

• BWCM No. _____

(Certification of Completion/County Permit)

Water Control Board
Box 11143
North Hamilton St.
chmond, Va. 23230

SWCB Permit _____
County Permit _____
Certification of inspecting official:
This well does _____ does not _____
meet code/low requirements.
S. _____
Date _____
For Office Use

nty/City _____

County/City Stamp

Virginia Plane Coordinates
_____ N
_____ E

Latitude & Longitude
_____ N
_____ W

Topo. Map No. _____
Elevation _____ ft.
rmation _____
Lithology _____
River Basin _____
ovince _____
pe Logs _____
Cuttings _____
ter Analysis _____
uifer Test _____

• Owner Henry Schepers
• Well Designation or Number _____
Address 1316 Murray Ave
Chesapeake Va
Phone _____

• Drilling Contractor L.E. Stillman Sr
Address 1513 Hawthorne Dr
Chesapeake Va
Phone 420 0001

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

WELL LOCATION: 100 (feet/~~miles~~ North direction) of house
and 75 feet/miles West (direction) of East property line
(If possible please include map showing location marked)

Date started 6-9-86 • Date completed 6-10-86 Type rig Mud Rotary

LL DATA: New ✓ Reworked _____ Deepened _____
otal depth 130 ft.
Depth to bedrock _____ ft.
ole size (Also include reamed zones)
• 6 inches from 0 to 20 ft.
• 3 inches from 20 to 130 ft.
• _____ inches from _____ to _____ ft.
sing size (I.D.) and material
• 2 inches from +1 to 70 ft.
Material PVC
Wt per foot _____ or wall thickness Sch40 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.
reen size and mesh for each zone (where applicable)
• 1¼ inches from 70 to 130 ft.
• Mesh size .008 Type PVC
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
ivel pack
• From 70 to 130 ft.
• From _____ to _____ ft.
rout
• From 0 to 20 ft., Type neat
• From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature 59 °F
• Static water level (unpumped level-measured) 8 ft
• Stabilized measured pumping water level 15 ft
• Stabilized yield 20 gpm after 4 hours
Natural Flow Yes _____ No ✓, flow rate _____ gpm
Comment on quality _____

3. WATER ZONES: From 15 To 25
From 40 To 50 From 70 To 130
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 6-9-86, Disinfectant used Chlorine
Amount 200 PPM, Hours used 24

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

OVER

Owner Henry Scheelers

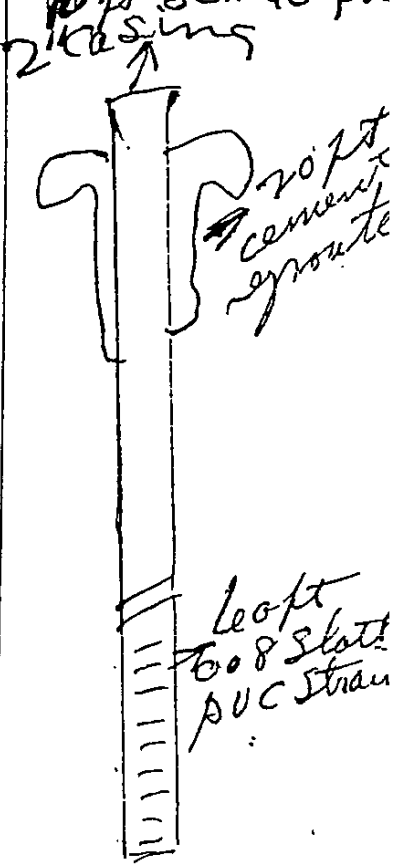
BWCM No. _____

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)

DEPTH (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	5	Top Soil + clay		
5	15	clay		
15	25	fine grey Sand		
25	40	clay Black		
40	50	Sand Coarse grey		
50	70	fine Sand + Clay		
70	130	Shell + fine Salt + pepper Sand		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



13. Well lot dedicated? _____ : Size _____ ft. X _____ ft.; Well house? _____
Distance to nearest pollutant source 120 ft., Type Septic tank
Distance to nearest property line 10 ft., Building 100 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.

Signature L E Stillman Jr (Seal), Date 6-10-86
(Well driller or authorized person)

License No. 009852

State Water Control Board Regional Offices

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

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

West Central Reg. Off.
Executive Park
312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

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

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

Commonwealth of Virginia
Uniform Water Well Completion Report

Owner: WARNER CONSTRUCTION
Address: 521 WEST 25TH
NORFOLK VA 23517
Phone: 627-2187
Location: 1317 MURRAY DR, CHESAPEAKE, VA

Tax Map ID: 234-93-1002
VDH Permit:
VWCB Permit: MS 6/C Lot 7
VWCB ID:
County:

*** Well Data ***

General Information

Drilling Method: ROTARY
Depth to Bedrock: —
Static Water Level: 9
Well Disinfected (Y or N): Y

Date Completed: 2/1/94
Yield: 25 (GPM)
Stabilized Water Level: —
Disinfectant Used: CHLOROX

Total Depth of Well: 48'
Length of Test: 1 HR
Natural Flow (Rate): N
Amount Used: 1 GAL

Casing

From 0 to 43
Size 1¼ Material PVC
Weight/Schedule 200

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

Gravel Pack

From 40 to 48

From ____ to ____

From ____ to ____

Grout

From 0 to 20
Bore Hole Size 4 1/2
Type BENTONITE
Method POURED

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

Water Zones or Screened Intervals

From 43 to 48
Mesh Size .010 Diam. 1¼
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

*** Use Data ***

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

1317 MURRAY DR

Drillers Log *
(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Remarks
0-11	TOPSOIL + CLAY	
11-26	SAND	
26-36	MUD	
36-48	SAND	

I certify that the information contained here is true and that this well was installed and constructed in accordance with the per that the well complies with all applicable state and local regulations, ordinances and laws.

Name LARRY PINKSTON
Address 2525 GORDON DR
VA BEACH, VA
Phone 621-7643 / 426-2018

Drillers Signature [signature] Date 2/27/94 Representing PINKSTON WELL

Virginia Contractors License Number 016859

N/F HUMPHRIES

S71°44'01"E 39.07'

S70°49'11"E 259.51'

30' DRAINAGE & UTILITY EASEMENT

PIN(S)

℄ DITCH

℄ DITCH

℄ DITCH

LOT 29
130701 SF
3.00 AC.

N17°55'12"E 389.35'

S47°53'12"W 382.33'

20' DRAINAGE EASEMENT

133'

185'

20x40 INGROUND POOL

30

2 STORY FRAME

1317

20'

14.45'

20.99'

22.1'

20.57'

141.03'

35.42'

20.95'

141.04'

APPROVED
Chesapeake Health Department

Pool must be no closer than 7' from DMP ditch to maintain 10' from drainfield and house

Well for house water

N72°06'48"W 238.50'

PIN(S)

1317 MURRAY DRIVE (50' R/W) 061 3002 000070

061 3002 000070

CAEIS DARYL

1317

Commonwealth of Virginia
Uniform Water Well Completion Report

Owner WARNER CONSTRUCTION
Address 521 WEST 25TH
NORFOLK, VA 23517
Phone 627-2187
Location 1317 MURRAY DR, CHESAPEAKE, VA

Tax Map ID 234-93-1002
VDH Permit
VWCB Permit MS 61C 7 of 7
VWCB ID
County

*** Well Data ***

General Information
Drilling Method ROTARY
Depth to Bedrock —
Static Water Level 0
Well Disinfected (Y or N) Y

Date Completed 2/1/94
Yield 25 (GPM)
Stabilized Water Level —
Disinfectant Used CHLOROX

Total Depth of Well 48'
Length of Test 1 HR
Natural Flow (Rate) N
Amount Used 1 GAL

Casing
From 0 to 43
Size 1 1/4 Material PVC
Weight/Schedule 200

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

From ____ to ____
Size ____ Material ____
Weight/Schedule ____

Gravel Pack
From 40 to 48

From ____ to ____

From ____ to ____

Grout
From 0 to 20
Bore Hole Size 4 1/2
Type BENTONITE
Method POURED

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

From ____ to ____
Bore Hole Size ____
Type ____
Method ____

Water Zones or Screened Intervals
From 43 to 48
Mesh Size .010 Diam. 1 1/4
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

*** Use Data ***

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

FEB 28 '94 10:46 LARRY PINKSTON 8044262018 TO: 8045477549 P01

1317 MURRAY DR

Drillers Log *
(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Remarks
0-11	TOPSOIL & CLAY	
11-26	SAND	
26-36	MUD	
36-48	SAND	

I certify that the information contained here is true and that this well was installed and constructed in accordance with the per that the well complies with all applicable state and local regulations, ordinances and laws.

Name LARRY PINKSTON
Address 2525 FLORIDA DR
VA BEACH, VA
Phone 621-2643 / 426-2018

Drillers Signature [signature] Date 2/27/94 Representing PINKSTON WELL

Virginia Contractors License Number 016859

Form GW-2
78-10,000

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

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT
(Certification of Completion/County Permit)

MS61C Bl 2 Lot 18 (CE) Plat #40

• BWCM No.

SWCB Permit
County Permit
Certification of inspecting official:
This well does ____ does not ____
meet code/low requirements.
S.
Date
For Office Use

County/City Chesapeake

County/City Stamp

Virginia Plane Coordinates
N
E
Latitude & Longitude
N
W
Topo. Map No.
Elevation ____ ft.
• Formation
• Lithology
River Basin
Province
• Type Logs
Cuttings
Water Analysis
• Aquifer Test

• Owner Roy Mendelsohn
• Well Designation or Number Class 2 B
Address Lot 40 1320 Murray Drive
Chesapeake, Va.
Phone 420-7249

• Drilling Contractor T.E. Gildersleeve Pump & Well, Inc
Address 5855-A Hargrove Street
Norfolk, Virginia 23502
Phone 461-7867/ 464-0461

Tax Map I.D. No.
Subdivision
Section
Block
Lot
Class Well: I ____, IIA ____, IIB X, IIIA ____, IIIB ____, IIIC ____, IIID ____, IIIE ____

WELL LOCATION: 60 (feet/~~meters~~ in front direction) of house
and 15' feet/~~meters~~ from (direction) of driveway (see enclosed site plan)
(If possible please include map showing location marked) well head completed 1" above ground p cod

Date started 6-21-87 • Date completed 6-21-87 Type rig mud rotary

WELL DATA: New X Reworked ____ Deepened ____
• Total depth 80' ft.
Depth to bedrock n/a ft.
Hole size (Also include reamed zones)
• 7 inches from 0 to 80 ft.
• ____ inches from ____ to ____ ft.
• ____ inches from ____ to ____ ft.
• Casing size (I.D.) and material
• 4 inches from 0 to 65 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)
• 4 inches from 65 to 80 ft.
• Mesh size .010 Type Timco slotted pvc
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
Gravel pack
• From 60 to 80 ft.
• From ____ to ____ ft.
Grout
• From 0 to 50 ft., Type Portland Type 2
• From ____ to ____ ft., Type ____

2. WATER DATA • Water temperature 60 °F
• Static water level (unpumped level-measured) 9' ft.
• Stabilized measured pumping water level 25 ft.
• Stabilized yield 18 gpm after 2 hours
Natural Flow: Yes ____ No X, flow rate: ____ gpm
Comment on quality ph 7.0, iron 0.6 ppm, hardness

3. WATER ZONES: From 26 To 32 chlor 350 ppm
From 65 To 80, From ____ To ____
From ____ To ____, From ____ To ____

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

5. PUMP DATA: Type sub. • Rated H.P. 1/2
• Intake depth 45' • Capacity 18gpm at 30 psi head

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

7. DISINFECTION: Well disinfected X yes ____ no
Date 6-21-87, Disinfectant used chlorine tablets
Amount 6 (six), Hours used 4 (four)

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

OVER

Owner Roy Mendelsohn

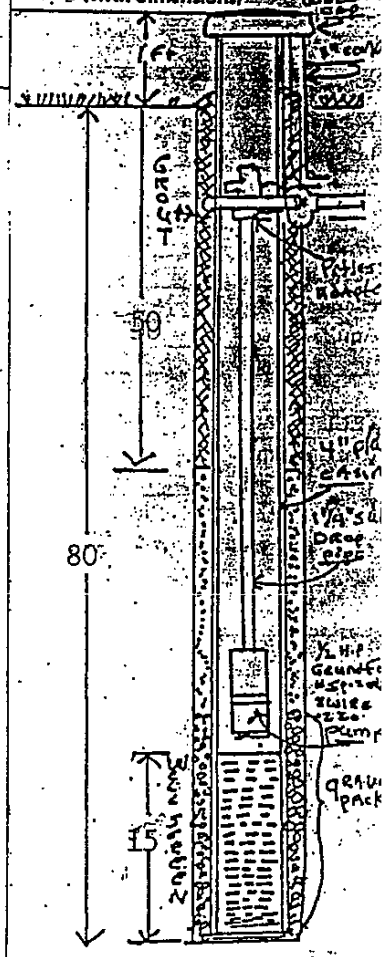
BWCM No.

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)

DEPTH (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	6	brown clay		
6	14	fine sand and gray clay		
14	18	gray clay		
18	24	fine gray sand		
24	32	coarse gray sand	water bearing	
32	38	coarse gray sand, clay breaks		
38	55	gray clay		
55	65	fine gray silt and clay		
65	80	fine gray sand and shell	water bearing	

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



13. Well lot dedicated? No ; Size ____ ft. X ____ ft.; Well house? no
Distance to nearest pollutant source 60 ft., Type foundation treatment
Distance to nearest property line 15 ft., Building 60 ft.

14. WATER SERVICE PIPE: Checked under 75 p.s.i. for 60 minutes. Pipe size 1¼ inches, Material pvc sch 40
Installer Michael A. Gildersleeve
Date 6-21-87

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.

Signature Michael A. Gildersleeve (Seal), Date 6-22-87
(Well driller or authorized person)
License No# 021427

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.
408 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
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

COMMONWEALTH OF VIRGINIA

WATER WELL COMPLETION REPORT

(Certification of Completion/County Permit)

• BWCM No. (CE 2082) Plat #40

Water Control Board
Box 11143
North Hamilton St.
Richmond, Va. 23230

SWCB Permit _____
County Permit _____

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

County/City Chesapeake

County/City Stamp

Virginia Plane Coordinates
____ N
____ E

Latitude & Longitude
____ N
____ W

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

• Owner Roy Mendelsohn
• Well Designation or Number Class 2 B
Address Lot 40 1320 Murray Drive
Chesapeake, Va.
Phone 420-7249

• Drilling Contractor T.E. Gildersleeve Pump & Well, Inc
Address 5855-A Hargrove Street
Norfolk, Virginia 23502
Phone 461-7867/ 464-0461

Tax Map I.D. No. ____
Subdivision ____
Section ____
Block ____
Lot ____
Class Well: I ____, IIA ____, IIB X, IIIA ____, IIIB ____, IIIC ____, IIID ____, IIIE ____

WELL LOCATION: 60 (feet/~~xxxx~~ in front direction) of house
and 15' feet/~~xxxx~~ from (direction) of driveway(see enclosed site plan)
(If possible please include map showing location marked) well head completed 1" above ground per code

Date started 6-21-87 • Date completed 6-21-87 Type rig mud rotary

WELL DATA: New X Reworked ____ Deepened ____
• Total depth 80' ft.
• Depth to bedrock n/a ft.
Hole size (Also include reamed zones)
• 7 inches from 0 to 80 ft.
• ____ inches from ____ to ____ ft.
• ____ inches from ____ to ____ ft.
Casing size (I.D.) and material
• 4 inches from 0 to 65 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)
• 4 inches from 65 to 80 ft.
• Mesh size .010 Type Timco slotted pvc
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• ____ inches from ____ to ____ ft.
• Mesh size ____ Type ____
• Gravel pack
• From 60 to 80 ft.
• From ____ to ____ ft.
Grout
• From 0 to 50 ft., Type Portland Type 2
• From ____ to ____ ft., Type ____

2. WATER DATA • Water temperature 60 °F
• Static water level (unpumped level-measured) 9' ft
• Stabilized measured pumping water level 25 ft
• Stabilized yield 18 gpm after 2 hours
Natural Flow: Yes ____ No X, flow rate: ____ gpm
Comment on quality ph 7.0, iron 0.6 ppm, hardness 2
3. WATER ZONES: From 26 To 32 chlor 350 ppm
From 65 To 80, From ____ To ____
From ____ To ____, From ____ To ____

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

5. PUMP DATA: Type sub. • Rated H.P. 1/2
• Intake depth 45' • Capacity 18gpm at 30 psi head

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

7. DISINFECTION: Well disinfected X yes ____ no
Date 6-21-87, Disinfectant used chlorine tablets
Amount 6 (six), Hours used 4 (four)

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

OVER

Owner Roy Mendelsohn

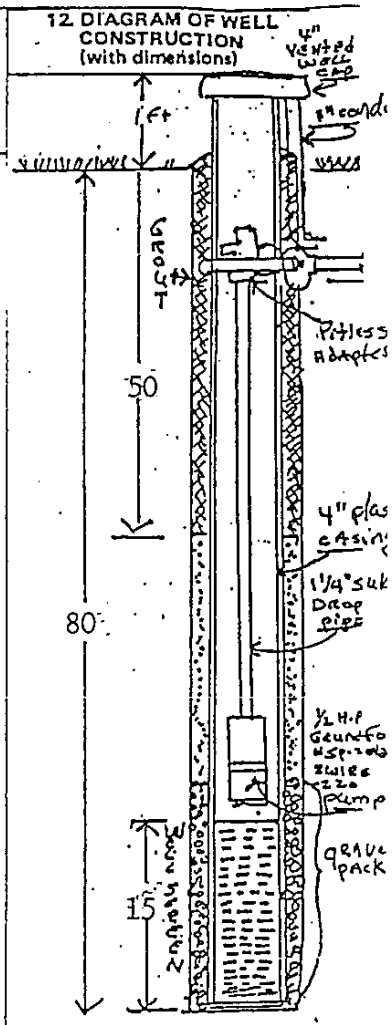
BWCM No. _____

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)

DEPTH (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	6	brown clay		
6	14	fine sand and gray clay		
14	18	gray clay		
18	24	fine gray sand		
24	32	coarse gray sand	water bearing	
32	38	coarse gray sand, clay breaks		
38	55	gray clay		
55	65	fine gray silt and clay		
65	80	fine gray sand and shell	water bearing	

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



13. Well lot dedicated? No ; Size _____ ft. X _____ ft.; Well house? no
Distance to nearest pollutant source 60 ft., Type foundation treatment
Distance to nearest property line 15 ft., Building 60 ft.

14. WATER SERVICE PIPE: Checked under 75 p.s.i. for 60 minutes. Pipe size 1 1/4 inches, Material pvc sch. 40
Installer Michael A. Gildersleeve
Date 6-21-87

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.

Signature Michael A. Gildersleeve (Seal), Date 6-22-87
(Well driller or authorized person)
License No# 021427

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.
408 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
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

Health Department Identification Number 234-87-0002

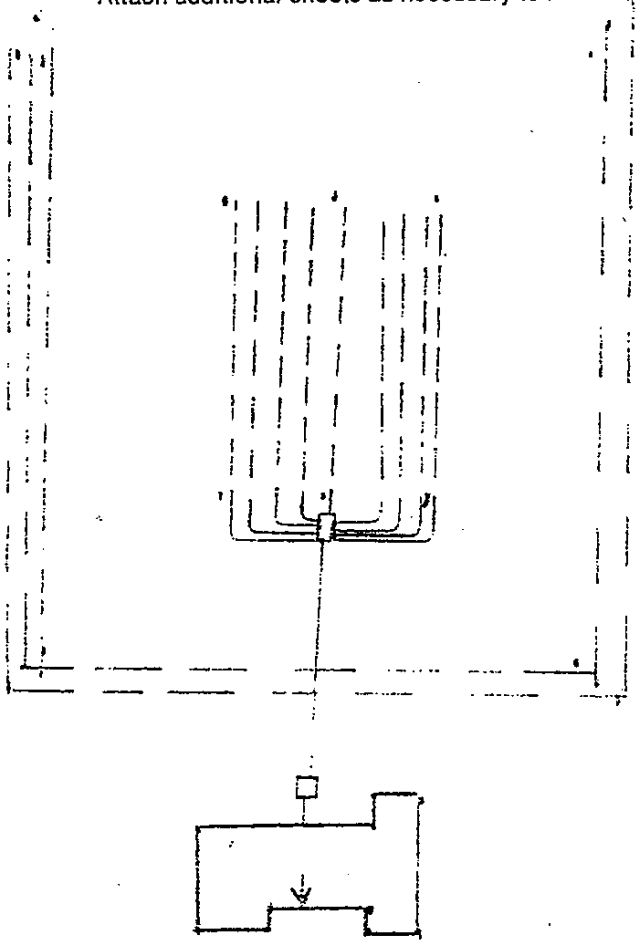
PAGE 1 OF 2

Schematic drawing of sewage disposal system and topographic features.

Show the lot lines of the building lot and building site; sketch of property showing any topographic features which may impact on the design of the system, all existing and/or proposed structures including sewage disposal systems and wells within 100 feet of sewage disposal system and reserve area. The schematic drawing of the sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance system, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be located on the same lot show all sources of pollution within 100 feet.

☑ The information required above has been drawn on the attached copy of the sketch submitted with the application. Attach additional sheets as necessary to illustrate the design.

1. Lateral will require 9-100 ft lines [illegible]
2. Septic tank will [illegible] Cap. Min.
3. [illegible]
4. Final grade [illegible] comply with [illegible]
5. [illegible]



The sewage disposal system is to be constructed as specified by the permit ☐ or attached plans and specifications ☐

This sewage disposal system construction permit is null and void if (a) conditions are changed from those shown on the application (b) conditions are changed from those shown on the construction permit.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon the direction of the Department.

Date: 12-31-86 Issued by: [signature] Sanitarian

Date: 1-5-87 Reviewed by: [signature] Supervisory Sanitarian

This Construction Permit Valid until 2-91

If FHA or VA financing

Reviewed by Date _____ _____ Supervisory Sanitarian Date _____ _____ Regional Sanitarian

C.H.S. 202B Revised 6/84

II-2A

THE vanguard GROUP OF PRINTING COMPANIES
5 MAIN STREET COLD SPRING HARBOR NY 11724

50295

1324 Murray Dr.

Health Department
Identification Number _____

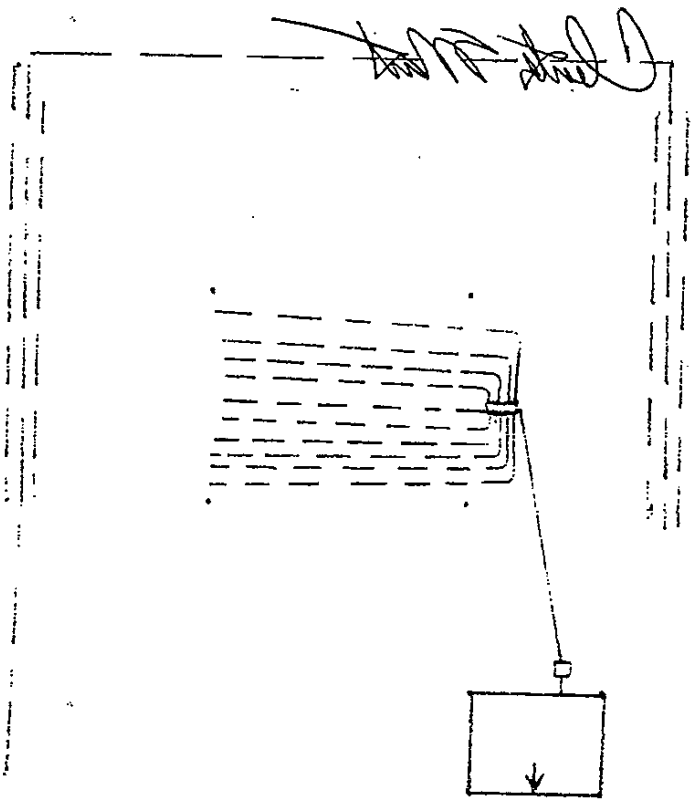
Schematic drawing of sewage disposal system and topographic features.

PAGE 1 OF 2

Show the lot lines of the building lot and building site, sketch of property showing any topographic features which may impact on the design of the system, all existing and/or proposed structures including sewage disposal systems and wells within 100 feet of sewage disposal system and reserve area. The schematic drawing of the sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance system, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be located on the same lot show all sources of pollution within 100 feet.

Not To Scale

☒ The information required above has been drawn on the attached copy of the sketch submitted with the application. Attach additional sheets as necessary to illustrate the design. * Soil Drainage Management Plan.



1. Drainfield will require 10-100 ft lines 3 ft wide.
2. Septic tank will require at least 1,000 Gal Cap.
3. Drainfield must be [illegible] as shown on Soil Drainage Management Plan. Drainfield must be at least [illegible] from any [illegible].
4. Landscaping & grading must comply with the Soil [illegible] Management Plan. This must be [illegible]
5. Well must be [illegible] 100 ft from [illegible] drainfields.

Murray Drive

The sewage disposal system is to be constructed as specified by the permit ☒ or attached plans and specifications ☐.

This sewage disposal system construction permit is null and void if (a) conditions are changed from those shown on the application (b) conditions are changed from those shown on the construction permit.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon the direction of the Department.

Date: 6-2-87 Issued by: [signature] Sanitarian

Date: 6-3-87 Reviewed by: [signature] Supervisory Sanitarian

This Construction Permit Valid until 12-72

If FHA or VA financing

Prior Records

o..n GW-2
978-10,000

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT

• BWCM No. _____

(Certification of Completion/County Permit)

ate Water Control Board
O. Box 11143
11 North Hamilton St.
Richmond, Va. 23230

SWCB Permit _____
County Permit _____
Certification of inspecting official:
This well does _____ does not _____
meet code/low requirements.
S. _____
Date _____
For Office Use

unty/City Chesapeake Va
County/City Stamp

• Virginia Plane Coordinates
_____ N
_____ E
Latitude & Longitude
_____ N
_____ W
• Topo. Map No. _____
Elevation _____ ft.
Formation _____
• Lithology _____
• River Basin _____
rovince _____
• Type Logs _____
• Cuttings _____
Water Analysis _____
quifer Test _____

• Owner Jeffrey D. Spicher
• Well Designation or Number Lot 41 new # 19 Chesap-
Address 633 Biltmore Drive
Va Beach Va
Phone 4637953

• Drilling Contractor Joe Saunders well Drilling
Address 941 Mt. Pleasant Rd
Chesapeake Va 23320
Phone 4821408

Tax Map I.D. No. _____
Subdivision Greenhaven
Section MS-61C
Block _____
Lot old-41-new # 19
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 7-24-87 • Date completed 7-24-87 Type rig Hydraulic Drill

ELL DATA: New ✓ Reworked _____ Deepened _____
• Total depth 90 ft.
• Depth to bedrock 85 ft.
Hole size (Also include reamed zones)
• 6 inches from 0 to 90 ft.
• _____ inches from _____ to _____ ft.
• _____ inches from _____ to _____ ft.
asing size (I.D.) and material
• 2 inches from 0 to 85 ft.
Material PVC
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.
creen size and mesh for each zone (where applicable)
• 2 inches from 85 to 90 ft.
• Mesh size .012 Type PVC
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
avel pack
• From 80 to 90 ft.
• From _____ to _____ ft.
out
• From 0 to 22 ft., Type Cement
• From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature 63° °F
• Static water level (unpumped level-measured) 8 ft.
• Stabilized measured pumping water level 16 ft.
• Stabilized yield 10 gpm after 2 hours
Natural Flow. Yes _____ No ✓, flow rate _____ gpm
Comment on quality Very good for this area
3. WATER ZONES: From 40 To 45
From 85 To 90 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. 3/4 Max
• 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) at wellhead
Electrical disconnect switch on power supply _____
7. DISINFECTION: Well disinfected ✓ yes _____ no
Date 7-24-87, Disinfectant used chlorine
Amount 65/N4/1, Hours used 1
8. ABANDONMENT (where applicable) • yes _____ no ✓
Casing pulled yes _____ no _____ not applicable _____
Plugging grout From _____ to _____ material _____

OVER

Owner J. S. Spicher

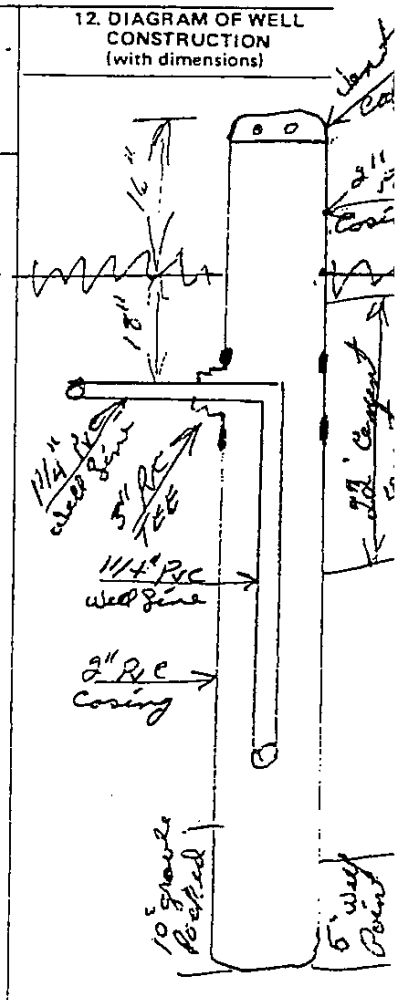
PWCM No. _____

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)

DEPTH (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	10	clay silt sand		70
10	20	clay		
20	30	clay silt sand		
30	40	silt sand		
40	45	Red Rock		
45	55	clay silt		
55	65	silt clay		
65	75	clay		
75	85	silt clay		
85	90	Red Rock		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



13. Well lot dedicated? _____. Size _____ ft X _____ ft. Well house? _____
Distance to nearest pollutant source _____ ft., Type _____
Distance to nearest property line _____ ft. Building 100 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.

Signature Joe Saunders (Seal). Date 7-24-87
(Well driller or authorized person)
License No. 70018

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.
408 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
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

SGW-2
10,000

Water Control Board
Box 11143
North Hamilton St.
chmond, Va. 23230

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT
(Certification of Completion/County Permit)

1527 11 County Dr

• BWCM No. _____

SWCB Permit _____
County Permit _____
Certification of inspecting official:
This well does _____ does not _____
meet code/low requirements.
S. _____
Date _____
For Office Use

ity/City Chesapeake Va
County/City Stamp

Virginia Plane Coordinates
_____ N
_____ E
Latitude & Longitude
_____ N
_____ W
Topo. Map No. _____
Elevation _____ ft.
Formation _____
Lithology _____
River Basin _____
Province _____
Type Logs _____
Cuttings _____
Water Analysis _____
Aquifer Test _____

• Owner Jeffrey S. Spicher
• Well Designation or Number Lot 41 new # 19 - Chesap-
Address 633 Biltmore Drive
Va Beach Va
Phone 4637953

• Drilling Contractor Jim Sandman Well Drilling
Address 941 Mt. Pleasant Rd
Chesapeake Va 23320
Phone 4821408

Tax Map I.D. No. _____
Subdivision Greenhaven
Section MS-61C
Block _____
Lot old-41-new # 19
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 7-24-87 • Date completed 7-24-87 Type rig Hydraulic Drill

LL DATA: New ✓ Reworked _____ Deepened _____
Total depth 90 ft.
Depth to bedrock 85 ft.
Hole size (Also include reamed zones)
• 6 inches from 0 to 90 ft.
• _____ inches from _____ to _____ ft.
• _____ inches from _____ to _____ ft.
Casing size (I.D.) and material
• 2 inches from 0 to 85 ft.
Material PVC
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)
• 2 inches from 85 to 90 ft.
• Mesh size .012 Type PVC
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
Gravel pack
• From 80 to 90 ft.
• From _____ to _____ ft.
Grout
• From 0 to 22 ft., Type Cement
• From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature 63° °F
• Static water level (unpumped level-measured) 8 ft.
• Stabilized measured pumping water level 16 ft.
• Stabilized yield 10 gpm after 2 hours
Natural Flow: Yes _____ No ✓, flow rate: _____ gpm
Comment on quality Very good for this area

3. WATER ZONES: From 40 To 45
From 85 To 90, 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. 3/4 Max
• 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) at wellhead
Electrical disconnect switch on power supply _____

7. DISINFECTION: Well disinfected ✓ yes _____ no
Date 7-24-87, Disinfectant used chlorine
Amount 65/N4/1, Hours used 1

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

Owner J. S. Spicher

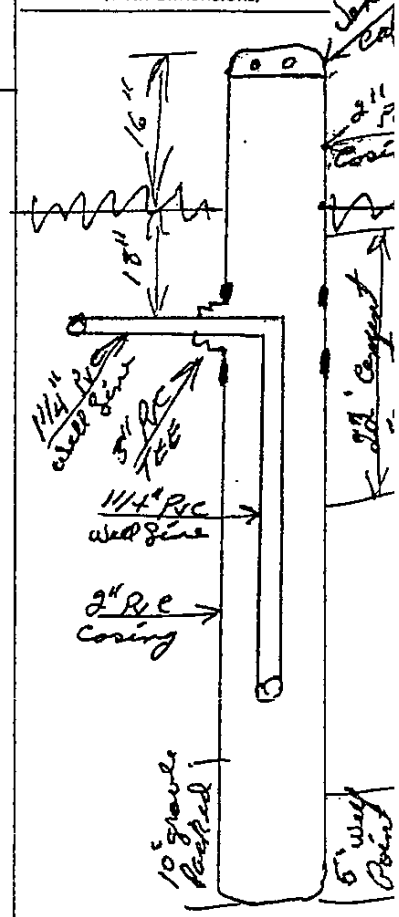
BWCM No. _____

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)

DEPTH (feet) From	To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	10	clay silt sand		70
10	20	clay		
20	30	clay silt sand		
30	40	Silt sand		
40	45	Bed Rock		
45	55	clay silt		
55	65	Silt clay		
65	75	clay		
75	85	silt clay		
85	90	Bed Rock		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)



13. Well lot dedicated? _____; Size _____ ft. X _____ ft.; Well house? _____
Distance to nearest pollutant source _____ ft., Type _____
Distance to nearest property line _____ ft., Building 100 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.

Signature Joe Saunders (Seal), Date 7-24-87
(Well driller or authorized person)
License No. 70018

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.
408 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
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

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

Commonwealth of Virginia
Uniform Water Well Completion Report

Owner Don Froehlee
Address 911 Wingate
Chesapeake, Va
Phone 547-0192
Location 1325 Murray Dr 98230

Tax Map ID
VDH Permit 23497-5289
VWCB Permit
VWCB ID
County

* Well Data *

General Information
Drilling Method Mud Rotary
Depth to Bedrock 25 FT.
Static Water Level 12 FT
Well Disinfected (Y or N) Y

Date Completed 7-14-98
Yield 15 (GPM)
Stabilized Water Level 16 FT.
Disinfectant Used Chlorine

Total Depth of Well 32 FT.
Length of Test 1 Hour
Natural Flow (Rate) No
Amount Used 50/Gl

Casing
From 1 To 25
Size 2 Material PVC
Weight/Schedule 200

From To
Size Material
Weight/Schedule

From To
Size Material
Weight/Schedule

Gravel Pack
From 25 To 32 FT.

From To

From To

Grout
From 1 To 25
Bore Hole Size 5 7/8
Type Benseal
Method poured

From To
Bore Hole Size
Type
Method

From To
Bore Hole Size
Type
Method

Water Zones or Screened Intervals
From 25 To 32
Mesh Size 10th Diam 2"
From To
Mesh Size Diam

From To
Mesh Size Diam
From To
Mesh Size Diam

From To
Mesh Size Diam
From To
Mesh Size Diam

* Use Data *

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Monitoring ____
Public Well: Community ____ Non Community ____

* Abandonment Information *

Bored or Dug Wells
Casing Removed, Y or N?:
If Y, Depth to which casing was removed:
Depth and Type of Fill:
Source of Fill
Bentonite Plugs: From ____ to ____ From ____ to ____

Wells other than Bored Wells
Casing removed, Y or N?
Depth to which casing was removed:
Applicable, depth(s), and type of gravel/sand fill:
Source of gravel or sand:
Cement: From ____ to ____ From ____ to ____

Method of permanently marking location:

Post-it® Fax Note 7671 Date 12-65 # of pages ▸ 3

Depth	Description of Formation or Sediment	Remarks
0 - 8	Clay	
8 - 15	Sand	
15 - 21	Clay	
21 - 32	Sand	

WELL INSPECTED AND APPROVED BASED ON WATER WELL COMPLETION REPORT

Approved for Laura B.
SIGNATURE

12-29-98
DATE

I certify that the information contained here is true and that this well was installed and constructed in accordance with the permit and further that the well complies with all applicable state and local regulations, ordinances and laws.

Drilling
Contractor Chesapeake Well & Pump Service Inc.
Address P.O Box 15280
Chesapeake, VA 23328
Phone 804-436-2665

Drillers Signature [signature] Date 12-1-98
Representing Chesapeake Well & Pump Service Inc.
Virginia Contractors License Number 030034

chesap:
1-31-94

MS 6

Commonwealth of Virginia
Uniform Water Well Completion Report

Sat. 42

Owner albert Viola
Address Po Box 6156 chesap. Va
Phone 4873957
Location Murray Drive - Sh Green Haven
1328

Tax Map ID
VDH Permit 234-93-1138
VWCB Permit
VWCB ID
County

*** Well Data ***

General Information
Drilling Method Hyd-Drill
Depth to Bedrock 30
Static Water Level 4
Well Disinfected (Y or N) yes

Date Completed 1-26-94
Yield 20 (GPM)
Stabilized Water Level 23
Disinfectant Used Clorine

Total Depth of Well 45
Length of Test 2 HRS
Natural Flow (Rate) no
Amount Used 65/N9/1

Casing
From 0 to 40
Size 2 Material PVC
Weight/Schedule

From ____ to ____
Size ____ Material ____
Weight/Schedule

From ____ to ____
Size ____ Material ____
Weight/Schedule

Gravel Pack
From 38 to 45

From ____ to ____

From ____ to ____

Grout
From 0 to 20
Bore Hole Size 6
Type Cement & Bent Seal
Method pour

From ____ to ____
Bore Hole Size
Type
Method

From ____ to ____
Bore Hole Size
Type
Method

Water Zones or Screened Intervals
From 40 to 45
Mesh Size .012 Diam. 2
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Diam. ____
From ____ to ____
Mesh Size ____ Diam. ____

From ____ to ____
Mesh Size ____ Di ____
From ____ to ____
Mesh Size ____ D ____

*** Use Data ***

Private Well: Domestic ✓ Agricultural ____ Industrial ____ Me ____
Public Well: Community ____ Non Community ____

Drillers Log
(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Rem
0 to 10'	clay silt sand	
10 - 20	silt sand	
20 - 25	clay silt sand	
25 - 35	Bed Rock silt sand	
35 - 45	Bed Rock	

I certify that the information contained here is true and that this well was installed and con[illegible]d in accordance with the permit and further that the well complies with all applicable state [illegible] local regulations, ordinances and laws.

Drilling Contractor Joe Saunders Well Drilling
Address 1941 Mt. Pleasant Rd
Chesapeake Va 23320
Phone 482-1408

Drillers Signature Joe Saunders
Representing
Date 1-26-94
Virginia Contractors License Number 018280

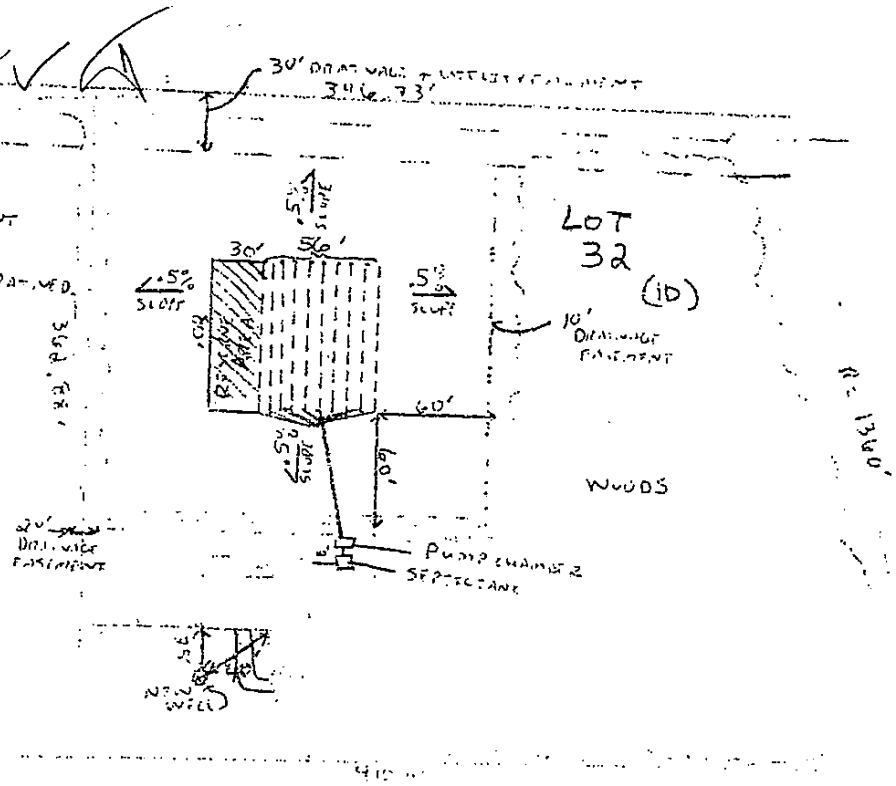
Health Department
Identification Number 234-94-0075

Schematic drawing of sewage disposal and/or water supply system and topographic features.

Show the lot lines of the building site, sketch of property showing any topographic features which may impact on the design of the well or sewage disposal system, including existing and/or proposed structures and sewage disposal systems and wells within 200 feet. The schematic drawing of the well site or area and/or sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance system, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be permitted, show all sources of pollution within 200 feet.

☐ The information required above has been drawn on the attached copy of the sketch submitted with the application. Attach additional sheets as necessary to illustrate the design.

10 - 2' x 80' DRAINFIELD TRENCH LINES.
MAXIMUM DEPTH OF DRAINFIELD - 18".
GRADE BOARDS REQUIRED.
COMPLY WITH SOIL DRAINAGE MANAGEMENT PLAN.
25% OF TOTAL DITCHES MAY BE FRENCH DRAINED.
(4) BEDROOMS ONLY.
FEE WELL 25' FROM HOUSE FOUNDATION; 50' FROM SEPTIC TANK & PUMP CHAMBER.
FINAL GRADE MUST BE COMPLETED & INSPECTED BEFORE THE SOIL OFFICE CAN ALLOW THE HOUSE TO BE OCCUPIED.
ALL DRILLERS MUST SUBMIT A G.W.R. TO THIS OFFICE.
ONE (1) CLASS II WELL TO BE INSTALLED FOR DRINKING WATER. MUST BE CASED PROVIDED TO 20' MIN. MIN.
PUMP CHAMBER TO BE INSTALLED IN ACCORDANCE TO SECTION 4.23B. SEE PAGE 3 of 3.
WATER SAMPLE MUST BE TAKEN & TESTED BY AN APPROVED LABORATORY.



This sewage disposal system and/or water supply is to be constructed as specified by the permit X or attached plans and specifications ____ .

This sewage disposal system and/or well construction permit is null and void if (a) conditions are changed from those shown on the application (b) conditions are changed from those shown on the construction permit.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon the direction of the Department.

Date: 6-14-94 **Issued by:** [signature] Sanitarian

Date: 6-14-94 **Reviewed by:** [signature] Supervisory Sanitarian

This Construction Permit Valid until November 1994

If FHA or VA financing

Reviewed by Date _____ _____ **Date** _____ _____

cheap

CBL

SULLIVAN

Commonwealth of Virginia
Uniform Water Well Completion Report

Sat - 10

Owner Norman Court -
Address 5175 Witchduck Court - Suite 102
Va Beach Va
Phone 4999834
Location Green Haven - 1339 Merry Drive

Tax Map ID N15-61C
VDH Permit 234-94-0075
VWCB Permit
VWCB ID
County

*** Well Data ***

General Information
Drilling Method Hyd-Drill
Depth to Bedrock 40
Static Water Level 9
Well Disinfected (Y or N) yes

Date Completed 8-19-94
Yield 20 (GPM)
Stabilized Water Level 23
Disinfectant Used Clorine

Total Depth of Well 53
Length of Test 2 HRS
Natural Flow (Rate) NO
Amount Used 65/N9/11

Casing
From 0 to 45
Size 2 Material PVC
Weight/Schedule

From to
Size Material
Weight/Schedule

From to
Size Material
Weight/Schedule

Gravel Pack
From 42 to 53

From to

From to

Grout
From 0 to 20
Bore Hole Size 6
Type Cement & Bent Seal
Method pour

From to
Bore Hole Size
Type
Method

From to
Bore Hole Size
Type
Method

Water Zones or Screened Intervals
From 45 to 53
Mesh Size #012 Diam. 2
From to
Mesh Size Diam.

From to
Mesh Size Diam.
From to
Mesh Size Diam.

From to
Mesh Size Diam.
From to
Mesh Size Diam.

*** Use Data ***

Private Well: Domestic ✓ Agricultural Industrial Municipal
Public Well: Community Non Community

Drillers Log
(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Rem
0 To 10'	clay wet sand	
10 - 20	wet sand	
20 - 30	Bed Rock	
30 - 40	clay	
40 - 50	Bed Rock	
50 - 53	Bed Rock	

I certify that the information contained here is true and that this well was installed and con[illegible]d in accordance with the permit and further that the well complies with all applicable state [illegible] local regulations, ordinances and laws.

Drilling Contractor Joe Saunders Well Drilling
Address 1941 Mt. Olivet Rd
Chesapeake Va 23320
Phone 482-1408

Drillers Signature Joe Saunders
Representing
Date 8-19-94
Virginia Contractors License Number 018280

cherap
CBE
8/22/1994

Commonwealth of Virginia
Uniform Water Well Completion Report

Sat - 10

Owner Norman Const.
Address 5125 Witchduck Const - Suite 102
Va Beach Va
Phone 4999834
Location Green Haven - 1329 Murry Drive

Tax Map ID M5-61C
VDH Permit 234-94-0075
VWCB Permit
VWCB ID
County

*** Well Data ***

General Information
Drilling Method Hyd-Drill
Depth to Bedrock 40
Static Water Level 9
Well Disinfected (Y or N) yes

Date Completed 8-19-94
Yield 20 (GPM)
Stabilized Water Level 23
Disinfectant Used clorine

Total Depth of Well 53
Length of Test 2 HRS
Natural Flow (Rate) NO
Amount Used 65/N9/1

Casing
From 0 to 45
Size 2 Material PVC
Weight/Schedule

From to
Size Material
Weight/Schedule

From to
Size Material
Weight/Schedule

Gravel Pack
From 42 to 53

From to

From to

Grout
From 0 to 20
Bore Hole Size 6
Type Cement & Bent Seal
Method pour

From to
Bore Hole Size
Type
Method

From to
Bore Hole Size
Type
Method

Water Zones or Screened Intervals
From 45 to 53
Mesh Size .012 Diam. 2
From to
Mesh Size Diam.

From to
Mesh Size Diam.
From to
Mesh Size Diam.

From to
Mesh Size Di
From to
Mesh Size Di

*** Use Data ***

Private Well: Domestic ✓ Agricultural Industrial Mo
Public Well: Community Non Community

Drillers Log *
(Use additional sheets if necessary)

Depth	Description of Formation or Sediment	Rem
0 To 10'	clay silt sand	
10 - 20	silt sand	
20 - 30	Bed Rock	
30 - 40	clay	
40 - 50	Bed Rock	
50 - 53	Bed Rock	

I certify that the information contained here is true and that this well was installed and co[illegible] in accordance with the permit and further that the well complies with all applicable state [illegible] local regulations, ordinances and laws.

Drilling Contractor Joe Saunders Well Drilling
Address 1941 Mt. Pleasant Rd
Chesapeake Va 23320
Phone 4821408

Drillers Signature Joe Saunders
Representing
Date 8-19-94
Virginia Contractors License Number 018280

bgm

SUBJECT: CITY OF CHESAPEAKE
Water - US Navy – NALF Fentress

SEP 22 2000

Mr. Wilkie Din
NALF-Fentress
Environmental Department
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

Dear Mr. Din:

Enclosed please find the Water Quality Reports for your information and files. These reports contain the results of inorganic, Volatile Organic Chemicals (VOCs) VOC and nitrate/nitrite nitrogen analyses performed on water samples collected from the subject waterworks on July 21, 2000.

The results of the analyses indicate that the water meets the Primary and Secondary Maximum Contaminant Levels for the analyzed constituents as set forth in the Commonwealth of Virginia *Waterworks Regulations*.

The result of the VOC analysis indicates that levels of the VOCs were below the detection limit of the testing equipment. Therefore, the subject waterworks is classified as non-vulnerable as defined in Section 2.4B.3.C (VR 355-18-004.04) of the *Waterworks Regulations*. As a result, the next sample to be analyzed for VOCs from these waterworks should be collected in July 2001.

The Aggressive Index Number (Corrosion Index) for your water is 9.408. This means that your water may have a tendency for being non-corrosive. Water with an AI greater than or equal to 12.0 is considered to be non-corrosive while an AI below 10 is an indication of corrosive water. The actual tendency of your water to be corrosive will depend on factors such as temperature, hydraulic conditions, velocity, oxygen content, pipe material used, etc.

SEP 2 2 2000

SUBJECT: CITY OF CHESAPEAKE
Water - US Navy – NALF Fentress

Your next sample for inorganic analyses should be taken in July 2003, for VOC and nitrate/nitrite nitrogen analyses in July 2001.

If you have any questions on the above, please do not hesitate to contact me.

Sincerely,

RSH

Renee S. Hall
Assistant District Engineer
Office of Water Programs

RSH
RSH/bjm

Enclosures: Water Quality Reports

pc: City of Chesapeake Health Department

\\OWPSEVFO\DATA\FILEROOM\DIST20B\Chesapeake\WATER\NALF- Fentress Field\SAMPLINGRESULTS\WQR-Inorg. VOC. Nitrate.doc

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA

Department of General Services

DIVISION OF CONSOLIDATED LABORATORY SERVICES

28 August 2000
606157

MAIL TO:

Office of Water Programs Virginia Beach
5700 Thurston Ave
Virginia Beach, VA 23455

REGION: 3

PWS OWNER	PWSID	SOURCE
NALF FENTRESS FIELD/NALF FENTR 9742 MARYLAND AVE NORFOLK, VA 235113095	3550615	GROUNDWATER

LIMS NO.: 606157
DATE RECEIVED: 7/25/2000

SAMPLING DATE: 7/21/2000
SAMPLE LOCATION: ENTRY
SAMPLE TYPE:

COLLECTED BY: PWV LAB

FIELD TESTS: Temp: pH: Alk: Chl: .02 CO2: Hrd:

PRESERVATIVE: 4xC, H2SO4 to pH <2

CONT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
	Nitrate+Nitrite as N	10		.20 mg/l	15/08/2000	BONEAL

RECEIVED
AUG 29 2000
VIRGINIA DEPT. OF HEALTH
OFFICE OF WATER PROGRAMS
SOUTHEAST VA. FIELD OFFICE

APPROVED BY: CMORTON DATE APPROVED: 8/15/2000 1 WQRNR

INORGANIC

606157
Water Chemistry
NO
Recvd: 07/25/00

OFFICE OF WATER PROGRAMS
SOUTHEAST VA REGIONAL OFFICE
REPORT RESULTS TO HEALTH OFFICIAL AT:
VIRGINIA DEPARTMENT OF HEALTH (Name)
5700 THURSTON AVE, SUITE 203 (Address)
VIRGINIA BEACH, VIRGINIA 23455 (City, Zip Code)

NITRATE-N NITRITE-N HARDNESS
WSE 50
Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

NAME OF WATER SYSTEM: HALF FENTRESS
SOURCE: GROUNDWATER
OTHER INFORMATION: TREATMENT + CHLORINATION

REGION: ☐ Abingdon ☐ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☒ Virginia Beach ☐ Local Health Dept. ☐

PLANNING DISTRICT# 20B
COUNTY: NA
INDEPENDENT CITY: CHESAPEAKE
SAMPLING LOCATION: ENTRY
CODE: [ ] 7-9
SOURCE TYPE: ☒ Public-Community ☐ Public-Noncommunity

FIELD TESTS: Temp: pH: Cl_2: .02 mg/L CO_2 mg/L Alk: mg/L Hard.: mg/L

P.W.S.I.D. #: 3 5 5 0 6 1 5 (10-16)
TRANSACTION CODE: 0 3 (17-18)

DATE COLLECTED: Mo 07 Day 21 Yr 00 (19-24)
TIME: 1040 (25-28)
COLLECTED BY: ABM/BB PWC LAB

CONTAINER TYPE:
☐ Glass
☒ Plastic

PRESERVATIVE USED:
☐ None
☐ Ice
☐ Other
☐ Nitric Acid
☒ Sulfuric Acid

SAMPLE TYPE:
D ☐ Reg. Dist.
P ☐ Plant Tap
R ☐ Raw Water
C ☐ Check
M ☐ MCL Check
☐ Other
29

CONT. I.D.	CONTAMINANT NAME (Maximum Allowable Level)	MTD.	S	ANALYSIS RESULTS	PRECISION	ANALYSIS DATE Mo Day Yr	A*
	Nitrate-Nitrogen				±		
	Nitrite-Nitrogen				±		
					±		
	Nitrate/Nitrite Nitrogen				±		
					±		
	Hardness (Total)				±		
30-33	LAB I.D. 34-38	39-41		43-50	51-53	54-59	

DATE REC:
DATE REP:
PREPARED BY:

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

28 August 2000
606156

MAIL TO:

Office of Water Programs Virginia Beach
5700 Thurston Ave
Virginia Beach, VA 23455

REGION: 3

PWS OWNER	PWSID	SOURCE
NALF FENTRESS FIELD/NALF FENTR 9742 MARYLAND AVE NORFOLK, VA 235113095	3550615	GROUNDWATER

LIMS NO.: 606156
DATE RECEIVED 7/25/2000
SAMPLING DATE: 7/21/2000
SAMPLE LOCATION: ENTRY
SAMPLE TYPE:
COLLECTED BY: ABM/PWC LAB

FIELD TESTS: Temp: pH: Alk: Chl: .02 CO2: Hrd:
PRESERVATIVE:

CONT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
1928	Alkalinity-Bicarbonate			143 mg/l	01/08/2000	VCORBIN
1929	Alkalinity-Carbonate			0 mg/l	01/08/2000	VCORBIN
1927	Alkalinity-Total			143 mg/l	01/08/2000	VCORBIN
1039	Ammonia			< .04 mg/l	16/08/2000	FBLACKSHEAR
	Calcium Hardness			< 5 mg/l	21/08/2000	CMORTON
1017	Chloride		250.0	32.5 mg/l	14/08/2000	BONEAL
1905	Color-PCU		15	8 PCU	26/07/2000	GJACKSON
1910	Corrosion Index			9.408	21/08/2000	CMORTON
1059	Fixed Dissolved Solids(550xC)		500	205 mg/l	25/07/2000	MCREWEY
1025	Fluoride	4.0	2.0	0.20 mg/l	18/08/2000	CMORTON
1915	Hardness-Total			< 5 mg/l	21/08/2000	CMORTON
1997	Langlier Index 15C			-2.646	21/08/2000	CMORTON
1044	Ortho Phosphate as P			.04 mg/l	16/08/2000	FBLACKSHEAR
1049	Silica			46.01 mg/l	21/08/2000	STHRASH
1926	Specific Conductance			373 umhos/cm	17/08/2000	PJONES
1055	Sulfate		250.0	6.6 mg/l	14/08/2000	BONEAL
1027	Sulfide			< 0.03 mg/l	25/07/2000	PJONES
1930	Total Dissolved Solids(185xC)		500	274 mg/l	25/07/2000	MCREWEY
0100	Turbidity		1	1.12 TU	26/07/2000	LBURTON
1058	Volatile Dissolved Solids(550xC)		500	69 mg/l	25/07/2000	MCREWEY
1925	pH		8.5	6.60	01/08/2000	VCORBIN

RECEIVED
AUG 31 2000
VIRGINIA DEPT. OF HEALTH
OFFICE OF WATER PROGRAMS
SOUTHEAST VA. FIELD OFFICE

APPROVED BY: CMORTON
DATE APPROVED: 8/21/2000
1
WORNR

INORGANIC

OFFICE OF WATER PROGRAMS
REPORT RESULTS TO HEALTH OFFICIAL AT:
Name: VIRGINIA DEPARTMENT OF HEALTH
Address: 3600 THURSTON AVE., SUITE 203
City, Zip Code: VIRGINIA BEACH, VIRGINIA 23455

LAB #: 606156

Water Chemistry INORGANICS Recvd: 07/25/00

NAME OF WATER SYSTEM: NALF FENTRESS
SOURCE: GROUNDWATER
OTHER INFORMATION: TREATMENT + CHLORINATION

INORGANIC

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept. ☐ Culpeper ☐ Lexington ☒ Virginia Beach ☐

PLANNING DISTRICT# 20B
SAMPLING LOCATION: ENTRY
COUNTY: NA
CODE: 7-9
INDEPENDENT CITY: CHESAPEAKE
SOURCE TYPE: ☒ Public-Community ☐ Public-Noncommunity

FIELD TESTS: Temp: Cl2: .02 mg/L CO2 / mg/L
pH: Alk: mg/L Hard.: mg/L

P.W.S.I.D. #: 3 5 5 0 6 1 5 (10-16) TRANSACTION CODE 0 3 (17-18)

DATE COLLECTED: Mo 7 Day 21 Yr 00 (19-24) 7-21-00

TIME: 1040 (25-28)

COLLECTED BY: HSM PHD PHC LAB

CONTAINER TYPE: ☐ Glass ☒ Plastic

PRESERVATIVE USED: ☐ None ☒ Ice ☐ Other

ICE THIS SAMPLE

SAMPLE TYPE: D ☐ Reg. Dist. P ☐ Plant Tap R ☐ Raw Water C ☐ Check M ☐ MCL Check S ☐ Other (29)

CONT. I.D. (30-33)	CONTAMINANT NAME (Maximum Allowable Level)	MTD. (39-41)	S (42)	ANALYSIS RESULTS (43-50)	PRECISION (51-53)	ANALYSIS DATE Mo Day Yr (54-59)	A*
1925	pH (6.5-8.5)	135		Ø Ø	±		
1927	Alkalinity-Total	157		Ø Ø Ø Ø	±		
1928	Alkalinity-Bicarbonate	157		Ø Ø Ø Ø	±		
1929	Alkalinity-Carbonate	157		Ø Ø Ø Ø	±		
1915	Hardness-EDTA	141		Ø Ø Ø	±		
1932	Acidity	157		Ø Ø Ø Ø	±		
1910	Corrosion Index	136		Ø Ø Ø Ø	±		
1025	Fluoride 1.8	107		Ø Ø Ø Ø	±		
1017	Chloride 250.	107		Ø Ø Ø	±		
1905	Color (APHA) 15 CU	129		Ø Ø Ø Ø Ø	±		
0100	Turbidity (FTU) 1.0	001		Ø Ø Ø	±		
1027	Hydrogen Sulfide 0.05	155		Ø Ø Ø Ø Ø	±		
1055	Sulfate 250.	137		Ø Ø Ø Ø	±		
1040	Nitrogen-Nitrate 10.0	163		Ø Ø Ø Ø	±		
1039	Nitrogen-Ammonia	147		Ø Ø Ø Ø	±		
1038	Nitrogen-Nitrite	163		Ø Ø Ø Ø	±		
1041	Nitrogen-Total Kjeldahl	175		Ø Ø Ø Ø	±		
1043	Phosphate-Total (As P)	162		Ø Ø Ø Ø	±		
1044	Phosphate-Ortho (As P)	162		Ø Ø Ø Ø	±		
1926	Specific Conductance (u mhos/cm)	145		Ø Ø Ø Ø	±		
1930	Total Dissolved Solids (185°C)	139		Ø Ø Ø Ø	±		
1058	Volatile (550°C)	139		Ø Ø Ø Ø	±		
1059	Fixed (550°C)	139		Ø Ø Ø Ø	±		
1049	Silica (as SiO_2)	143		Ø Ø Ø	±		
1997	Langlier Index 15°C	136		Ø Ø Ø Ø	±		
					±		
					±		
	LAB I.D. 0 1 0 0 0 (34-38)						

DATE REC:
DATE REP:

PREPARED BY:

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

E THIS SAMPLE

OFFICE OF WATER PROGRAMS

REPORT RESULTS TO HEALTH OFFICIAL AT OFFICE

Name: VIRGINIA DEPARTMENT OF HEALTH

Address: 7300 THURSTON AVE., SUITE 203

City: VIRGINIA BEACH, VIRGINIA 23455

3#: 606158

Volatiles and Petroleum

M502

Recvd: 07/25/00

VOLATILE ORGANICS

NAME OF WATER SYSTEM: NALF FENTRESS

SOURCE: GROUNDWATER

OTHER INFORMATION: TREATMENT + CHLORINATION

REGION: ☐ Abingdon ☐ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☐ Virginia Beach ☐ Local Health Dept. ☐

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

PLANNING DISTRICT#: 20B

COUNTY: NA

INDEPENDENT CITY: CHESAPEAKE

SAMPLING LOCATION: ENTRY

CODE: 7-9

SOURCE TYPE: ☒ Public-Community ☐ Public-Noncommunity

FIELD TESTS: Temp: pH: Cl_2: .02 mg/L Alk: mg/L CO_2 mg/L Hard.: mg/L

P.W.S.I.D.#: 3 5 5 0 6 1 5 (10-16)

TRANSACTION CODE: 0 3 (17-18)

E COLLECTED: Mo 7 Day 21 Yr 00 (19-24)

E: 1045 (25-28)

LECTED BY: ABM / TBB

NTAINER TYPE: ☒ Glass ☐ Plastic

RVATIVE USED: ☐ None ☒ Ice ☒ Other HCL/ASCORBIC ACID ☐ Nitric Acid

MPLE TYPE: D ☐ Reg. Dist. P ☐ Plant Tap R ☐ Raw Water C ☐ Check M ☐ MCL Check ☐ Other (29)

CONT. I.D.	CONTAMINANT NAME (Maximum Allowable Level)	MTD.	S	ANALYSIS RESULTS	PRECISION	ANALYSIS DATE Mo Day Yr	A*
			<	0005	±	08 14 00	Jem
2900	Regulated VOC's	524		0000	±		
2990	Benzene 0.00	524		0000	±	PH 1.5	
2976	Vinyl Chloride 0.002	524		0000	±		
2982	Carbon Tetrachloride 0.005	524		0000	±		
2980	1,2-Dichloroethane 0.005	524		0000	±		
2984	Trichloroethylene 0.005	524		0000	±		
2977	1,1-Dichloroethylene 0.007	524		0000	±		
2981	1,1,1-Trichloroethane 0.20	524		0000	±		
2969	p-Dichlorobenzene 0.075	524		0000	±		
	c-1,2-dichloroethene 0.07	524		0000	±		
	1,2-dichloropropane 0.005	524		0000	±		
	ethylbenzene 0.7	524		0000	±		
	total xylenes 10.	524		0000	±		
	chlorobenzene 0.1	524		0000	±		
	o-dichlorobenzene 0.6	524		0000	±		
	styrene 0.1	524		0000	±		
	perchloroethene 0.005	524		0000	±		
	toluene 1.	524		0000	±		
	t-1,2-dichloroethene .1	524		0000	±		
2200	UNREGULATED VOCS	524	<	0000	±	HACH 0.0	

LAB I.D. (34-38)

EXCEEDED MAXIMUM HOLDING TIME

RECEIVED AUG 24 2000 VIRGINIA DEPT. OF HEALTH OFFICE OF WATER PROGRAMS NORTHEAST VA. FIELD OFFICE

PREPARED BY:

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

859

W TER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

21 August 2000
606158

MAIL TO:
Office of Water Programs Virginia Beach
5700 Thurston Ave
Virginia Beach, VA 23455

REGION: 3

PWS OWNER	PWSID	SOURCE
NALF FENTRESS FIELD/NALF 9742 MARYLAND AVE NORFOLK, VA 235113095	3550615	GROUNDWATER

LIMS NO.: 606158
DATE RECEIVED: 5/07/2000
FIELD TESTS: Temp: pH: Alk:
SAMPLING DATE: 7/21/2000
SAMPLE LOCATION: ENTRY
SAMPLE TYPE:
Chl: .02 CO2: Hrd:
COLLECTED BY: ABM
PRESERVATIVE:

CONT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
	1,1,1,2-Tetrachloroethane			< 0.5 ppb	14/08/2000	JMCULLOU
	1,1,1-Trichloroethane			< 0.5 ppb	14/08/2000	JMCULLOU
	1,1,2,2-Tetrachloroethane			< 0.5 ppb	14/08/2000	JMCULLOU
	1,1,2-Trichloroethane			< 0.5 ppb	14/08/2000	JMCULLOU
	1,1-Dichloroethane			< 0.5 ppb	14/08/2000	JMCULLOU
	1,1-Dichloroethene			< 0.5 ppb	14/08/2000	JMCULLOU
	1,1-Dichloropropene			< 0.5 ppb	14/08/2000	JMCULLOU
	1,2,3-Trichlorobenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	1,2,3-Trichloropropane			< 0.5 ppb	14/08/2000	JMCULLOU
	1,2,4-Trichlorobenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	1,2,4-Trimethylbenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	1,2-Dibromo-3-chloropropane			< 0.5 ppb	14/08/2000	JMCULLOU
	1,2-Dichloroethane			< 0.5 ppb	14/08/2000	JMCULLOU
	1,2-Dichloropropane			< 0.5 ppb	14/08/2000	JMCULLOU
	1,2-Ethylenedibromide			< 0.5 ppb	14/08/2000	JMCULLOU
	1,3,5-Trimethylbenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	1,3-Dichloropropane			< 0.5 ppb	14/08/2000	JMCULLOU
	2,2-Dichloropropane			< 0.5 ppb	14/08/2000	JMCULLOU
	4-Isopropyltoluene			< 0.5 ppb	14/08/2000	JMCULLOU
	Benzene			< 0.5 ppb	14/08/2000	JMCULLOU
	Bromochloromethane			< 0.5 ppb	14/08/2000	JMCULLOU
	Bromodichloromethane			< 0.5 ppb	14/08/2000	JMCULLOU
	Bromoform			< 0.5 ppb	14/08/2000	JMCULLOU
	Carbon Tetrachloride			< 0.5 ppb	14/08/2000	JMCULLOU

APPROVED BY: WRAY
DATE APPROVED: 8/21/2000
1 WQR

VOLATILES

W TER QUALITY REPORT

COMMONWEALTH OF VIRGINIA

Department of General Services

DIVISION OF CONSOLIDATED LABORATORY SERVICES

21 August 2000
606158

	Chlorine			0.0	14/08/2000	JMCULLOU
	Chlorobenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	Chloroethane			< 0.5 ppb	14/08/2000	JMCULLOU
	Chloroform			< 0.5 ppb	14/08/2000	JMCULLOU
	Dibromochloromethane			< 0.5 ppb	14/08/2000	JMCULLOU
	Dibromomethane			< 0.5 ppb	14/08/2000	JMCULLOU
	Dichlorodifluoromethane			< 0.5 ppb	14/08/2000	JMCULLOU
	Dichloromethane (Methylene Chlorid			< 0.5 ppb	14/08/2000	JMCULLOU
	Ethylbenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	Hexachlorobutadiene			< 0.5 ppb	14/08/2000	JMCULLOU
	Isopropylbenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	Methyl Bromide (Bromomethane)			< 0.5 ppb	14/08/2000	JMCULLOU
	Methyl Chloride (Chloromethane)			< 0.5 ppb	14/08/2000	JMCULLOU
	Naphthalene			< 0.5 ppb	14/08/2000	JMCULLOU
	Styrene			< 0.5 ppb	14/08/2000	JMCULLOU
	Tetrachloroethylene (Perchloroethyle			< 0.5 ppb	14/08/2000	JMCULLOU
	Toluene			< 0.5 ppb	14/08/2000	JMCULLOU
	Total Xylenes			< 0.5 ppb	14/08/2000	JMCULLOU
	Trichloroethene			< 0.5 ppb	14/08/2000	JMCULLOU
	Trichlorofluoromethane			< 0.5 ppb	14/08/2000	JMCULLOU
	Vinyl Chloride			< 0.5 ppb	14/08/2000	JMCULLOU
	cis-1,2-Dichloroethene			< 0.5 ppb	14/08/2000	JMCULLOU
	cis-1,3-Dichloropropene			< 0.5 ppb	14/08/2000	JMCULLOU
	m-Dichlorobenzene (1,3-Dichloroben			< 0.5 ppb	14/08/2000	JMCULLOU
	n-Butylbenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	n-Propylbenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	note exceeded maximum holding time			*	14/08/2000	JMCULLOU
	o-Chlorotoluene (2-Chlorotoluene)			< 0.5 ppb	14/08/2000	JMCULLOU
	o-Dichlorobenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	p-Chlorotoluene (4-Chlorotoluene)			< 0.5 ppb	14/08/2000	JMCULLOU
	p-Dichlorobenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	pH			1.5	14/08/2000	JMCULLOU
	s-Butylbenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	t-Butylbenzene			< 0.5 ppb	14/08/2000	JMCULLOU
	trans-1,2-Dichloroethene			< 0.5 ppb	14/08/2000	JMCULLOU
	trans-1,3-Dichloropropene			< 0.5 ppb	14/08/2000	JMCULLOU

AUG 24 2000

APPROVED BY: WRAY DATE APPROVED: 8/21/2000 2 WOR

VOLATILES

BGR

SUBJECT: CITY OF CHESAPEAKE
Water - US Navy – NALF Fentress

AUG 17 2000

Mr. Wilkie Din
NALF-Fentress
Environmental Department
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

Dear Mr. Din:

Enclosed please find a copy of the Water Quality Report for your information and files. This report contains the results of metals analyses performed on water samples collected from the subject waterworks on July 21, 2000.

The results of the metals analyses indicate that the water meets the Primary and Secondary Maximum Contaminant Levels for the analyzed constituents as set forth in the Commonwealth of Virginia *Waterworks Regulations*.

There is presently no established standard for sodium in drinking water. Water containing more than 270 mg/l of sodium should not be used for drinking water by those on moderately restricted sodium diets. Water containing more than 20 mg/l should not be used by those on severely restricted diets. For informational purposes only, we wish to point out that the analysis of this sample indicates that your water system has a sodium content of 94.5 mg/l.

We would like to point out that the numbers and types of samples to be required in the future will be greatly expanded as a result of the 1986 amendments to the Safe Drinking Water Act. An additional result may be the need to add chlorination, regardless of bacteriological quality, in response to the upcoming mandatory disinfection rule set up by the U.S. Congress during the passage of the amendments. We will make sure that you are made aware of any new responsibilities as the U.S. Environmental Protection Agency promulgates the several sets of new regulations required by the amendments.

Your next sample for metals analyses should be taken in 2003.

AUG 17 2000

SUBJECT: CITY OF CHESAPEAKE
Water - US Navy – NALF Fentress

If you have any questions or if we may be of additional assistance, please contact us.

Sincerely,

RSH

Renée S. Hall
Assistant District Engineer
Office of Water Programs

DBH

RSH/bjm

pc: City of Chesapeake Health Department
V.D.H. - Division of Water Supply Engineering
Mr. Eric D. Ashton, Federal Facilities Coordinator, USEPA, Region III

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W ' TER QUALITY REPORT

C OMMONWEALTH OF VIRGINIA

Department of General Services

DIVISION OF CONSOLIDATED LABORATORY SERVICES

8 August 20C
606155

MAIL TO:

Office of Water Programs Virginia Beach
5700 Thurston Ave
Virginia Beach, VA 23455

REGION: 3

PWS OWNER	PWSID	SOURCE
NALF FENTRESS FIELD/NALF FENTR 9742 MARYLAND AVE NORFOLK, VA 235113095	3550615	GROUNDWATER

LIMS NO.: 606155
DATE RECEIVED 7/25/2000

SAMPLING DATE: 7/21/2000
SAMPLE LOCATION: ENTRY
SAMPLE TYPE:

COLLECTED BY: ABM

FIELD TESTS: Temp: pH: Alk: Chl: CO2: .02 Hrd:

PRESERVATIVE: HNO3

CONT ID	PARAMETER	PM CL (ppm)	SM CL (ppm)	RESULT	ANALYSIS DATE	ANALYST
1002	Aluminum			< 0.20 ppm	01/08/2000	THENRY
1074	Antimony	.006		< 0.002 ppm	01/08/2000	THENRY
1005	Arsenic			< 0.002 ppm	01/08/2000	THENRY
1010	Barium	2		< 0.20 ppm	01/08/2000	THENRY
1075	Beryllium	.004		< 0.002 ppm	01/08/2000	THENRY
1015	Cadmium	.005		< 0.002 ppm	01/08/2000	THENRY
1020	Chromium	.1		< 0.01 ppm	01/08/2000	THENRY
1022	Copper		1.3	< 0.20 ppm	01/08/2000	THENRY
1028	Iron		.3	< 0.20 ppm	01/08/2000	THENRY
1030	Lead	.015		< 0.002 ppm	01/08/2000	THENRY
1032	Manganese		0.05	0.010 ppm	01/08/2000	THENRY
1035	Mercury	0.002		< 0.0002 ppm	01/08/2000	THENRY
1036	Nickel	.1		< 0.01 ppm	01/08/2000	THENRY
1045	Selenium	.05		< 0.01 ppm	01/08/2000	THENRY
1052	Sodium			94.5 ppm	01/08/2000	THENRY
1085	Thallium	.002		< 0.002 ppm	01/08/2000	THENRY
1095	Zinc		5	< 0.20 ppm	01/08/2000	THENRY

RECEIVED
AUG 9 2000
VIRGINIA DEPT. OF HEALTH
OFFICE OF WATER PROGRAMS
SOUTHEAST VA. FIELD OFFICE

APPROVED BY: THENRY

DATE APPROVED: 8/ 7/2000

1

WQRNR

METALS

606155

Metals & Radiochemistry
DW-METALS
Recvd: 07/25/00

...report

METALS

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

NAME OF WATER SYSTEM: NALF FENTRESS
SOURCE: GROUNDWATER
OTHER INFORMATION:
TREATMENT + CHLORINATION

REPORT RESULTS TO HEALTH OFFICIAL AT:
DIVISION OF WATER PROGRAMS
SOUTHEAST VA. REGIONAL OFFICE
Name: VIRGINIA DEPARTMENT OF HEALTH
Address: 5700 THURSTON AVE., SUITE 203
City: VIRGINIA BEACH, VIRGINIA Zip Code: 23455

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept.
☐ Culpeper ☐ Lexington ☒ Virginia Beach ☐

PLANNING DISTRICT# 20B
SAMPLING LOCATION: ENTRY
COUNTY: NA
INDEPENDENT CITY: CHESAPEAKE
CODE: 7-9

SOURCE TYPE:
☒ Public-Community
☐ Public-Noncommunity

FIELD TESTS: Temp: pH:
Cl_2: 0.1 mg/L Alk: mg/L
CO_2 mg/L Hard.: mg/L

P.W.S.I.D. #: 3 5 5 0 6 1 5 (10-16)
TRANSACTION CODE: 0 3 (17-18)

DATE COLLECTED
Mo 7 Day 21 Yr 00 (19-24)

TIME: 1240 (25-28)

COLLECTED BY: ABM / BBB

CONTAINER TYPE:
☐ Glass
☒ Plastic

PRESERVATIVE USED:
☐ None
☐ Ice
☐ Other
☒ Nitric Acid

SAMPLE TYPE:
D ☐ Reg. Dist.
P ☐ Plant Tap
R ☐ Raw Water
C ☐ Check
M ☐ MCL Check
☐ Other
29

DATE REC:
DATE REP:

865

SUBJECT: CITY OF CHESAPEAKE
Water - NALF – Fentress

FEB 29 2000

Mr. Wilkie Din
NALF-Fentress
Environmental Department
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

Dear Mr. Din:

Enclosed please find copies of the Water Quality Reports for your information and files. These reports contain the results of the VOC (Volatile Organic Chemicals) analyses that was performed on a water sample collected on February 10, 2000 from the subject water system.

The results of these analyses indicate that levels of the VOCs were below the detection limit of the testing equipment. Therefore, the subject waterworks is classified as non-vulnerable as defined in 12 VAC 5-590-370 of the *Waterworks Regulations*.

The following unregulated contaminants were detected in the sample results:

Chloroform
Bromodichloromethane
Dibromochloromethane

These sample were collected for investigative purposes only. If you have any question, please do not hesitate to call me.

Sincerely,

RSH

Renée S. Hall
Assistant District Engineer
Office of Water Programs

RWT
VSB

RSH/bjm
Enclosures
pc: City of Chesapeake Health Department
V.D.H. – Division of Water Supply Engineering

\\OWPSEVFO\DATA\FILEROOM\DIST20B\Chesapeake\WATER\Nalf-fentrs\SAMPLINGRESULTS\voc-Feb00.doc

545740
Volatiles and Petroleum
M502
Recvd: 02/11/00

NAME OF WATER SYSTEM: NALF-Fentress
SOURCE: GW
OTHER INFORMATION: Environmental Investigation

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name: SOUTHEAST VA. DIST.
Address: [illegible]
City: [illegible] Zip Code: [illegible]

VOLATILE ORGANICS

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept.
☐ Culpeper ☐ Lexington ☑ Virginia Beach ☐

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

PLANNING DISTRICT# 20B
COUNTY: N/A
INDEPENDENT CITY: Chesapeake
SAMPLING LOCATION: WELL # 2
CODE: 7-9
SOURCE TYPE: ☑ Public-Community ☐ Public-Noncommunity
FIELD TESTS: Temp: pH: Cl2: mg/L Alk: mg/L CO2 mg/L Hard.: mg/L
P.W.S.I.D. #: 3 5 5 0 6 1 5 (10-16)
TRANSACTION CODE: 0 3 (17-18)

DATE COLLECTED: Mo 02 Day 10 Yr 00 (19-24)
TIME: 1000 (25-28)
COLLECTED BY: RSHall
CONTAINER TYPE: ☑ Glass ☐ Plastic
PRESERVATIVE USED: ☐ None ☑ Ice ☑ Other HT ☐ Nitric Acid
SAMPLE TYPE: D ☐ Reg. Dist. P ☐ Plant Tap R ☐ Raw Water C ☐ Check M ☐ MCL Check ☑ Other Special (29)
DATE REC:
DATE REP:

CONT. I.D.	CONTAMINANT NAME (Maximum Allowable Level)	MTD.	S	ANALYSIS RESULTS	PRECISION	ANALYSIS DATE Mo. Day Yr	A*
			✓	0005	±	2 12 00	TKP
2900	Regulated VOC's	524		0000	±		
2990	Benzene 0.00	524		0000	±		
2976	Vinyl Chloride 0.002	524		0000	±		
2982	Carbon Tetrachloride 0.005	524		0000	±		
2980	1,2-Dichloroethane 0.005	524		0000	±		
2984	Trichloroethylene 0.005	524		0000	±	pH = 1.8	
2977	1,1-Dichloroethylene 0.007	524		0000	±		
2981	1,1,1-Trichloroethane 0.20	524		0000	±		
2969	p-Dichlorobenzene 0.075	524		0000	±		
	c-1,2-dichloroethene 0.07	524		0000	±		
	1,2-dichloropropane 0.005	524		0000	±		
	ethylbenzene 0.7	524		0000	±		
	total xylenes 10.	524		0000	±		
	chlorobenzene 0.1	524		0000	±		
	o-dichlorobenzene 0.6	524		0000	±		
	styrene 0.1	524		0000	±		
	perchloroethene 0.005	524		0000	±		
	toluene 1.	524		0000	±		
	t-1,2-dichloroethene .1	524	✓	0000	±		
					±		
2200	UNREGULATED VOCS	524		0000	±		
	unidentified compounds		✓	0250	±		
					±		
					±		
					±		
					±		
					±		
(30-33)	LAB I.D. (34-38)	(39-41)		(43-50)	(51-53)	(54-59)	

RECEIVED FEB 16 2000 OFFICE OF [illegible]

PREPARED BY:

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

867

WAT R QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

14 February 2000
545740

MAIL TO:
Office of Water Programs Virginia Beach
700 Thurston Ave
Virginia Beach, VA 23455

REGION: 3

WS OWNER	PWSID	SOURCE
NALF FENTRESS FIELD/NALF 9742 MARYLAND AVE NORFOLK, VA 235113095	3550615	GROUNDWATER

LIMS NO.: 545740 SAMPLING DATE: 2/10/2000 COLLECTED BY: R. S. HALL
ATE RECEIVED: SAMPLE LOCATION: WELL #2
/02/2000 SAMPLE TYPE: OTHER SPECIAL
ELD TESTS: Temp: Chl: PRESERVATIVE:
pH: CO2:
Alk: Hrd:

ONT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
	1,1,1,2-Tetrachloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1,1-Trichloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1,2,2-Tetrachloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1,2-Trichloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1-Dichloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1-Dichloroethene			< 0.5 ppb	12/02/2000	TPAYNE
	1,1-Dichloropropene			< 0.5 ppb	12/02/2000	TPAYNE
	1,2,3-Trichlorobenzene			< 0.5 ppb	12/02/2000	TPAYNE
	1,2,3-Trichloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	1,2,4-Trichlorobenzene			< 0.5 ppb	12/02/2000	TPAYNE
	1,2,4-Trimethylbenzene			< 0.5 ppb	12/02/2000	TPAYNE
	1,2-Dibromo-3-chloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	1,2-Dichloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,2-Dichloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	1,2-Ethylenedibromide			< 0.5 ppb	12/02/2000	TPAYNE
	1,3,5-Trimethylbenzene			< 0.5 ppb	12/02/2000	TPAYNE
	1,3-Dichloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	2,2-Dichloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	4-Isopropyltoluene			< 0.5 ppb	12/02/2000	TPAYNE
	Benzene			< 0.5 ppb	12/02/2000	TPAYNE
	Bromochloromethane			< 0.5 ppb	12/02/2000	TPAYNE
	Bromodichloromethane			< 0.5 ppb	12/02/2000	TPAYNE
	Bromoform			< 0.5 ppb	12/02/2000	TPAYNE
	Carbon Tetrachloride			< 0.5 ppb	12/02/2000	TPAYNE

APPROVED BY: LGREEN DATE APPROVED: 2/14/2000 1 WQR

VOLATILES

	Chlorobenzene	< 0.5 ppb	12/02/2000	TPAYNE
	Chloroethane	< 0.5 ppb	12/02/2000	TPAYNE
	Chloroform	< 0.5 ppb	12/02/2000	TPAYNE
	Dibromochloromethane	< 0.5 ppb	12/02/2000	TPAYNE
	Dibromomethane	< 0.5 ppb	12/02/2000	TPAYNE
	Dichlorodifluoromethane	< 0.5 ppb	12/02/2000	TPAYNE
	Dichloromethane (Methylene Chlorid	< 0.5 ppb	12/02/2000	TPAYNE
	Ethylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	Hexachlorobutadiene	< 0.5 ppb	12/02/2000	TPAYNE
	Isopropylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	Methyl Bromide (Bromomethane)	< 0.5 ppb	12/02/2000	TPAYNE
	Methyl Chloride (Chloromethane)	< 0.5 ppb	12/02/2000	TPAYNE
46491	Methyl t-butyl ether (MTBE)	< 5.0 ppb	12/02/2000	TPAYNE
	Naphthalene	< 0.5 ppb	12/02/2000	TPAYNE
	Styrene	< 0.5 ppb	12/02/2000	TPAYNE
	Tetrachloroethylene (Perchloroethylei	< 0.5 ppb	12/02/2000	TPAYNE
	Toluene	< 0.5 ppb	12/02/2000	TPAYNE
	Total Xylenes	< 0.5 ppb	12/02/2000	TPAYNE
	Trichloroethene	< 0.5 ppb	12/02/2000	TPAYNE
	Trichlorofluoromethane	< 0.5 ppb	12/02/2000	TPAYNE
	Unidentified compounds	< 25 ppb	12/02/2000	TPAYNE
	Vinyl Chloride	< 0.5 ppb	12/02/2000	TPAYNE
	cis-1,2-Dichloroethene	< 0.5 ppb	12/02/2000	TPAYNE
	cis-1,3-Dichloropropene	< 0.5 ppb	12/02/2000	TPAYNE
	m-Dichlorobenzene (1,3-Dichloroben	< 0.5 ppb	12/02/2000	TPAYNE
	n-Butylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	n-Propylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	o-Chlorotoluene (2-Chlorotoluene)	< 0.5 ppb	12/02/2000	TPAYNE
	o-Dichlorobenzene	< 0.5 ppb	12/02/2000	TPAYNE
	p-Chlorotoluene (4-Chlorotoluene)	< 0.5 ppb	12/02/2000	TPAYNE
	p-Dichlorobenzene	< 0.5 ppb	12/02/2000	TPAYNE
	pH	1.8	12/02/2000	TPAYNE
	s-Butylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	t-Butylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	trans-1,2-Dichloroethene	< 0.5 ppb	12/02/2000	TPAYNE
	trans-1,3-Dichloropropene	< 0.5 ppb	12/02/2000	TPAYNE

VOLATILES

545741
Volatiles and Petroleum
M502
Recvd: 02/11/00

VOLATILE ORGANICS

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

NAME OF WATER SYSTEM: NALF-Fentress
SOURCE: GW
OTHER INFORMATION: Environmental Investigation

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name: [illegible]
Address: [illegible]
City: [illegible] Zip Code: 2701[illegible]

REGION: ☐ Abingdon ☐ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☑ Virginia Beach ☐ Local Health Dept.

PLANNING DISTRICT# 20B
COUNTY: N/A
INDEPENDENT CITY: Chesapeake
SAMPLING LOCATION: WELL #1
CODE: 7-9
SOURCE TYPE: ☑ Public-Community ☐ Public-Noncommunity

FIELD TESTS: Temp: pH: Cl2: mg/L Alk: mg/L CO2 mg/L Hard.: mg/L

P.W.S.I.D.#: 3 5 5 0 6 1 5 (10-16)
TRANSACTION CODE: 0 3 (17-18)

DATE COLLECTED: Mo 02 Day 10 Yr 99 (19-24)
TIME: 0950 (25-28)
COLLECTED BY: RSHall
CONTAINER TYPE: ☑ Glass ☐ Plastic
PRESERVATIVE USED: ☐ None ☑ Ice ☑ Other H+ ☐ Nitric Acid
SAMPLE TYPE: D ☐ Reg. Dist. P ☐ Plant Tap R ☐ Raw Water C ☐ Check M ☐ MCL Check ☑ Other Special (29)

CONT. I.D.	CONTAMINANT NAME (Maximum Allowable Level)	MTD.	S	ANALYSIS RESULTS	PRECISION	ANALYSIS DATE Mo Day Yr	A*
			✓	0005	±	2 12 00	TKP
2900	Regulated VOC's	524		0000	±		
2990	Benzene 0.00	524		0000	±		
2976	Vinyl Chloride 0.002	524		0000	±		
2982	Carbon Tetrachloride 0.005	524		0000	±		
2980	1,2-Dichloroethane 0.005	524		0000	±		
2984	Trichloroethylene 0.005	524		0000	±	pH=1.8	
2977	1,1-Dichloroethylene 0.007	524		0000	±		
2981	1,1,1-Trichloroethane 0.20	524		0000	±		
2969	p-Dichlorobenzene 0.075	524		0000	±		
	c-1,2-dichloroethene 0.07	524		0000	±		
	1,2-dichloropropane 0.005	524		0000	±		
	ethylbenzene 0.7	524		0000	±		
	total xylenes 10.	524		0000	±		
	chlorobenzene 0.1	524		0000	±		
	o-dichlorobenzene 0.6	524		0000	±		
	styrene 0.1	524		0000	±		
	perchloroethene 0.005	524		0000	±		
	toluene 1.	524		0000	±		
	t-1,2-dichloroethene .1	524	✓	0000	±		
					±		
2200	UNREGULATED VOCS	524	✓	0000	±		
					±		
					±		
					±		
					±		
					±		
30-33	LAB I.D. 34-38	39-41		43-50	51-53	54-59	

RECEIVED FEB 18 2000

DATE REC:
DATE REP:
PREPARED BY:

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

870

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

14 February 2000
545741

MAIL TO:
Office of Water Programs Virginia Beach
5700 Thurston Ave
Virginia Beach, VA 23455

REGION: 3

PWS OWNER	PWSID	SOURCE
NALF FENTRESS FIELD/NALF 9742 MARYLAND AVE NORFOLK, VA 235113095	3550615	GROUNDWATER

LIMS NO.: 545741 SAMPLING DATE: 2/10/2000 COLLECTED BY: R. S. HALL
DATE RECEIVED: 1/02/2000 SAMPLE LOCATION: WELL #1
SAMPLE TYPE: OTHER SPECIAL
FIELD TESTS: Temp: pH: Alk: Chl: CO2: Hrd: PRESERVATIVE:

CONT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
	1,1,1,2-Tetrachloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1,1-Trichloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1,2,2-Tetrachloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1,2-Trichloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1-Dichloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,1-Dichloroethene			< 0.5 ppb	12/02/2000	TPAYNE
	1,1-Dichloropropene			< 0.5 ppb	12/02/2000	TPAYNE
	1,2,3-Trichlorobenzene			< 0.5 ppb	12/02/2000	TPAYNE
	1,2,3-Trichloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	1,2,4-Trichlorobenzene			< 0.5 ppb	12/02/2000	TPAYNE
	1,2,4-Trimethylbenzene			< 0.5 ppb	12/02/2000	TPAYNE
	1,2-Dibromo-3-chloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	1,2-Dichloroethane			< 0.5 ppb	12/02/2000	TPAYNE
	1,2-Dichloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	1,2-Ethylenedibromide			< 0.5 ppb	12/02/2000	TPAYNE
	1,3,5-Trimethylbenzene			< 0.5 ppb	12/02/2000	TPAYNE
	1,3-Dichloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	2,2-Dichloropropane			< 0.5 ppb	12/02/2000	TPAYNE
	4-Isopropyltoluene			< 0.5 ppb	12/02/2000	TPAYNE
	Benzene			< 0.5 ppb	12/02/2000	TPAYNE
	Bromochloromethane			< 0.5 ppb	12/02/2000	TPAYNE
	Bromodichloromethane			< 0.5 ppb	12/02/2000	TPAYNE
	Bromoform			< 0.5 ppb	12/02/2000	TPAYNE
	Carbon Tetrachloride			< 0.5 ppb	12/02/2000	TPAYNE

APPROVED BY: LGREEN DATE APPROVED: 2/14/2000 1 WOR

VOLATILES

	Chlorobenzene	< 0.5 ppb	12/02/2000	TPAYNE
	Chloroethane	< 0.5 ppb	12/02/2000	TPAYNE
	Chloroform	< 0.5 ppb	12/02/2000	TPAYNE
	Dibromochloromethane	< 0.5 ppb	12/02/2000	TPAYNE
	Dibromomethane	< 0.5 ppb	12/02/2000	TPAYNE
	Dichlorodifluoromethane	< 0.5 ppb	12/02/2000	TPAYNE
	Dichloromethane (Methylene Chlorid	< 0.5 ppb	12/02/2000	TPAYNE
	Ethylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	Hexachlorobutadiene	< 0.5 ppb	12/02/2000	TPAYNE
	Isopropylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	Methyl Bromide (Bromomethane)	< 0.5 ppb	12/02/2000	TPAYNE
	Methyl Chloride (Chloromethane)	< 0.5 ppb	12/02/2000	TPAYNE
46491	Methyl t-butyl ether (MTBE)	< 5.0 ppb	12/02/2000	TPAYNE
	Naphthalene	< 0.5 ppb	12/02/2000	TPAYNE
	Styrene	< 0.5 ppb	12/02/2000	TPAYNE
	Tetrachloroethylene (Perchloroethylei	< 0.5 ppb	12/02/2000	TPAYNE
	Toluene	< 0.5 ppb	12/02/2000	TPAYNE
	Total Xylenes	< 0.5 ppb	12/02/2000	TPAYNE
	Trichloroethene	< 0.5 ppb	12/02/2000	TPAYNE
	Trichlorofluoromethane	< 0.5 ppb	12/02/2000	TPAYNE
	Vinyl Chloride	< 0.5 ppb	12/02/2000	TPAYNE
	cis-1,2-Dichloroethene	< 0.5 ppb	12/02/2000	TPAYNE
	cis-1,3-Dichloropropene	< 0.5 ppb	12/02/2000	TPAYNE
	m-Dichlorobenzene (1,3-Dichloroben	< 0.5 ppb	12/02/2000	TPAYNE
	n-Butylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	n-Propylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	o-Chlorotoluene (2-Chlorotoluene)	< 0.5 ppb	12/02/2000	TPAYNE
	o-Dichlorobenzene	< 0.5 ppb	12/02/2000	TPAYNE
	p-Chlorotoluene (4-Chlorotoluene)	< 0.5 ppb	12/02/2000	TPAYNE
	p-Dichlorobenzene	< 0.5 ppb	12/02/2000	TPAYNE
	pH	1.8	12/02/2000	TPAYNE
	s-Butylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	t-Butylbenzene	< 0.5 ppb	12/02/2000	TPAYNE
	trans-1,2-Dichloroethene	< 0.5 ppb	12/02/2000	TPAYNE
	trans-1,3-Dichloropropene	< 0.5 ppb	12/02/2000	TPAYNE

VOLATILES

545739
Volatiles and Petroleum
M502
Recvd: 02/11/00

NAME OF WATER SYSTEM: NALF - FENTRESS
SOURCE: GW
OTHER INFORMATION: ENVIRONMENTAL INVESTIGATION

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name: SOUTHEAST VA REGIONAL OFFICE
Address: VIRGINIA DEPT. OF HEALTH
City: VIRGINIA BEACH, Zip Code: 23455

VOLATILE ORGANICS

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

00 FEB 16 AM 8:48

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept.
☐ Culpeper ☐ Lexington ☑ Virginia Beach ☐

PLANNING DISTRICT# 20B
SAMPLING LOCATION: ENTRY POINT
SOURCE TYPE: ☑ Public-Community ☐ Public-Noncommunity
COUNTY: N/A
INDEPENDENT CITY: Chesapeake
CODE: 7-9
FIELD TESTS: Temp: Cl2: mg/L CO2 mg/L
pH: Alk: mg/L Hard.: mg/L
P.W.S.I.D. #: 3 5 5 0 6 1 5 (10-16)
TRANSACTION CODE 0 3 (17-18)

DATE COLLECTED: Mo 02 Day 10 Yr 00 (19-24)
TIME: 1015 (25-28)
COLLECTED BY: RSHALL
CONTAINER TYPE: ☑ Glass ☐ Plastic
PRESERVATIVE USED: ☐ None ☑ Ice ☑ Other H+ ☐ Nitric Acid
SAMPLE TYPE: D ☐ Reg. Dist. P ☐ Plant Tap R ☐ Raw Water C ☐ Check M ☐ MCL Check ☑ Other Special (29)
DATE REC:
DATE REP:

CONT. I.D.	CONTAMINANT NAME (Maximum Allowable Level)	MTD.	S	ANALYSIS RESULTS	PRECISION	ANALYSIS DATE Mo Day Yr	A*
			2	0005	±	2 11 00	TKP
2900	Regulated VOC's	524		0000	±		
2990	Benzene 0.00	524		0000	±		
2976	Vinyl Chloride 0.002	524		0000	±		
2982	Carbon Tetrachloride 0.005	524		0000	±		
2980	1,2-Dichloroethane 0.005	524		0000	±		
2984	Trichloroethylene 0.005	524		0000	±	pH = 1.7	
2977	1,1-Dichloroethylene 0.007	524		0000	±		
2981	1,1,1-Trichloroethane 0.20	524		0000	±		
2969	p-Dichlorobenzene 0.075	524		0000	±		
	c-1,2-dichloroethene 0.07	524		0000	±		
	1,2-dichloropropane 0.005	524		0000	±		
	ethylbenzene 0.7	524		0000	±		
	total xylenes 10.	524		0000	±		
	chlorobenzene 0.1	524		0000	±		
	o-dichlorobenzene 0.6	524		0000	±		
	styrene 0.1	524		0000	±		
	perchloroethene 0.005	524		0000	±		
	toluene 1.	524		0000	±		
	t-1,2-dichloroethene .1	524	↓	0000	±		
					±		
2200	UNREGULATED VOCS	524		0000	±		
	Chloroform			0071	±		
	Bromodichloromethane			0058	±		
	Dibromochloromethane			0030	±		
					±		
					±		
					±		
30-33	LAB I.D. 34-38	39-41		43-50	51-53	54-59	

RECEIVED FEB 16 2000 VIRGINIA DEPT. OF HEALTH SOUTHEAST VA

HACH 0.0

PREPARED BY:

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

WATER QUALITY REPORT
COMMONWEALTH OF VIRGINIA
Department of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

14 February 2000
545739

MAIL TO:
Office of Water Programs Virginia Beach
5700 Thurston Ave
Virginia Beach, VA 23455

REGION: 3

WS OWNER	PWSID	SOURCE
NALF FENTRESS FIELD/NALF		**GROUNDWATER**
9742 MARYLAND AVE	**3550615**	
NORFOLK, VA 235113095		

LIMS NO.: 545739 SAMPLING DATE: 2/10/2000 COLLECTED BY: R. S. HALL
DATE RECEIVED: SAMPLE LOCATION: ENTRY POINT
/02/2000 SAMPLE TYPE: OTHER SPECIAL
IELD TESTS: Temp: Chl: PRESERVATIVE:
pH: CO2:
Alk: Hrd:

ONT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
	1,1,1,2-Tetrachloroethane			< 0.5 ppb	14/02/2000	TPAYNE
	1,1,1-Trichloroethane			< 0.5 ppb	14/02/2000	TPAYNE
	1,1,2,2-Tetrachloroethane			< 0.5 ppb	14/02/2000	TPAYNE
	1,1,2-Trichloroethane			< 0.5 ppb	14/02/2000	TPAYNE
	1,1-Dichloroethane			< 0.5 ppb	14/02/2000	TPAYNE
	1,1-Dichloroethene			< 0.5 ppb	14/02/2000	TPAYNE
	1,1-Dichloropropene			< 0.5 ppb	14/02/2000	TPAYNE
	1,2,3-Trichlorobenzene			< 0.5 ppb	14/02/2000	TPAYNE
	1,2,3-Trichloropropane			< 0.5 ppb	14/02/2000	TPAYNE
	1,2,4-Trichlorobenzene			< 0.5 ppb	14/02/2000	TPAYNE
	1,2,4-Trimethylbenzene			< 0.5 ppb	14/02/2000	TPAYNE
	1,2-Dibromo-3-chloropropane			< 0.5 ppb	14/02/2000	TPAYNE
	1,2-Dichloroethane			< 0.5 ppb	14/02/2000	TPAYNE
	1,2-Dichloropropane			< 0.5 ppb	14/02/2000	TPAYNE
	1,2-Ethylenedibromide			< 0.5 ppb	14/02/2000	TPAYNE
	1,3,5-Trimethylbenzene			< 0.5 ppb	14/02/2000	TPAYNE
	1,3-Dichloropropane			< 0.5 ppb	14/02/2000	TPAYNE
	2,2-Dichloropropane			< 0.5 ppb	14/02/2000	TPAYNE
	4-Isopropyltoluene			< 0.5 ppb	14/02/2000	TPAYNE
	Benzene			< 0.5 ppb	14/02/2000	TPAYNE
	Bromochloromethane			< 0.5 ppb	14/02/2000	TPAYNE
	Bromodichloromethane			5.8 ppb	14/02/2000	TPAYNE
	Bromoform			< 0.5 ppb	14/02/2000	TPAYNE
	Carbon Tetrachloride			< 0.5 ppb	14/02/2000	TPAYNE

APPROVED BY: LGREEN DATE APPROVED: 2/14/2000 1 WOR

VOLATILES

	Chlorine	0	14/02/2000	TPAYNE
	Chlorobenzene	< 0.5 ppb	14/02/2000	TPAYNE
	Chloroethane	< 0.5 ppb	14/02/2000	TPAYNE
	Chloroform	7.1 ppb	14/02/2000	TPAYNE
	Dibromochloromethane	3.0 ppb	14/02/2000	TPAYNE
	Dibromomethane	< 0.5 ppb	14/02/2000	TPAYNE
	Dichlorodifluoromethane	< 0.5 ppb	14/02/2000	TPAYNE
	Dichloromethane (Methylene Chlorid	< 0.5 ppb	14/02/2000	TPAYNE
	Ethylbenzene	< 0.5 ppb	14/02/2000	TPAYNE
	Hexachlorobutadiene	< 0.5 ppb	14/02/2000	TPAYNE
	Isopropylbenzene	< 0.5 ppb	14/02/2000	TPAYNE
	Methyl Bromide (Bromomethane)	< 0.5 ppb	14/02/2000	TPAYNE
	Methyl Chloride (Chloromethane)	< 0.5 ppb	14/02/2000	TPAYNE
46491	Methyl t-butyl ether (MTBE)	< 5.0 ppb	14/02/2000	TPAYNE
	Naphthalene	< 0.5 ppb	14/02/2000	TPAYNE
	Styrene	< 0.5 ppb	14/02/2000	TPAYNE
	Tetrachloroethylene (Perchloroethylei	< 0.5 ppb	14/02/2000	TPAYNE
	Toluene	< 0.5 ppb	14/02/2000	TPAYNE
	Total Xylenes	< 0.5 ppb	14/02/2000	TPAYNE
	Trichloroethene	< 0.5 ppb	14/02/2000	TPAYNE
	Trichlorofluoromethane	< 0.5 ppb	14/02/2000	TPAYNE
	Vinyl Chloride	< 0.5 ppb	14/02/2000	TPAYNE
	cis-1,2-Dichloroethene	< 0.5 ppb	14/02/2000	TPAYNE
	cis-1,3-Dichloropropene	< 0.5 ppb	14/02/2000	TPAYNE
	m-Dichlorobenzene (1,3-Dichloroben	< 0.5 ppb	14/02/2000	TPAYNE
	n-Butylbenzene	< 0.5 ppb	14/02/2000	TPAYNE
	n-Propylbenzene	< 0.5 ppb	14/02/2000	TPAYNE
	o-Chlorotoluene (2-Chlorotoluene)	< 0.5 ppb	14/02/2000	TPAYNE
	o-Dichlorobenzene	< 0.5 ppb	14/02/2000	TPAYNE
	p-Chlorotoluene (4-Chlorotoluene)	< 0.5 ppb	14/02/2000	TPAYNE
	p-Dichlorobenzene	< 0.5 ppb	14/02/2000	TPAYNE
	pH	1.7	14/02/2000	TPAYNE
	s-Butylbenzene	< 0.5 ppb	14/02/2000	TPAYNE
	t-Butylbenzene	< 0.5 ppb	14/02/2000	TPAYNE
	trans-1,2-Dichloroethene	< 0.5 ppb	14/02/2000	TPAYNE
	trans-1,3-Dichloropropene	< 0.5 ppb	14/02/2000	TPAYNE

APPROVED BY: LGREEN DATE APPROVED: 2/14/2000 2 WOR

VOLATILES

SUBJECT: CITY OF CHESAPEAKE
Water - NALF – Fentress

APR 09 1999

Mr. D. H. Buckner, Head
Environmental Department
Navy Public Works Center
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

Dear Mr. Buckner:

Enclosed please find copies of the Water Quality Reports for your information and files. These reports contain the results of the VOC (Volatile Organic Chemicals) and nitrate/nitrite analyses that was performed on water samples collected on March 4, 1999 from the subject water system.

The results of these analyses indicate that levels of the VOCs were below the detection limit of the testing equipment. Therefore, the subject waterworks is classified as non-vulnerable as defined in 12 VAC 5-590-370 of the *Waterworks Regulations*. The results of the nitrate/nitrite analysis indicate that the levels were below the Primary Maximum Contaminant Level. As a result, the next samples to be analyzed for VOCs and nitrate/nitrite from this waterworks should be collected in March ~~1999.~~ 2000

The following unregulated contaminants were detected in the sample results:

Chloroform	Bromoform
Bromodichloromethane	Dibromochloromethane

If you have any question, please do not hesitate to call me.

Sincerely,

RSH

Renée Hall
Assistant District Engineer
Office of Water Programs

RSH/bjm
Enclosures
pc: City of Chesapeake Health Department
VDH – Division of Water Supply Engineering

W:\DIST20B\CHESAPKE\WATER\Nalf-fentrs\SAMPLINGRESULTS\woc499.doc

Volatiles 372711
M502
Recvd: 03/05/99

VOLATILE ORGANICS

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

NAME OF WATER SYSTEM: NALF FENTRESS
SOURCE: GROUNDWATER
OTHER INFORMATION:

REPORT RESULTS TO HEALTH OFFICIAL AT:
SOUTHEAST VA. REGIONAL OFFICE
VIRGINIA DEPARTMENT OF HEALTH
5700 THURSTON AVE., SUITE 203
VIRGINIA BEACH, VIRGINIA 23455

REGION: ☐ Abingdon ☐ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☒ Virginia Beach ☐ Local Health Dept. ☐

PLANNING DISTRICT: 20 B
COUNTY: N/A
INDEPENDENT CITY: CHESAPEAKE
SAMPLING LOCATION: Bldg
CODE: [illegible]
SOURCE TYPE: NTNC
☐ Public Community
☐ Public Noncommunity

FIELD TESTS: Temp. Cl₂ 0.81 mg/L CO₂ mg/L
pH Alk. mg/L Hard. mg/L

PWSID: 3 5 5 0 6 1 5
TRANSACTION CODE: 0 3

DATE COLLECTED: Mo 03 Day 04 Yr 99

TIME: 1230

COLLECTED BY: ABN

CONTAINER TYPE:
☒ Glass
☐ Plastic

PRESERVATIVE USED:
☐ None
☒ Ice
☒ Other HCL Ascorbic
☐ Nitric Acid

SAMPLE TYPE:
D ☐ Dist.
P ☐ Plant Tap
R ☐ Raw Water
C ☐ Check
M ☐ MCL Check
S ☐ Other

CONT. ID	CONTAMINANT NAME (Maximum Allowable Level)	MTD	S	ANALYSIS RESULTS	PRECISION
2900	Regulated VOCs	524	<	0 0 0 0 0 0 0 5	±
2990	Benzene 0.001	524		0 0 0 0	±
2976	Vinyl Chloride 0.002	524		0 0 0 0	±
2982	Carbon tetrachloride 0.005	524		0 0 0 0	±
2980	1,2-Dichloroethane 0.005	524		0 0 0 0	±
2984	Trichloroethylene 0.005	524		0 0 0 0	±
2977	1,1-Dichloroethylene 0.007	524		0 0 0 0	±
2981	1,1,1-Trichloroethane 0.20	524		0 0 0 0	±
2969	p-Dichlorobenzene 0.075	524		0 0 0 0	±
[illegible]	1,2-Dichloroethane 0.07	524		0 0 0 0	±
[illegible]	1,2-Dichloropropane 0.005	524		0 0 0 0	±
[illegible]	Ethylbenzene 0.7	524		0 0 0 0	±
[illegible]	Chlorobenzene 0.1	524		0 0 0 0	±
[illegible]	o-Dichlorobenzene 0.6	524		0 0 0 0	±
[illegible]	Styrene 0.1	524		0 0 0 0	±
[illegible]	Tetrachloroethylene 0.005	524		0 0 0 0	±
[illegible]	Toluene 1	524		0 0 0 0	±
[illegible]	1,2-Dichloroethylene 1	524		0 0 0 0	±
[illegible]	Total Xylenes 10	524	√	0 0 0 0	±
2 [illegible] 0 0	UNREGULATED VOCs	524		0 0 0 [illegible]	
[illegible]	[illegible]			[illegible]	

ANALYSIS DATE: Mo 03 Day 12 Yr 99

pH = 1.9

RECEIVED
MAR 22 1999
VIRGINIA DEPT. OF HEALTH
OFFICE OF WATER PROGRAMS
SOUTHEAST VA FIELD OFFICE

HACH 0.0

LAB ID

DATE REC'D
DATE RUN

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

March/17/1999
372711

MAIL TO:

Office of Water Programs Virginia Beach
5700 Thurston Ave
Virginia Beach, VA 23455

REGION: 3

PWS OWNER	PWSID	SOURCE
NALF FENTRESS FIELD/NALF **9742 MARYLAND AVE** **NORFOLK, VA 235113095**	**3550615**	**GROUNDWATER**

LIMS NO.: 372711 SAMPLING DATE: 3/ 4/99 COLLECTED BY: ABM
DATE RECEIVED: 3/ 5/99 SAMPLE LOCATION: BLDG.
SAMPLE TYPE:

FIELD TESTS: Temp: Chl: PRESERVATIVE:
pH: CO2:
Alk: Hrd:

CONT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
	1,1,1,2-Tetrachloroethane			< 0.5 ppb	03/12/1999	JMCULLOU
	1,1,1-Trichloroethane			< 0.5 ppb	03/12/1999	JMCULLOU
	1,1,2,2-Tetrachloroethane			< 0.5 ppb	03/12/1999	JMCULLOU
	1,1,2-Trichloroethane			< 0.5 ppb	03/12/1999	JMCULLOU
	1,1-Dichloroethane			< 0.5 ppb	03/12/1999	JMCULLOU
	1,1-Dichloroethene			< 0.5 ppb	03/12/1999	JMCULLOU
	1,1-Dichloropropene			< 0.5 ppb	03/12/1999	JMCULLOU
	1,2,3-Trichlorobenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	1,2,3-Trichloropropane			< 0.5 ppb	03/12/1999	JMCULLOU
	1,2,4-Trichlorobenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	1,2,4-Trimethylbenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	1,2-Dibromo-3-chloropropane			< 0.5 ppb	03/12/1999	JMCULLOU
	1,2-Dichloroethane			< 0.5 ppb	03/12/1999	JMCULLOU
	1,2-Dichloropropane			< 0.5 ppb	03/12/1999	JMCULLOU
	1,2-Ethylenedibromide			< 0.5 ppb	03/12/1999	JMCULLOU
	1,3,5-Trimethylbenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	1,3-Dichloropropane			< 0.5 ppb	03/12/1999	JMCULLOU
	2,2-Dichloropropane			< 0.5 ppb	03/12/1999	JMCULLOU
	4-Isopropyltoluene			< 0.5 ppb	03/12/1999	JMCULLOU
	Benzene			< 0.5 ppb	03/12/1999	JMCULLOU
	Bromochloromethane			< 0.5 ppb	03/12/1999	JMCULLOU
	Bromodichloromethane			10.4 ppb	03/12/1999	JMCULLOU
	Bromodichloropropane			< 0.5 ppb	03/12/1999	JMCULLOU
	Bromoform			0.8 ppb	03/12/1999	JMCULLOU
	Carbon Tetrachloride			< 0.5 ppb	03/12/1999	JMCULLOU
	Chlorine			0.0	03/12/1999	JMCULLOU
	Chlorobenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	Chloroethane			< 0.5 ppb	03/12/1999	JMCULLOU
	Chloroform			15.6 ppb	03/12/1999	JMCULLOU
	Dibromochloromethane			6.60 ppb	03/12/1999	JMCULLOU

RECEIVED MAR 22 1999 VIRGINIA DEPT. OF HEALTH OFFICE OF WATER PROGRAMS SOUTHEAST DISTRICT

APPROVED BY: BWHITEHEAD DATE APPROVED: 3/17/99 1 WQR

VOLATILES

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

March/17/1999
372711

	Dibromomethane			< 0.5 ppb	03/12/1999	JMCULLOU
	Dichlorodifluoromethane			< 0.5 ppb	03/12/1999	JMCULLOU
	Dichloromethane			< 0.5 ppb	03/12/1999	JMCULLOU
	Ethylbenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	Hexachlorobutadiene			< 0.5 ppb	03/12/1999	JMCULLOU
	Isopropylbenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	Methyl Bromide			< 0.5 ppb	03/12/1999	JMCULLOU
	Methyl Chloride			< 0.5 ppb	03/12/1999	JMCULLOU
	Methyl tert-butyl ether			< 0.5 ppb	03/12/1999	JMCULLOU
	Naphthalene			< 0.5 ppb	03/12/1999	JMCULLOU
	Styrene			< 0.5 ppb	03/12/1999	JMCULLOU
	Tetrachloroethylene			< 0.5 ppb	03/12/1999	JMCULLOU
	Toluene			< 0.5 ppb	03/12/1999	JMCULLOU
	Total Xylenes			< 0.5 ppb	03/12/1999	JMCULLOU
	Trichloroethene			< 0.5 ppb	03/12/1999	JMCULLOU
	Trichlorofluoromethane			< 0.5 ppb	03/12/1999	JMCULLOU
	Vinyl Chloride			< 0.5 ppb	03/12/1999	JMCULLOU
	cis-1,2-Dichloroethene			< 0.5 ppb	03/12/1999	JMCULLOU
	cis-1,3-Dichloropropene			< 0.5 ppb	03/12/1999	JMCULLOU
	m-Dichlorobenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	n-Butylbenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	n-Propylbenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	o-Chlorotoluene			< 0.5 ppb	03/12/1999	JMCULLOU
	o-Dichlorobenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	p-Chlorotoluene			< 0.5 ppb	03/12/1999	JMCULLOU
	p-Dichlorobenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	pH			1.9	03/12/1999	JMCULLOU
	s-Butylbenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	t-Butylbenzene			< 0.5 ppb	03/12/1999	JMCULLOU
	trans-1,2-Dichloroethene			< 0.5 ppb	03/12/1999	JMCULLOU
	trans-1,3-Dichloropropene			< 0.5 ppb	03/12/1999	JMCULLOU

APPROVED BY: BWHITEHEAD DATE APPROVED: 3/17/99 2 WQR

VOLATILES

WATER QUALITY REPORT

COMMONWEALTH OF VIRGINIA
Department of General Services
DIVISION OF CONSOLIDATED LABORATORY SERVICES

March/15/1999
372676

MAIL TO:
Office of Water Programs Virginia Beach
5700 Thurston Ave
Virginia Beach, VA 23455

REGION: 3

PWS OWNER	PWSID	SOURCE
NALF FENTRESS FIELD/NALF FENTRESS 9742 MARYLAND AVE NORFOLK, VA 235113095	3550615	GROUNDWATER

LIMS NO.: 372676
DATE RECEIVED: 03/05/1999
SAMPLING DATE: 03/04/1999 12:30
SAMPLE LOCATION: BLDG 26 TAP
SAMPLE TYPE: PLANT TAP
COLLECTED BY: ABM

FIELD TESTS: Temp: pH: Alk: Chl: .81 CO2: Hrd:

PRESERVATIVE: 4xC, H2SO4 to pH <2

CONT ID	PARAMETER	PMCL (ppm)	SMCL (ppm)	RESULT	ANALYSIS DATE	ANALYST
	Nitrate plus Nitrite Nitrogen	10		.27 mg/l	03/12/1999	CMORTON

RECEIVED
MAR 18 1999
VIRGINIA DEPT. OF HEALTH
OFFICE OF WATER
SOUTHEAST VA. FIELD OFFICE

APPROVED BY: NROADCAP NR
DATE APPROVED: 03/15/1999
1
WQRLK

INORGANIC

372676
Water Chemistry
NO
Reqd: 03/05/99

rt

NITRATE -N NITRITE - N HARDNESS

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

NAME OF WATER SYSTEM: NALF FENTRESS
SOURCE: GROUNDWATER
OTHER INFORMATION:

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name: VIRGINIA DEPARTMENT OF HEALTH
Address: 3700 THURSTON AVE., SUITE 203
City: VIRGINIA BEACH, VIRGINIA Zip Code: 23455

REGION: ☐ Abingdon ☐ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☒ Virginia Beach ☐ Local Health Dept. ☐

PLANNING DISTRICT# 20B
SAMPLING LOCATION: BLDG-26 - TAP
SOURCE TYPE: NTNC
☐ Public-Community
☐ Public-Noncommunity
COUNTY: N/A
CODE: 7-9
INDEPENDENT CITY: CHESAPEAKE
FIELD TESTS: Temp: pH: Cl_2: .81 mg/L CO_2 mg/L Alk: mg/L Hard.: mg/L

P.W.S.I.D. #: 3 5 5 0 6 1 5 (10-16)
TRANSACTION CODE: Ø 3 (17-18)

DATE COLLECTED
Mo 03 Day 04 Yr 99 (19-24)

TIME: 1230 (25-28)

COLLECTED BY: ABM

CONTAINER TYPE:
☐ Glass
☒ Plastic

PRESERVATIVE USED:
☐ None
☐ Ice
☐ Other
☐ Nitric Acid
☒ Sulfuric Acid

SAMPLE TYPE:
D ☐ Reg. Dist.
P ☑ Plant Tap
R ☐ Raw Water
C ☐ Check
M ☐ MCL Check
☐ Other
29

CONT. I.D.	CONTAMINANT NAME (Maximum Allowable Level)	MTD.	S	ANALYSIS RESULTS	PRECISION	ANALYSIS DATE Mo Day Yr	A*
	Nitrate-Nitrogen				±		
	Nitrite-Nitrogen				±		
					±		
	Nitrate/Nitrite Nitrogen				±		
					±		
	Hardness (Total)				±		
30-33	LAB I.D. 34-38	39-41		43-50	51 53	54 59	

RECEIVED MAR 18 1999 VIRGINIA DEPT. OF HEALTH OFFICE OF WATER PROGRAMS SOUTHEAST VA. FIELD OFFICE

DATE REC:
DATE REP:
PREPARED BY:

The results on this report are expressed in mg/L unless otherwise indicated. *A = analyst's initials

SUBJECT: CITY OF CHESAPEAKE
Water - U.S. Navy
NALF Fentress

Mr. Will Bullard
Environmental Engineer
Public Works Department (Code: 189)
Building 820
N.A.S. Oceana
Virginia Beach, Virginia 23460

JAN 23 1992

Dear Mr. Bullard:

Enclosed please find copies of the Water Quality Reports for your information and files. These reports contain the results of radiological and metals analyses performed on water samples collected from the subject waterworks on November 26, 1991.

The results of these analyses indicate that the water meets the Primary and Secondary Maximum Contaminant Levels for the analyzed constituents as set forth in the Commonwealth of Virginia Waterworks Regulations.

There is presently no established standard for sodium in drinking water. Water containing more than 270 mg/l of sodium should not be used as drinking water by those persons whose physician has placed them on moderately restricted sodium diets. Water containing more than 20 mg/l should not be used as drinking water by those persons whose physician has placed them on severely restricted sodium diets. For informational purposes only, we wish to point out that the analysis of this sample indicates that your water system has a sodium content of 106 mg/l.

We would like to point out that the numbers and types of samples to be required in the future will be greatly expanded as a result of the 1986 amendments to the Safe Drinking Water Act. An additional result may be the need to add chlorination, regardless of bacteriological quality, in response to the upcoming mandatory disinfection rule set up by the U.S. Congress during the passage of the

JAN 23 1992

SUBJECT: CITY OF CHESAPEAKE
Water - U.S. Navy
NALF Fentress

amendments. We will make sure that you are made aware of any new responsibilities as the U.S. Environmental Protection Agency promulgates the several sets of new regulations required by the amendments.

Your next sample for metals and radiological analyses should be taken in 1994.

If you have any questions on the above, please do not hesitate to contact either Shahram Mohsenin, District Engineer, or me.

Sincerely,

Chris Demme

Chris Demme
Assistant District Engineer
Office of Water Programs

SM
CD/ms

Enclosures

pc/enc: City of Chesapeake Health Department

pc: Federal Facilities Coordinator, U.S.E.P.A., Region III
Ms. Joanne Troung, LANTDIV
Commander C. N. Salmond, Public Works Officer, N.A.S. Oceana
V.D.H. - Division of Water Supply Engineering

LAB #: 39039

SUB. U. DISTRICT

Water Quality Report

NAME OF WATER SYSTEM: US NAVY NALF - FENTRESS
SOURCE: GROUND WATER
OTHER INFORMATION:

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name VIRGINIA BEACH REGIONAL OFFIC
Address 5700 THURSTON AVE, SUITE 203
City VA BEACH, VA Zip Code 23455

RADIOLOGICAL

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

REGION: ☐ Abingdon ☐ Culpeper ☐ Danville ☐ Lexington ☐ Richmond ☒ Virginia Beach ☐ Local Health Dept. ☐

PLANNING DISTRICT# 20
COUNTY:
INDEPENDENT CITY: CHESAPEAKE

SAMPLING LOCATION: MEN'S HEAD
CODE: 7-9

SOURCE TYPE: ☒ Public-Community ☐ Public-Noncommunity

FIELD TESTS: Temp: 15.6 °C pH: 7.06 Cl2: mg/L Alk: mg/L CO2 mg/L Hard.: mg/L

P.W.S.I.D.#: 3 5 5 0 6 1 5 (10-16)

TRANSACTION CODE 0 3 (17-18)

DATE COLLECTED: Mo 1 1 Day 2 6 Yr 9 1 (19-24)

TIME: 0 9 3 0 (25-28)

COLLECTED BY: PATRICIA KVASNICKA

CONTAINER TYPE: ☐ Glass ☒ Plastic

PRESERVATIVE USED: ☐ None ☒ Ice ☐ Other ☐ Nitric Acid

SAMPLE TYPE: D ☒ Reg. Dist. P ☐ Plant Tap R ☐ Raw Water C ☐ Check M ☐ MCL Check S ☐ Other (29)

CONT. I.D. (30-33)	CONTAMINANT NAME (Maximum Allowable Level)	MTD. (39-41)	S (42)	ANALYSIS RESULTS (43-50)	PRECISION (51-53)	ANALYSIS DATE Mo Day Yr (54-59)	A*
4 0 0 0	Gross Alpha 5 pCi/L	4 1 9		Ø Ø Ø Ø Ø Ø	± Ø 1 1	12 5 91	SAD
4 0 1 0	Gross Radium (Alpha)	4 2 0		Ø Ø Ø Ø	± Ø		
4 0 2 0	Radium-226	4 2 1		Ø Ø Ø Ø	± Ø		
4 0 3 0	Radium-228	4 2 2		Ø Ø Ø Ø	± Ø		
4 1 0 0	Gross Beta 50 pCi/L	4 1 9		Ø Ø 3 7 Ø Ø	± Ø 1 6	12 5 91	SAD
4 0 0 6	Uranium			Ø Ø Ø Ø	± Ø		
4 1 0 2	Tritium				±		

LAB I.D. 0 4 0 0 0 (34-38)

DATE REC: DEC 01 1991
DATE REP: DEC 12 1991

PREPARED BY: SAD

The results on this report are expressed in pCi/L unless otherwise indicated. *A = analyst's initials

DEC 10 1991 VIRGINIA DEPT. OF HEALTH OFFICE OF WATER PROGRAMS VA. REGIONAL OFFICE

LAB #: BUR. OF CHEMISTRY

NAME OF WATER SYSTEM: US NAVY NALF-FENTRESS

SOURCE: GROUND WATER

OTHER INFORMATION:

REPORT RESULTS TO HEALTH OFFICIAL AT:
Name VIRGINIA BEACH REGIONAL OFFICE
Address 5700 THURSTON AVE, SUITE 203
City VA BEACH, VA Zip Code 23455

Water Quality Report

METALS

WSE 50

Commonwealth of Virginia
Department of Health
Division of Water Programs
Bureau of Water Supply Engineering

REGION: ☐ Abingdon ☐ Danville ☐ Richmond ☐ Local Health Dept.
☐ Culpeper ☐ Lexington ☒ Virginia Beach ☐

PLANNING DISTRICT# 20

SAMPLING LOCATION: MENS HEAD

SOURCE TYPE: ☒ Public-Community ☐ Public-Noncommunity

COUNTY:

INDEPENDENT CITY: CHESAPEAKE

CODE: 7-9

FIELD TESTS: Temp: 15.6 °C pH: 7.06 Cl_2: mg/L Alk: mg/L CO_2 mg/L Hard.: mg/L

P.W.S.I.D.#: 3 5 5 0 6 1 5 (10-16)

TRANSACTION CODE 0 3 (17-18)

DATE COLLECTED
Mo Day Yr
1 1 2 6 9 1 (19-24)

TIME: 0 9 3 7 (25-28)

COLLECTED BY: PATRICIA KVASNICKA

CONTAINER TYPE:
☐ Glass
☒ Plastic

PRESERVATIVE USED:
☐ None
☒ Ice
☐ Other
☒ Nitric Acid

SAMPLE TYPE:
D ☒ Reg. Dist.
P ☐ Plant Tap
R ☐ Raw Water
C ☐ Check
M ☐ MCL Check
☐ Other
29

DATE REC:
DATE REP:

SAMPLE NUMBER : 69698 DCLS : BUREAU OF CHEMISTRY

CONT.I.D.	CONTAMINANT NAME (Maximum Allowable Level)		MTD	S	ANALYSIS RESULTS UG/ML
1005	Arsenic	0.05	125		< 0.010
1010	Barium	1.0	108		< 0.01
1015	Cadmium	0.010	125		< 0.010
1020	Chromium	0.05	125		< 0.010
1030	Lead	0.05	125		< 0.010
1035	Mercury	0.002	106		< 0.0003
1045	Selenium	0.01	125		< 0.010
1050	Silver	0.05	125		< 0.010
1002	Aluminum		108		< 0.1
1016	Calcium		108		1
1028	Iron	0.30	108		0.02
1031	Magnesium		108		0
1032	Manganese	0.05	108		< 0.01
1051	Strontium		108		< 0.01
1095	Zinc	5.0	108		< 0.01
1022	Copper	1.0	108		0.37
1042	Potassium		108		4.5
1052	Sodium	20.	108		106
1036	Nickel		108		< 0.01
1007	Boron		108		
1919	Calcium Hardness		108		1
1918	Magnesium Hardness		136		1
1013	Ca & Mg Hardness		136		2
1015	Total Hardness***		136		2
1004	Antimony		125		< 0.020

File: City of Va Beach
US Govt
NAVAL A
water - NALF-FENTRESS

DEPARTMENT OF THE NAVY

NAVAL AIR STATION OCEANA
VIRGINIA BEACH, VIRGINIA 23460-5120

IN REPLY REFER TO:
6280
Ser 186/3763
10 July 1990

Mr Shahram Mohsenin, District Engineer
Virginia Department of Health
Office of Water Programs
5700 Thurston Avenue, Suite 203
Virginia Beach, Virginia 23460

Dear Mr. Mohsenin:

Please find attached annual drinking water sample analyses for NALF Fentress for calendar years 1989 and 1990.

The most recent analysis indicate continued compliance with Safe Drinking Water Standards.

If after review you have any questions NAS Oceana's point of contact is Richard Turner at 433-2229.

Sincerely,

S.H. DeBerry

S.H. DeBERRY
Management Officer
By direction of the
Commanding Officer

Copy to:
LANTNAVFACENGCOM (Code 1811)

the bionetics corporation
ANALYTICAL LABORATORIES

18 RESEARCH DRIVE
HAMPTON, VIRGINIA 23666
TELEPHONE: (804) 865-0880
TOLL FREE: 1-800-476-5548

REPORT OF ANALYSIS

06/20/90

TO: NAS OCEANA
COMMANDING OFFICER, NAVAL AIR STATION, OCEANA
VIRGINIA BEACH VA 23460

ATTN: PUBLIC WORKS DEPT

3550

MATRIX: DRINKING WATER
SAMPLE DATE: 06/04/90 RECEIVED DATE: 06/05/90

SAMPLE ID: FENTRESS BAL LOG NO(s). 9008589

TEST/ METHOD		TEST RESULTS		DATE	TIME	INT
SILVER EPA 272.1/7760	<	0.01	mg/l	06/11/90	13:39:00	JID
ALUMINUM EPA 202.2		0.016	mg/l	06/08/90	08:40:00	RTT
ARSENIC EPA 206.2/7060		0.001	mg/l	06/08/90	12:20:00	RTT
BORON EPA 200.7		0.074	mg/l	06/13/90	11:59:00	JID
BARIUM EPA 208.1/7080	<	0.005	mg/l	06/11/90	13:39:00	JID
ALKALINITY (BICARB.) EPA 310.2		161	mg/l	06/15/90	08:00:00	HAT
CALCIUM EPA 215.1 /7140		1.03	mg/l	06/18/90	10:25:00	JID
CALCIUM HARDNESS SM 314A		2.57	mg/l	06/18/90	10:25:00	JID
CADMIUM EPA 213.1/7130	<	0.003	mg/l	06/11/90	13:39:00	JID
CORROSION INDEX SM 203	-	3		06/15/90	: :	

RESPECTFULLY SUBMITTED,

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

Water, Wastewater, Hazardous Waste, Industrial Hygiene and Chemical-Bacteriological Analysis

the bionetics corporation
ANALYTICAL LABORATORIES

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ATTN: PUBLIC WORKS DEPT

MATRIX: DRINKING WATER
SAMPLE DATE: 06/04/90 RECEIVED DATE: 06/05/90

SAMPLE ID: FENTRESS BAL LOG NO(s). 9008589

TEST/ METHOD		TEST RESULTS		DATE	TIME	INT
CHLORIDE EPA 325.1/9252		76.6	mg/l	06/14/90	10:15:00	KWW
COLOR EPA 110.2	<	5	C.U.	06/06/90	09:15:00	BAB
SPECIFIC CONDUCTIVITY EPA 120.1/9050		540	umhos/cm	06/12/90	20:30:00	PLW
CHROMIUM EPA 218.2/7191		0.001	mg/l	06/12/90	08:35:00	RIT
COPPER EPA 220.1/7210		0.75	mg/l	06/11/90	13:39:00	JID
ENDRIN	<	0.2	ug/l	06/06/90	10:00:	SLT
IRON EPA 236.1/7380		0.1	mg/l	06/11/90	13:39:00	JID
FLUORIDE EPA 340.2		0.22	mg/l	06/11/90	11:30:00	KWW
MERCURY EPA 245.1/7470	<	0.0004	mg/l	06/15/90	20:40:00	PSC
HARDNESS - EDTA EPA 130.2		12	mg/l	06/12/90	21:00:00	PLW

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VIRGINIA BEACH VA 23460

ATTN: PUBLIC WORKS DEPT

MATRIX: DRINKING WATER
SAMPLE DATE: 06/04/90 RECEIVED DATE: 06/05/90

SAMPLE ID: FENTRESS BAL LOG NO(s). 9008589

TEST/ METHOD		TEST RESULTS		DATE	TIME	INT
CA & MG HARDNESS SM 314A		3.31	mg/l	06/18/90	10:25:00	JID
TOTAL HARDNESS SM 314A		3.31	mg/l	06/18/90	10:25:00	JID
SULFIDE EPA 376.1/9030	<	0.003	mg/l	06/07/90	11:15:00	KWW
POTASSIUM 7610		0.3	mg/l	06/11/90	13:39:00	JID
LINDANE	<	0.8	ug/l	06/06/90	10:00:	SLT
MAGNESIUM EPA 242.1/7450		0.18	mg/l	06/18/90	10:25:00	JID
MAGNESIUM HARDNESS SM 314A		0.74	mg/l	06/18/90	10:25:00	JID
MANGANESE EPA 243.1/7460	<	0.01	mg/l	06/11/90	13:39:00	JID
METHOXYCHLOR	<	1	ug/l	06/06/90	10:00:	SLT
SODIUM EPA 273.1/7770		127	mg/l	06/11/90	13:39:00	JID

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ATTN: PUBLIC WORKS DEPT

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SAMPLE DATE: 06/04/90 RECEIVED DATE: 06/05/90

SAMPLE ID: FENTRESS BAL LOG NO(s). 9008589

TEST/ METHOD		TEST RESULTS		DATE	TIME	INT
AMMONIA EPA 350.2	<	0.10	mg/l	06/08/90	09:23:00	HAT
NITRITE EPA 353.2		0.01	mg/l	06/08/90	20:20:00	BAB
NITRATE EPA 353.2		0.06	mg/l	06/08/90	09:00:00	HAT
ORTHO - PHOSPHATE EPA 365.2		0.02	mg/l	06/07/90	16:00:00	BAB
ALKALINITY (CARBONATE) SM 403		0	mg/l	06/15/90	08:00:00	HAT
LEAD EPA 239.2/7421		0.012	mg/l	06/06/90	15:25:00	RTT
PH EPA 150.1/9040		7.0		06/07/90	20:00:00	KWW
ANTIMONY EPA 204.2/7040	<	0.004	mg/l	06/13/90	09:30:00	RTT
SELENIUM EPA 270.2/7740	<	0.002	mg/l	06/06/90	12:00:00	RTT
SILICA - TOTAL SM 420 B		40	mg/l	06/07/90	15:30:00	KWW

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VIRGINIA BEACH VA 23460

ATTN: PUBLIC WORKS DEPT

MATRIX: DRINKING WATER
SAMPLE DATE: 06/04/90 RECEIVED DATE: 06/05/90

SAMPLE ID: FENTRESS BAL LOG NO(s). 9008589

TEST/ METHOD		TEST RESULTS		DATE	TIME	INT
SULFATE EPA 375.4	<	10	mg/l	06/15/90	12:00:00	PLW
STRONTIUM	<	0.02	mg/l	06/13/90	11:59:00	JID
TOTAL ALKALINITY EPA 310.2		161	mg/l	06/13/90	13:00:00	KWW
TOTAL DISSOLVED SOLIDS EPA 160.1		360	mg/l	06/07/90	16:00:00	AMM
VOLATILE EPA 160.4		71.9	%	06/07/90	16:00:00	AMM
FIXED EPA 160.4		28.1	%	06/07/90	16:00:00	AMM
PHOSPHOROUS SM 425-CII/EPA 365.2		0.08	mg/l	06/06/90	16:00:00	BAB
TURBIDITY EPA 180.1		0.60	N.T.U.	06/06/90	21:30:00	BAB
TOXAPHENE	<	5	ug/l	06/06/90	10:00:	SLT
ZINC EPA 289.1/7950		0.05	mg/l	06/12/90	09:09:00	JID

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RESPECTFULLY SUBMITTED,

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06/20/90

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VIRGINIA BEACH VA 23460

ATTN: PUBLIC WORKS DEPT

MATRIX: DRINKING WATER
SAMPLE DATE: 06/04/90 RECEIVED DATE: 06/05/90

SAMPLE ID: FENTRESS BAL LOG NO(s). 9008589

ST/ METHOD	TEST RESULTS			DATE	TIME	INT
4-D	<	10	ug/l	06/06/90	10:00:	SLT
1,5-TP	<	1	ug/l	06/06/90	10:00:	SLT

SEE REVERSE SIDE FOR EXPLANATION
OF SYMBOLS AND ABBREVIATIONS

RESPECTFULLY SUBMITTED,

Water, Wastewater, Hazardous Waste, Industrial Hygiene and Chemical-Bacteriological Analysis

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF HEALTH

DIVISION OF WATER SUPPLY ENGINEERING

WATERWORKS CONSTRUCTION PERMIT

United States Navy Is Hereby Granted Permission To Construct A Community Waterworks That Will Consist of two new wells, one 5,000 gallon ground storage tank, one 1,000 gallon hydropneumatic tank, three greensand filters, two softening units, and a brine storage tank at NALF Fentress Field Located In The City of Chesapeake (City, Town and/or County) In Accordance With the Provisions of Title 32.1, Chapter 6, Article 2, Section(s) 32.1 - _____ Code of Virginia as Amended and Section(s) 1.20 and 1.24 _____ Of the Waterworks Regulations of the Virginia Department of Health As Amended. This Permit Is Issued In Accordance With the Following Plans, Specifications and Other Documents Plans entitled "Water Systems Upgrades, Naval Auxiliary Landing Field, Fentress, Public Works Center, Virginia Beach Site, Virginia Beach, Virginia" are undated. Specifications entitled "Water Facilities Improvements at the Naval Auxiliary Landing Field, Fentress, Chesapeake, Virginia" are dated May 17, 1995 as prepared by Maguire Associates, Inc.

An Engineering Description Sheet Is Attached Dated November 27, 1995

RECOMMENDED _____
Director, Division of Water Supply Engineering

RECOMMENDED _____
Director, Office of Water Programs

APPROVED _____
State Health Commissioner

PERMIT NO. 305495

EFFECTIVE DATE November 27, 1995

EXPIRATION DATE November 27, 2000

(Rev 11/95)

VIRGINIA DEPARTMENT OF HEALTH
ENGINEERING DESCRIPTION SHEET

DATE: November 27, 1995

WATERWORKS NAME:	NALF Fentress Field	CERTIFIED CLASS:	IV
COUNTY/CITY:	City of Chesapeake	TYPE:	Community System

LOCATION: This system is south of State Route 165, approximately 1-1/4 miles west of the intersection of Routes 165 and 190.

OWNER:
United States Navy
c/o Commanding Officer
Navy Public Works Center - Norfolk
9742 Maryland Avenue
Norfolk, Virginia 23511-3095
Environmental Contact: Mr. Brian Lee
Water Program Manager
C. O. NPWC (Code 940)
(804) 444 - 3208

OPERATOR:
Mr. Timothy Barrineau, NAS-Oceana
(804) 433 - 3470
Mr. Joe Patton, NAS-Oceana
(804) 433 - 3470

PERMIT NO.: 305495

DATE ISSUED: November 27, 1995

TYPE OF TREATMENT: Iron and Manganese removal by aeration, $KMnO_4$ and greensand filters, softening, and chlorination

SOURCE: Two wells

DESIGN CAPACITY: 10,800 gpd or 27 ERC

DESCRIPTION OF SYSTEM

The modifications to the existing water system include the following:

a) Abandoning the two existing wells.
b) Installing two new wells and a valve vault.

c) Constructing a new pump house equipped with a manually operated fire pump, 2 treatment service pumps, a backwash pump, 3 chemical feed pumps with chemical drums and solution, 3 greensand filters with media, 2 sodium zeolite water softeners with brine tank, media, and salt.
d) Installing a 5,000 gallon bulk storage tank with induced draft aerator, and a 1,000 gallon hydropneumatic tank.

The two wells alternately discharge (also together when required) to the 5,000 gallon bulk storage tank. Water from the bulk storage tank is repumped via the treatment service pumps (duplicate pumps rated at 25 gpm at 170 feet TDH, driven by 5HP motors)—through the greensand filters and the sodium zeolite softener—into the 1,000 gallon hydropneumatic tank and then to the distribution system.

Well No. 1 was drilled starting (and completed) on August 15, 1994. The well bore is 73 feet deep, with cement grout extending from the surface to 50 feet. The steel well casing is 6-inches in diameter and extends to 53 feet, extending to 73 feet of stainless steel wire wrap screen (mesh size - 0.010 inch). Gravel pack is installed from 50 feet to 63 feet. The well is equipped with a submersible pump (rated at 25 gpm at 150 feet TDH) driven by a a 1½ HP electric motor. The pump intake is set at 52 feet. The well has a tested yield of 25 gpm, over a 48-hour period (from August 24, 1994 to August 26, 1994), with the water level dropping from 8 feet (static condition) to 12 feet (dynamic condition).

Well No. 2 was drilled starting (and completed) on August 17, 1994. The well bore is 80 feet deep, with cement grout extending from the surface to 50 feet. The steel well casing is 6-inches in diameter and extends to 70 feet, extending to 80 feet of stainless steel wire wrap screen (mesh size - 0.010 inch). Gravel pack is installed from 70 feet to 80 feet. The well is equipped with a submersible pump (rated at 25 gpm at 150 feet TDH) driven by a a 1½ HP electric motor. The pump intake is set at 69 feet. The well has a tested yield of 25 gpm, over a 48-hour period (from August 24, 1994 to August 26, 1994), with the water level dropping from 10 feet (static condition) to 21 feet (dynamic condition).

The 5,000 gallon steel ground storage tank is provided with an induced draft aerator. The aerator receives water from the wells and discharges by gravity into the storage tank. The aerator is designed to handle 50 gpm and capable of delivering an air flow rate of 250 CFM.

Three pressure filter tanks (2 operational plus 1 for back-up) for iron and manganese removal will be 20 inches in diameter. The tanks will contain an anthracite layer and a greensand layer. Each filter has a maximum manufacturer's recommended feed rate of 10 gpm (4.55 gpm/sq.ft.). $KMnO_4$ will be utilized for continuous regeneration of the greensand. The backwash of the filters is rated at 30 gpm (13.6 gpm/sq.ft), and filter waste will be directed to the existing on-site sewage treatment facility.

Two softening units (1 operational plus 1 for back up), both 16 inches in diameter, will be installed after the pressure filters. The tanks will consist of 3.8 feet of ion exchange resin with a minimum exchange capacity of 160,000 grains per gallon at a salt dosage of 48 lbs. The maximum exchange capacity of the softeners will be 240,000 grains per gallon at 120 lbs salt dosage. The backwash is rated at 30 gpm (19 gpm/sq.ft) and the backwash waste will be directed to the existing on-site sewage treatment facility. The 2 feet × 3.5 feet brine tanks are located next to the softeners.

The manually operated 5 HP backwash pump is rated at 25 gpm at 140 feet TDH. It is also piped as a spare treatment service pump, and during backwash operations the pump will be throttled to provide the required flow.

EVALUATION OF SYSTEM

This system is evaluated on the basis of Equivalent Residential Connections (ERC). One ERC will utilize 400 gpd. This system capacity is evaluated as follows:

I. Source capacity (Groundwater)

A. Source Yield

1. Number of sources

a. Required = 1 up to 49 connections, more than 1 for 50 connections or more

b. Provided = 2 wells

2. Well yield = 25 gpm over a 48-hour test (each)

3. Pump yield = 25 gpm (each)

B. Production Capacity

$$\frac{25 \text{ gpm} + 25 \text{ gpm}}{0.5 \text{ gpm/ERC}} = 100 \text{ ERC}$$

II. Storage Capacity

A. Effective Storage

1. Storage provided

1 - Ground storage tank = 5,000 gallons
1 - Hydropneumatic tank = 1,000 gallons

2. Effective Storage

$$5{,}000 + \frac{1}{3} \times 1{,}000 = 5{,}333 \text{ gallons}$$

3. Storage Capacity

$$\frac{5{,}333 \text{ gallons}}{200 \text{ gallons/ERC}} = 27 \text{ ERC}$$

III. Treatment System Capacity

1. Treatment Service Pumps

Two pumps rated at 25 gpm each.

Total capacity = 50 gpm

2. Greensand Filters

No. of units in operation = 2

Surface area of each filter = 2.2 sq.ft.

Recommended hydraulic loading rate = 3 gpm/sq.ft.

Total capacity = 3 x 2.2 x 2 = 13.2 gpm

3. Softener

No. of units in operation = 1

Surface area of softener = 1.4 sq.ft.

Recommended hydraulic loading rate = 7 gpm/sq.ft.

Total capacity = 1.4 x 7 = 9.1 gpm

4. Treatment system capacity is governed by the softener rate allowed

$$\frac{9.1 \text{ gpm} \times 1440}{400 \text{ gpd/ERC}} \approx 33\text{ERC}$$

IV. Limiting Case

A. Storage Capacity = 27 ERC

B. Capacity Equivalent

$$27 \text{ ERC} \times \frac{400 \text{ gpd}}{\text{ERC}} = 10{,}800 \text{ gpd}$$

Therefore, based on critical values discussed above, this waterworks will be issued an operation permit for a design capacity of 10,800 gallons per day or 27 ERC. It is stressed that the flow restriction is the limiting factor and that the permitted number of ERC is only an indicator of when the flow restriction will be reached. Therefore, this system may exceed the permitted number of ERC as long as the flow is within limits as indicated by proper reporting as determined by the Health Department.

AS/dms

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF HEALTH

DIVISION OF WATER SUPPLY ENGINEERING

WATERWORKS OPERATION PERMIT

United States Navy Is Hereby Granted Permission

To Operate a Community Waterworks Having a Design Capacity of 72,000 gpd

at NALF Fentress Field Located In The City of Chesapeake In Accordance With the Provisions of
(City, Town and/or County)

Title 32.1, Chapter 6, Article 2, Sections 32.1 - 172 and 173 Code of Virginia as Amended and Section _____ of the Waterworks Regulations of the Virginia Department of Health As Amended. This Permit Is Issued In Accordance with Previously Issued Permits _____

Operation permit No. 3550615 dated June 20, 1979 issued to the United States Navy, Naval Air Station - Oceana

And With The Understanding That This Owner Will Operate the Waterworks in Accordance with Part II "Operation Regulations for Waterworks" of the Waterworks Regulations of the Virginia Department of Health and any Variances and/or Exemptions Noted Below.

Variances and/or Exemptions Granted (x) None ( ) See Attached

An Engineering Description Sheet Is Attached Dated May 14, 1993

RECOMMENDED _____
Director, Division of Water Supply Engineering

PERMIT NO. 3550615

EFFECTIVE DATE May 14, 1993

RECOMMENDED _____
Director, Office of Water Programs

EXPIRATION DATE N/A

APPROVED _____
State Health Commissioner

(4/92)

668

VIRGINIA DEPARTMENT OF HEALTH
ENGINEERING DESCRIPTION SHEET

DATE: May 14, 1993

INSTALLATION:	NALF Fentress Field	CERTIFIED CLASS:	IV
COUNTY/ CITY:	City of Chesapeake	TYPE:	Community System

LOCATION: This system is located south of State Route 165, approximately 1-1/4 miles west of the intersection of Routes 165 and 190.

OWNER: United States Navy
c/o Commanding Officer
Navy Public Works Center - Norfolk
9742 Maryland Avenue
Norfolk, Virginia 23511 - 3095
Environmental Contact: Mr. Brian Lee
Water Program Manager
C.O. NPWC (Code 940)
(same address) 444-3208

OPERATOR: Mr. Ross Wolfe, Utilities Division, NAS - Oceana
(804) 425-3105
Ms. Doreen Cantor, Naval Facilities Engineering Command
(804) 444-7313

PERMIT NO.: 3550615

DATE ISSUED: May 14, 1993

TYPE OF TREATMENT: Softening, Chlorination & Filtration

SOURCE: Two Wells

DESIGN BASIS: 72,000 gpd

DESCRIPTION OF SYSTEM: COMMUNITY SYSTEM

Storage Capacity: $\frac{50,000 \text{ gallons}}{200 \text{ gal/ERC}}$ = 250 ERC

Well Production Capacity: $\frac{125 \text{ gpm}}{0.5 \text{ gpm/ERC}}$ = 250 ERC

Storage Equivilant = 250 ERC X 400 gpd/ERC = 100,000 gpd

Booster Pump Capacity: 50 gpm X 1440 min/day = 72,000 gpd

Treatment Facility Capacity: 50 gpm X 1440 min/day = 72,000 gpd (Limiting Case)

This system serves an auxiliary landing field owned by the U.S. Navy. The landing field is utilized as a practice area for various training exercises.

Water is produced by two wells, one on active status (Well No. 109) and one on stand-by (Well No. 108). The wells are each approximately 90 feet deep, and are 4-inch drilled wells equipped with turbine pumps rated at 125 gpm at 150 feet TDH. The wells discharge to a 50,000 gallon wood stave ground storage tank. Chlorine is added to the tank influent by a single gas cylinder mounted chlorinator (capacity of 100 pounds per day).

Water is repumped from the storage tank by a single 50 gpm booster pump, and is sent to the treatment facilities. The treatment facilities consist of two pressure sand filters (4 feet high and 2 feet in diameter) in series, followed by a sodium zeolite softener. Water then goes to the distribution system.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF HEALTH

BUREAU OF WATER SUPPLY ENGINEERING

WATERWORKS OPERATION PERMIT

United States Navy, Naval Air Station - Oceana Is Hereby Granted Permission

)perate a Community Waterworks Having a Design Capacity of 72,000 gpd at NALF Fentress Field

Located In City of Chesapeake In Accordance With the Provisions of
(City, Town and/or County)

62.1, Chapter 4, Section(s) 62.1 - 50 Code of Virginia As Amended and

on(s) 3.14 Of the Waterworks Regulations of the Virginia Department of Health As Amended.

Permit Is Issued In Accordance with Previously Issued Permits None. (See attached description sheet dated June 1, 1979.)

With The Understanding That The United States Navy, Naval Air Station - Oceana Will

ate the Waterworks in Accordance with Part 2 "Operation Regulations for Waterworks" of the Waterworks Regulations of the Virginia Department

ealth and any Variances and/or Exemptions Noted Below.

ances and/or Exemptions Granted ( ) None (X) See Attached.

RECOMMENDED Allen R. Stamm
Director, Bureau of Water Supply Engineering

MIT NO. 3550615

CTIVE DATE June 20, 1979

RECOMMENDED Eric H. Bartsch
Director, Division of Water Programs

APPROVED J. H. Kenley M.D.
State Health Commissioner

902

WATER DESCRIPTION SHEET

DATE June 1, 1979

INSTALLATION NALF Fentress Field

COUNTY City of Chesapeake

LOCATION This system is located south of State Route 165, approximately 1-1/4 mile west of the intersection of Routes 165 and 190.

OWNER U.S. Navy, Naval Air Station - Oceana
Commanding Officer
Virginia Beach, Virginia 23460

OPERATOR Mr. Ross Wolfe, Utilities Division, NAS - Oceana
(804) 425-3105
Ms. Doreen Cantor, Naval Facilities Engineering Command
(804) 444-7313 Will Ballard 445-

PERMIT NO. 3550615 DATE ISSUED June 20, 1979

TYPE OF TREATMENT Softening, chlorination & Filtration SOURCE Two Wells

DESIGN BASIS 72,000 gpd

DESCRIPTION OF SYSTEM: COMMUNITY SYSTEM:

Storage Capacity: $\frac{50,000}{200}$ = 250 e.r.c.

Well Production Capacity: $\frac{125}{0.5}$ = 250 e.r.c.

Storage Equivalent = 250 X 400 = 100,000 gpd

Booster Pump Capacity: 50 X 1440 = 72,000 gpd

Treatment Facility Capacity: 50 X 1440 = 72,000 gpd (Limiting Case)

This system serves an auxiliary landing field owned by the U.S. Navy. The landing field is utilized as a practice area for various training exercises.

Water is produced by two wells, one on active status (Well No. 109) and one on stand-by (Well No. 108). The wells are each approximately 90 feet deep, and are 4-inch drilled wells equipped with turbine pumps rated at 125 gpm at 150 feet TDH. The wells discharged to a 50,000 gallon wood stave ground storage tank. Chlorine is added to the tank influent by a single gas cylinder mounted chlorinator (capacity of 100 pounds per day).

Water is repumped from the storage tank by a single 50 gpm booster pump, and is sent to the treatment facilities. The treatment facilities consist of two pressure sand filters (4 feet high and 2 feet indiameter) in series, followed by a sodium zeolite softener. Water then goes to the distribution system.

COMMONWEALTH of VIRGINIA

Department of Health
Richmond, Va. 23219

JAMES B. KENLEY, M.D.
COMMISSIONER

VARIANCE

Permit No. 3550615

This variance is issued in accordance with Section 3.09 of the Waterworks Regulations of the Virginia Department of Health. This variance is to Section 6.00 of the Waterworks Regulations and allows the United States Navy, Oceana Naval Air Station to operate a public water supply. This variance is issued with the following conditions:

1. Section 6.00 - Cross-Connection and Backflow Prevention Control in Waterworks. Within one year from the effective date of this permit, or no later than June 20, 1980, the United States Navy, Oceana Naval Air Station must establish or cause to be established and have in operation a cross-connection and backflow prevention program consistent with the extent of the system and the type of consumer served.
2. This variance is a nontransferable part of Permit No. 3550615 and must be attached to Permit No. 3550615.
3. This variance is a condition of Permit No. 3550615 and is revoked or superseded whenever Permit No. 3550615 is revoked or superseded.

Recommended _____
Director, Bureau of Water Supply Engineering

Recommended _____
Director, Division of Water Programs

Approved _____
State Health Commissioner

YMD

REVIEW OF CHEMICAL FEED FACILITIES

A: GENERAL

- Chemicals as per NSF 60 & 61? OK

- Do plans & specs show:
  * Description of feed equipment, including max/min feed ranges? OK
  * Location of feeders, piping layout & application points? OK
  * Storage & handling facilities? OK
  * Chemical specifications (product data)? [illegible]
  * Operating & control procedures? OK
  * Description of testing equipement & procedures? -
  * Can chemical application assure:
    - maximum efficiency of treatment? OK
    - maximum protection to consumer? OK
    - maxumum saftey to operators? OK
    - satisfactory mixing? OK
    - flexibility of operation with multiple application points? N/A
    - backflow of back-siphonage prevention? OK

B: FEED EQUIPMENT

- Minimum of 2 feeders required: Provided = OK (space available)

- Standby unit of sufficient capacity available? OK

- Design & capacity:
  * Type of model: —
  * Feed rate & range of feed: [illegible]
  * Proportioning of chemical feed with rate of flow: OK
  * Liquid chemical feed systems:
    - Positive-displacement pumps: OK
    - Gravity feed trough rotometers: N/A
  * Back siphonage considerations:
    - vacuum relief:
    - suitable air gaps:
    - other approved devices (or piping arrangements):
  * Service water protection (backflow/back-siphonage prevention):
  * Contact materials/surfaces resistant to aggressiveness of chemical solution: [illegible] and tubing)
  * Dry chemical feeders:
    - volumetric/gravimetric measurement:
    - provide effective chemical solution:
    - gravity feed from solution tank (preferred):
    - enclosure & prevent emission of "chemical" dust:

N/A

N/A

WELL INSTALLATION AT NALF FENTRESS
3/8/94

GENERAL

The Contractor shall install 2 new 6" wells (Class II Type B) at the locations shown on the drawings. The installation shall be in accordance with this specification and Virginia Department of Health Regulations.

All water, electricity, other necessary tools, equipment and materials required to complete installation of the new wells, including drawdown test well completion report and safe yield analysis shall be provided by the Contractor at no additional cost to the owner.

MATERIAL

The well casing shall be 6" ID metallic pipe with a minimum wall thickness of 0.280" meeting ASTM, API, ANSI or AWWA specifications and standards applicable to wells. Well screens shall be provided between 100 feet and 104 feet below existing grade. The well screens shall be No 10 slotted screen and shall be constructed of EVERDUR (96% copper, 3% silicon, 1% manganese).

The well screen shall be gravel packed to minimize potential for clogging. A submersible well pump shall be provided for each well which can deliver 25 GPM at a total dynamic head of 150 feet. The submersible pump shall be a GRUNDFOS SP6-8 1-1/2 HP pump which operates at 3450 RPM or approved equal. Galvanized steel pipe (SCH40) shall be used to deliver water from the submersible pump to the ground surface.

INSTALLATION

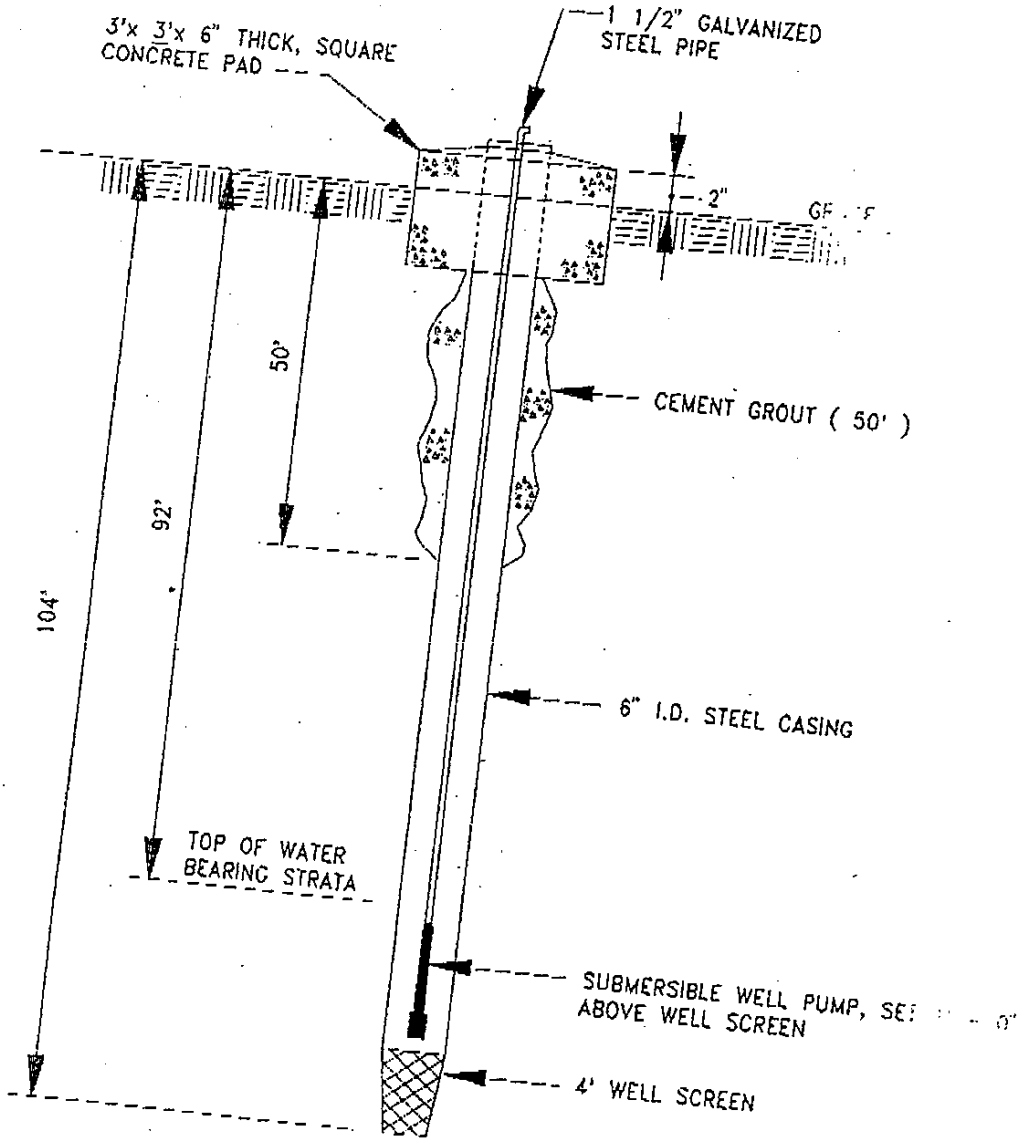
The contractor shall drill a pilot hole for each well and log the soil between 50 and [illegible] below grade to insure the soil conditions at each well site do not vary from the conditions shown on the boring log.

The 2 new wells shall be 104 feet deep and shall have the annular space around the casing grouted to a depth of at least 50' below grade. The well casing shall be equipped with a drawdown gauge which can be used for measuring the change in water elevation in the well. A 4' well screen shall be installed at the bottom of the casing and shall be sealed with packing material.

A pitless adapter shall be provided in each well near the top of the casing which can be removed to allow future access to the well pump or drop pipe. A thrust coupling or bushing shall be provided at the submersible pump which minimizes torque and vibration when the well pump is operating. The pump shall be suspended from the drop pipe and shall be centered in the well at the specified elevation. A stainless steel chain shall be attached to the pump and shall extend to the top of the casing to accommodate future removal of the pumps. The well shall be vented in accordance with Health Department requirements.

Upon completion of the well installation the contractor shall stub out a 3" galvanized diameter pipe 5 feet from the well for future connection by others. The wiring for the submersible pump shall terminate in a junction box at the concrete slab for future connection by others. A 3' x 3' x 6" thick concrete slab shall be constructed over the well. The concrete slab shall extend 2" above grade.

A 48 hour drawdown test shall be performed by the Contractor to determine drawdown and safe yield in accordance with Health Department requirements. A well completion report shall be prepared on a GW-2 form as provided by the Virginia Department of Health. During the 48 hour drawdown test the Contractor shall collect samples in containers provided by the testing lab for each well. Approximately 30 water samples need to be retrieved for testing of water from each well.



WELL DETAIL
3/4/94

DEPARTMENT OF THE NAVY
NALF, FENTRESS
CHESAPEAKE, VIRGINIA

WATER SYSTEM UPGRADE

SUBJECT: CITY OF CHESAPEAKE
Water - U.S. Navy
NALF Fentress

Captain S.R. Holm, Jr.
Commanding Officer
Navy Public Works Center
Building A81
Norfolk, Virginia 23511

JAN 28 1994

Dear Captain Holm:

We met with Messrs. Keith Yeates of the Public Works Center and Ken Turner of Maguire Associates, Inc. on January 25, 1994 for the purpose of conducting inspections of proposed well sites for the NALF Fentress to construct two (2) new wells.

In accordance with Section 1.29C (VR 355-18-003.23) of the Commonwealth of Virginia Waterworks Regulations, this letter is to advise that the proposed well sites, as shown on the attached maps, are tentatively approved for the construction Class II, Type B wells, as described in Section 3.21A.3 (VR 355-18-008.03) of the Waterworks Regulations.

This approval is valid for a period of twelve months. If construction of the wells does not commence by January 1995, a reinspection of the well lots will be required. Each well must be located at the center of a lot sized at least 100 x 100 feet square and must be at least 50 feet away from all sources of contamination. Each well lot must be graded to divert surface runoff from the well and to prevent ponding on the lot. An all-weather access road, either publicly or privately owned, must be provided to each well lot. All applicable local and state ordinances determining ownership and the right to use the land must be complied with.

During the construction of each well, it is requested that this office be notified of the date and approximately time of the grouting of the well. An engineer from this office may be present to observe the grouting operation.

Upon completion of the well, a yield and drawdown test of a minimum duration of 48 hours is required. The yield and drawdown tests must be performed simultaneously. Water samples must be collected near the end of the yield test and analyzed for inorganic constituents (PMCLs and SMCLs), VOC and radiological constituents (which will become the first sample of the required four consecutive quarterly samples). In order to determine whether chlorination of the water is necessary or will be acceptable) (reference Section 3.21 (VR 355-18-008.03) of the Regulations), a series of nine (9) bacteriological samples from the well must be collected and analyzed. This series of samples may be collected during the 48 hour drawdown test, starting the second hour after pumping begins and spacing samples at a minimum of 4 hours. This series is a qualitative check to determine, in a yes-or-no fashion, if coliform bacteria, are present. Should any of the nine (9) samples show the presence of any coliform bacteria, a second series of twenty (20) samples will be required to determine, on a qualitative basis, the numeric level of contamination. If required, the (20) samples from the second series must be analyzed using the Most Probable Number - serial dilution method. The parameters on which the ground water must be analyzed, are shown on Section 4, Articles 2.6 to 2.9 of the Waterworks Regulations.

It is the responsibility of the owner of the water system to ensure that all samples are collected and submitted to a certified laboratory within the appropriate time limits. It is also the responsibility of the owner to obtain the appropriate sample containers from the laboratory.

After receipt of the bacteriological and the chemical analysis results, three (3) copies of plans and specifications prepared, stamped and signed by a licensed professional engineer, and design criteria for the waterworks must be submitted to this office for review in accordance with Section 1.29 (VR 355-18-003.23) of the Regulations. Also, included with the submittal of the plans and specifications must be a copy of the Water Well Completion Report (D.E.Q. Form GW-2), yield test data, well log, and other well information as prepared by the driller, a copy of a recorded dedication document or certification for each well lot (stating that each well lot will be used only for waterworks appurtenances as long as the lot is used as part of a waterworks), and a copy of the recorded plat of each well lot showing the access road to the lot.

Upon receipt of all required information and after approval of the plans and specifications, a construction permit for the waterworks will be considered by the State Health Commissioner in accordance with Section 1.24 (VR 355-18-003.18) of the Regulations. Be advised that, in addition to obtaining a construction permit from this Department, any locally required permits or approvals must be obtained from the appropriate local officials before construction begins.

SUBJECT: CITY OF CHESAPEAKE
Water - U.S. Navy
NALF Fentress

Following completion of the construction of the waterworks, bacteriological samples from various portions of the system must be submitted and analyzed to determine if the system is suitable to be placed into service. This Department will grant final permission to operate the new waterworks, subsequent to a final inspection.

Recent changes in State Law may result in your having to obtain a Certificate of Groundwater Right from the Department of Environmental Quality. This certificate will allow you to withdraw and use water from your wells. You should contact the Department of Environmental Quality's Tidewater Regional Office, for further information concerning the necessity of your obtaining a Groundwater Right Certificate. The Tidewater Regional Office may be reached by telephone at (804) 552-1840.

If you have any questions on the above, Please do not hesitate to contact me.

Sincerely,

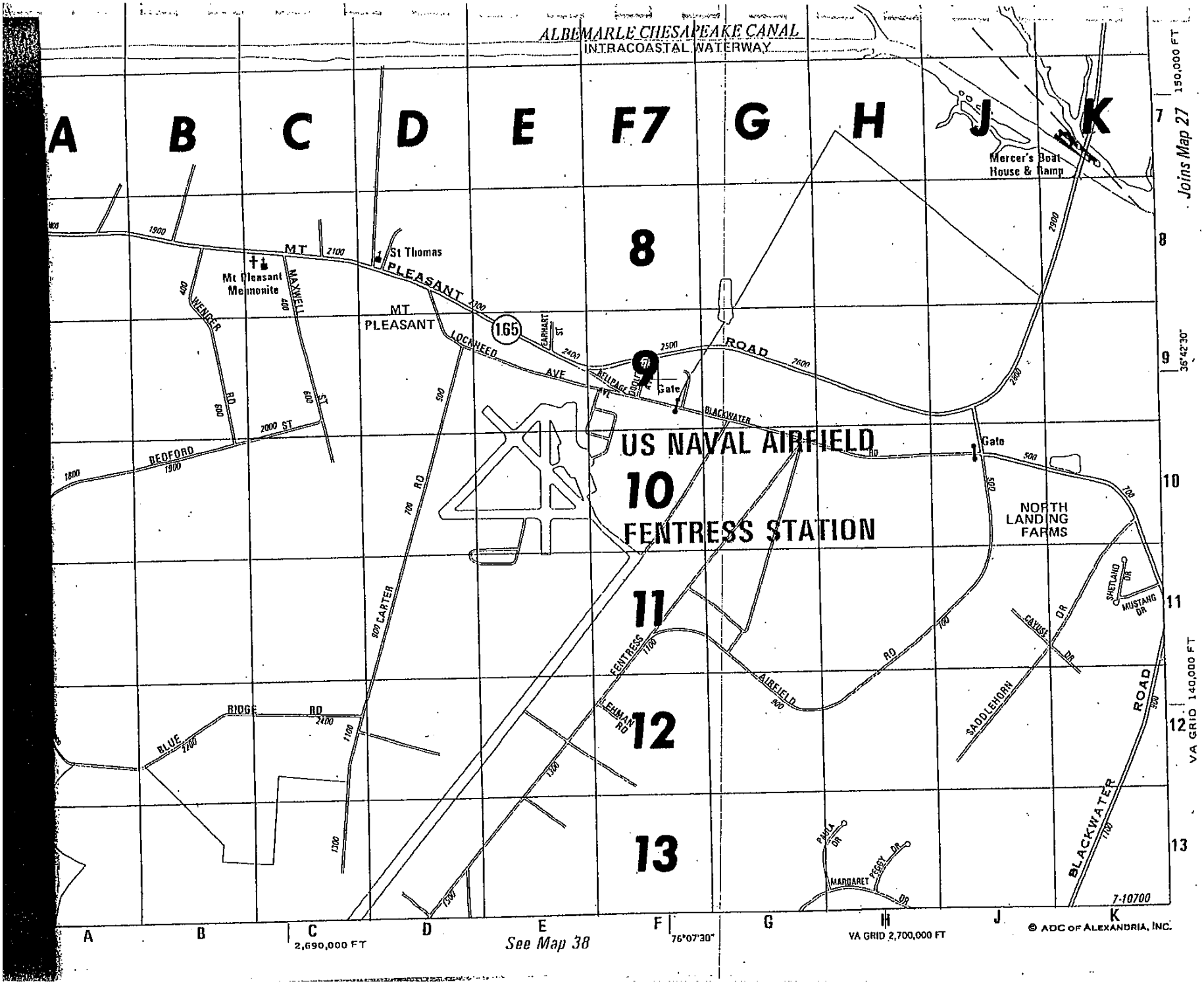
M.C. Dayrit, Jr. 1/27/94

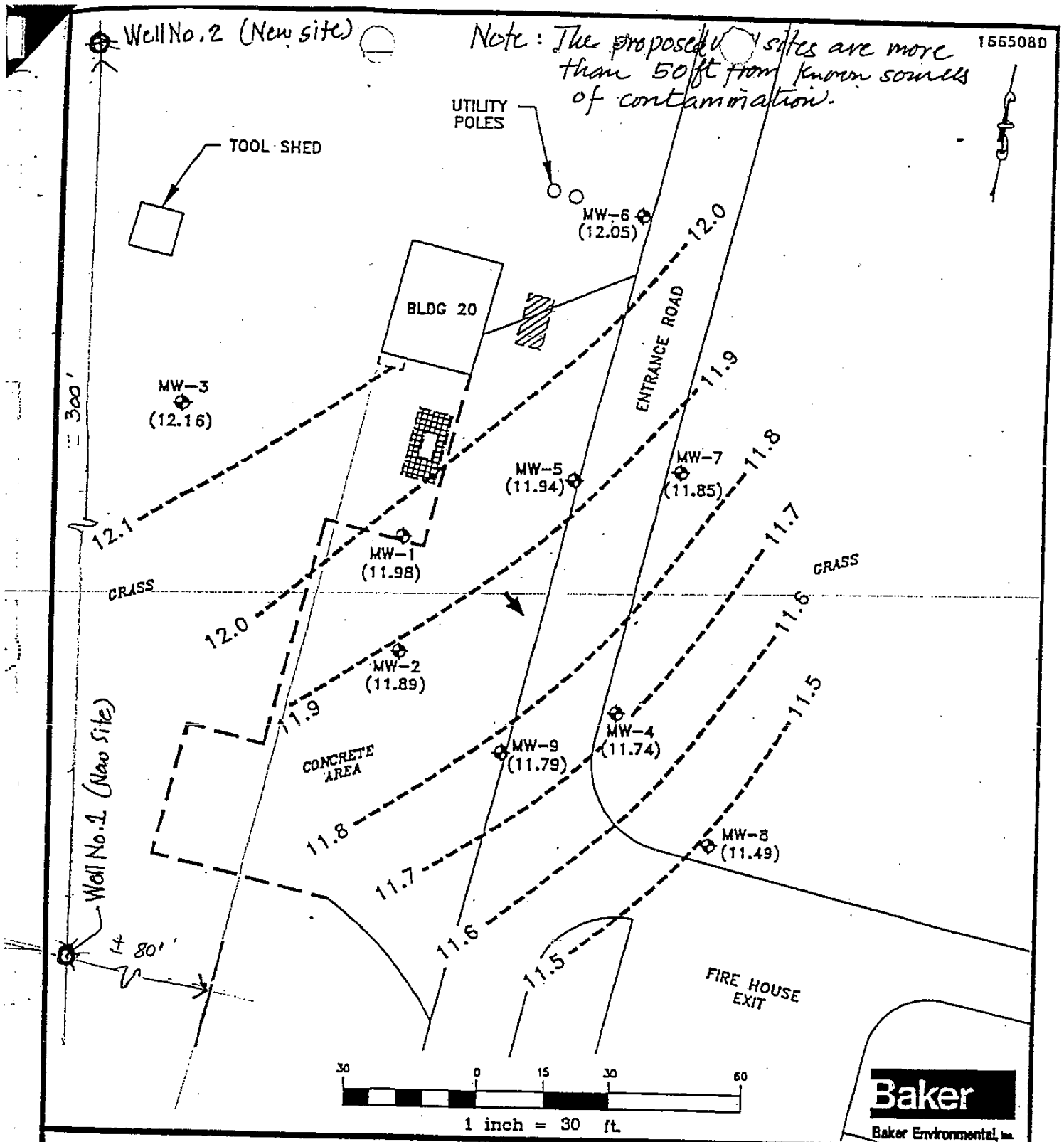
M.C. Dayrit, Jr., P.E.
Assistant District Engineer
Office of Water Programs

MCD,jr/slh

Enclosures: 1. Well Site Plan
2. Well Lot Certification
3. Water Well Completion Report

pc/enc: D.E.Q. - Water Regional Office - Tidewater (Enc. 1)
V.D.H. - Division of Water Supply Engineering (Enc. 1)
Mr. Kenneth R. Turner, P.E., Maguire Associates, Inc. (Encs. 1-3)
Mr. Keith Yeates, Public Works Center Engineering Department (Encs. 1-3)


ALBEMARLE CHESAPEAKE CANAL
INTRACOASTAL WATERWAY
A
B
C
D
E
F7
G
H
J
K
8
9
10
11
12
13
Mercer's Boat House & Ramp
Joins Map 27
150,000 FT
35°42'30"
VA GRID 140,000 FT
St Thomas
Mt Pleasant Mennonite
MT PLEASANT ROAD
MT PLEASANT
LOCKHEED AVE
165
EARHART ST
ALLPAGE AVE
Gate
BLACKWATER RD
US NAVAL AIRFIELD
FENTRESS STATION
NORTH LANDING FARMS
BEDFORD
2000 ST
WENGER RD
MAXWELL ST
CARTER RD
BLUE RIDGE RD
FENTRESS AIRFIELD RD
LEHMAN RD
SADDLEHORN
CAVUSE DR
SHETLAND DR
MUSTANG DR
PAULA DR
MARGARET PEGGY DR
BLACKWATER ROAD
7-10700
A
B
C
2,690,000 FT
D
E
See Map 38
F
76°07'30"
G
H
VA GRID 2,700,000 FT
J
K
© ADC OF ALEXANDRIA, INC.



LEGEND

MW-1	SHALLOW TYPE II MONITORING WELL LOCATION
(11.49)	GROUNDWATER ELEVATION (WELL SPECIFIC) IN MSL
→	ESTIMATED GROUNDWATER FLOW DIRECTION
—12.0—	GROUNDWATER CONTOUR IN MSL

FIGURE 1-11
GROUNDWATER CONTOUR MAP
MARCH 5, 1993
UST SYSTEM 20B

NAVAL AUXILIARY LANDING FIELD, FENTRESS
CHESAPEAKE, VIRGINIA

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

	LOCAL IDENT-I-FIER	DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	BROMIDE DIS-SOLVED (MG/L AS BR) (71870)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	DEPTH OF WELL, TOTAL (FEET) (72008)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT) (72015)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT) (72016)	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)
GLOUCESTER COUNTY									
57H 21		02-23-00	566	.26	6.0	480.00	470	480	86.40
GOOCHLAND COUNTY									
49J 4		06-29-00	--	--	258	400.00	52	158	--
HALIFAX COUNTY									
40C 1		06-28-00	--	--	360	280.00	105	280	--
HENRY COUNTY									
30B 1		06-27-00	--	--	1085	250.00	142	243	--
JAMES CITY COUNTY									
56H 25	SOW 177A	03-02-00	1030	1.17	103	929.00	888	908	183.60
58F127		03-27-00	1110	1.37	51.0	565.00	489	560	136.94
KING WILLIAM COUNTY									
55J 16		02-22-00	301	.02	90.0	765.00	730	760	168.68
LEE COUNTY									
07C 3		07-13-00	--	--	1640	160.00	120	--	--
LOUDOUN COUNTY									
49X 10		10-26-99	--	--	500	280.00	90	164	--
50W 7B		10-26-99	--	--	345	400.00	57	166	--
MADISON COUNTY									
45Q 1		10-19-99	--	--	390	145.00	64	117	--
		10-20-99	--	--	390	--	--	--	--
MECKLENBURG COUNTY									
43B 1		10-18-99	--	--	315	240.00	68	190	--
MONTGOMERY COUNTY									
27F 3		07-19-00	--	--	2010	180.00	114	180	--
27E 2		07-18-00	--	--	2020	720.00	245	700	--
27F 4		07-19-00	--	--	1990	350.00	94	247	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	STATION NUMBER	GEO-LOGIC UNIT	DATE	TIME	SAMPLE TYPE	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)	BARO-METRIC PRES-SURE (MM OF HG) (00025)
			POWHATAN COUNTY					
47J 2	373230077545301		06-29-00	1130	ENVIRONMENTAL	15.9	21.0	743
			PRINCE WILLIAM COUNTY					
51U103G	384702077283401	231BLBF	10-25-99	1722	ENVIRONMENTAL	16.0	15.9	756
			ROCKINGHAM COUNTY					
39SS 1	383216078572801		11-03-99	1200	ENVIRONMENTAL	11.9	9.8	712
			12-20-99	1330	ENVIRONMENTAL	11.5	13.0	716
			02-02-00	1400	ENVIRONMENTAL	11.3	2.0	718
			03-14-00	1215	ENVIRONMENTAL	10.9	12.0	721
			RUSSELL COUNTY					
13D 5	365912082105601	324NRTN	07-11-00	1530	ENVIRONMENTAL	13.6	24.1	711
			SCOTT COUNTY					
10C 2	365203082312601	327LEE	07-13-00	1445	ENVIRONMENTAL	12.4	--	685
			SMYTH COUNTY					
17D 1	365527081434301	341BRLR	07-17-00	0950	ENVIRONMENTAL	14.6	22.1	705
		341BRLR	07-17-00	0955	REPLICATE	14.6	22.1	705
			SPOTSYLVANIA COUNTY					
49Q 2	381802077425401	000MMPS	10-25-99	1240	ENVIRONMENTAL	14.9	11.3	752
			SURRY COUNTY					
57F 16 SOW 087A	371132076405501	217PTXN	03-23-00	1342	ENVIRONMENTAL	20.7	15.0	762
57F 24 SOW 087B	371132076405502	211CRCSU	03-21-00	1316	ENVIRONMENTAL	17.0	11.1	761
			TAZEWELL COUNTY					
17F 2	371104081385001		07-10-00	1345	ENVIRONMENTAL	14.5	27.0	711
19G 1	371546081224501		07-10-00	0950	ENVIRONMENTAL	12.8	--	688
			WARREN COUNTY					
44U 3	385135078182701	361MRBG	10-27-99	1340	ENVIRONMENTAL	14.5	13.1	742
			WASHINGTON COUNTY					
12B 1	364223082184101	341BRLR	07-13-00	1415	ENVIRONMENTAL	18.2	20.9	716

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	FLOW RATE (G/M) (00059)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
				POWHATAN COUNTY						
47J 2	06-29-00	144	255	.8	8	7.2	--	--	--	--
				PRINCE WILLIAM COUNTY						
51U103G	10-25-99	288	904	3.5	36	7.2	--	0	263	--
				ROCKINGHAM COUNTY						
39SS 1	11-03-99	--	338	6.5	60	7.1	--	--	--	<.020
	12-20-99	--	215	8.0	74	7.3	--	--	--	<.020
	02-02-00	--	315	7.4	67	7.4	--	--	--	<.020
	03-14-00	--	211	8.0	77	7.3	--	--	--	<.020
				RUSSELL COUNTY						
13D 5	07-11-00	36.0	454	3.8	39	7.2	--	--	--	--
				SCOTT COUNTY						
10C 2	07-13-00	11.5	266	.7	7	6.8	--	--	--	--
				SMYTH COUNTY						
17D 1	07-17-00	152	130	7.9	84	7.4	--	--	--	--
	07-17-00	152	130	7.9	84	7.4	--	--	--	--
				SPOTSYLVANIA COUNTY						
49Q 2	10-25-99	16.0	69	6.3	63	5.7	--	0	42	--
				SURRY COUNTY						
57F 16 SOW 087A	03-23-00	4.0	6960	.3	4	8.0	8.2	0	340	--
57F 24 SOW 087B	03-21-00	4.2	588	--	--	8.4	8.9	7	310	--
				TAZEWELL COUNTY						
17F 2	07-10-00	20.0	945	1.2	13	7.1	--	--	--	--
19G 1	07-10-00	60.0	380	3.4	36	7.7	--	--	--	--
				WARREN COUNTY						
44U 3	10-27-99	60.0	405	2.2	22	8.7	--	6	238	--
				WASHINGTON COUNTY						
12B 1	07-13-00	50.0	209	1.5	17	7.3	--	--	--	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
POWHATAN COUNTY										
47J 2	06-29-00	--	--	<.050	--	--	E.21	--	--	--
PRINCE WILLIAM COUNTY										
51U103G	10-25-99	--	--	1.06	--	--	.68	--	--	--
ROCKINGHAM COUNTY										
39SS 1	11-03-99	<.010	E.10	2.91	E.041	.019	--	--	--	--
	12-20-99	<.010	E.10	1.36	<.050	.015	--	--	--	--
	02-02-00	<.010	<.10	2.13	E.042	.010	--	--	--	--
	03-14-00	<.010	.10	1.13	<.050	.011	--	--	--	--
RUSSELL COUNTY										
13D 5	07-11-00	--	--	<.050	--	--	1.3	--	--	--
SCOTT COUNTY										
10C 2	07-13-00	--	--	<.050	--	--	12	--	--	--
SMYTH COUNTY										
17D 1	07-17-00	--	--	.125	--	--	E.21	--	--	--
	07-17-00	--	--	.123	--	--	E.32	--	--	--
SPOTSYLVANIA COUNTY										
49Q 2	10-25-99	--	--	.078	--	--	E.23	--	--	--
SURRY COUNTY										
57F 16 SOW 087A	03-23-00	--	--	--	--	--	--	14.5	6.20	1370
57F 24 SOW 087B	03-21-00	--	--	--	--	--	--	.77	.22	132
TAZEWELL COUNTY										
17F 2	07-10-00	--	--	<.050	--	--	2.1	--	--	--
19G 1	07-10-00	--	--	.145	--	--	.55	--	--	--
WARREN COUNTY										
44U 3	10-27-99	--	--	<.050	--	--	.47	--	--	--
WASHINGTON COUNTY										
12B 1	07-13-00	--	--	<.050	--	--	E.22	--	--	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)
				POWHATAN COUNTY					
47J 2	06-29-00	--	--	--	--	--	--	--	--
				PRINCE WILLIAM COUNTY					
51U103G	10-25-99	--	--	--	--	--	--	--	--
				ROCKINGHAM COUNTY					
39SS 1	11-03-99	--	--	--	--	--	--	--	--
	12-20-99	--	--	--	--	--	--	--	--
	02-02-00	--	--	--	--	--	--	--	--
	03-14-00	--	--	--	--	--	--	--	--
				RUSSELL COUNTY					
13D 5	07-11-00	--	--	--	--	--	--	--	--
				SCOTT COUNTY					
10C 2	07-13-00	--	--	--	--	--	--	--	--
				SMYTH COUNTY					
17D 1	07-17-00	--	--	--	--	--	--	--	--
	07-17-00	--	--	--	--	--	--	--	--
				SPOTSYLVANIA COUNTY					
49Q 2	10-25-99	--	--	--	--	--	--	--	--
				SURRY COUNTY					
57F 16 SOW 087A	03-23-00	17.0	2030	115	.8	E16.0	80	41	278
57F 24 SOW 087B	03-21-00	3.7	10.6	4.7	3.9	17.7	50	8	299
				TAZEWELL COUNTY					
17F 2	07-10-00	--	--	--	--	--	--	--	--
19G 1	07-10-00	--	--	--	--	--	--	--	--
				WARREN COUNTY					
44U 3	10-27-99	--	--	--	--	--	--	--	--
				WASHINGTON COUNTY					
12B 1	07-13-00	--	--	--	--	--	--	--	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	BROMIDE DIS-SOLVED (MG/L AS BR) (71870)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	DEPTH OF WELL, TOTAL (FEET) (72008)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT) (72015)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT) (72016)	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)
POWHATAN COUNTY									
47J 2	06-29-00	--	--	--	335	350.00	80	350	--
PRINCE WILLIAM COUNTY									
51U103G	10-25-99	216	--	--	175	925.00	310	609	--
ROCKINGHAM COUNTY									
39SS 1	11-03-99	--	--	--	1610	--	--	--	--
	12-20-99	--	--	--	1610	--	--	--	--
	02-02-00	--	--	--	1610	--	--	--	--
	03-14-00	--	--	--	1610	--	--	--	--
RUSSELL COUNTY									
13D 5	07-11-00	--	--	--	1755	180.00	--	--	--
SCOTT COUNTY									
10C 2	07-13-00	--	--	--	2780	119.00	--	--	--
SMYTH COUNTY									
17D 1	07-17-00	--	--	--	2030	380.00	80	151	--
	07-17-00	--	--	--	2030	380.00	80	151	--
SPOTSYLVANIA COUNTY									
49Q 2	10-25-99	34	--	--	425	307.00	--	--	--
SURRY COUNTY									
57F 16 SOW 087A	03-23-00	279	3700	7.76	5.0	1206.00	1170	1180	79.00
57F 24 SOW 087B	03-21-00	266	329	.05	5.0	380.00	370	380	80.35
TAZEWELL COUNTY									
17F 2	07-10-00	--	--	--	1735	245.00	117	151	--
19G 1	07-10-00	--	--	--	2710	298.00	75	298	--
WARREN COUNTY									
44U 3	10-27-99	195	--	--	705	--	--	--	--
WASHINGTON COUNTY									
12B 1	07-13-00	--	--	--	1470	620.00	129	620	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	STATION NUMBER	GEO-LOGIC UNIT	DATE	TIME	SAMPLE TYPE	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)
		WISE COUNTY					
09D 2	365814082444001	324WISE	07-12-00	0950	ENVIRONMENTAL	12.9	20.6
09E 10	370604082403901	324NRTN	07-12-00	1140	ENVIRONMENTAL	14.3	23.2
09E 11	370536082411301	324WISE	07-12-00	1430	ENVIRONMENTAL	14.7	25.5
10D 24	365320082370101	330MSSP	07-12-00	1415	ENVIRONMENTAL	12.2	19.8
11D 15	365842082250601	324NRTN	07-13-00	0905	ENVIRONMENTAL	13.1	20.1
		WYTHE COUNTY					
21E 1	370039081104801	340HRVL	07-19-00	0915	ENVIRONMENTAL	13.7	19.3
		--	07-19-00	1000	BLANK	--	--
23D 2	365836080571701	377ROME	07-17-00	1321	ENVIRONMENTAL	13.1	24.3
24D 1	365433080485601	377SHDY	07-18-00	0915	ENVIRONMENTAL	13.4	--
		YORK COUNTY					
58FS 14	371211076315301		04-11-00	1430	ENVIRONMENTAL	14.2	21.5
			04-11-00	1435	REPLICATE	14.2	21.5
58FS 17	371330076305501		04-11-00	1900	ENVIRONMENTAL	15.4	--
58FS 25	371213076320401		04-11-00	1410	ENVIRONMENTAL	14.4	20.5
58FS 26	371305076300801		04-12-00	0845	ENVIRONMENTAL	13.4	15.2
58FS 27	371223076311501		04-11-00	1300	ENVIRONMENTAL	12.8	20.1
58FS 28	371242076312101		04-11-00	1545	ENVIRONMENTAL	14.1	21.8
58FS 29	371344076323801		04-11-00	1630	ENVIRONMENTAL	18.0	18.2
58FS 37	371403076313401		04-12-00	1215	ENVIRONMENTAL	13.8	17.0
58FS 38	371402076313901		04-12-00	1245	ENVIRONMENTAL	14.4	17.0
58FS 40	371355076311001		04-12-00	1045	ENVIRONMENTAL	14.4	15.4
58FS 43	371321076312601		04-11-00	1700	ENVIRONMENTAL	14.5	21.7
58FS 50	371208076301501		04-11-00	1045	ENVIRONMENTAL	15.7	18.2
58FS 51	371331076303801		04-11-00	1830	ENVIRONMENTAL	15.0	21.0
59FS 2	371315076293601		04-12-00	0930	ENVIRONMENTAL	14.3	16.3
		CITY OF NEWPORT NEWS					
58F 93	371041076351702	217PPSC	03-28-00	1720	ENVIRONMENTAL	21.6	12.0
		CITY OF SUFFOLK					
58A 80 SOW 180D	363655076332005	125PLCN	03-24-00	1428	ENVIRONMENTAL	19.0	--
58A 81 SOW 180E	363655076332006	124EOCN	03-31-00	1520	ENVIRONMENTAL	18.6	17.0
		CITY OF VIRGINIA BEACH					
61C 43	364558076074501		08-10-00	1110	ENVIRONMENTAL	16.6	26.5
61C 44	364558076074401		08-09-00	1130	ENVIRONMENTAL	16.1	32.4
61C 45	365212076091201		08-08-00	1225	ENVIRONMENTAL	16.4	33.1
61C 46	365212076091202		08-07-00	1745	ENVIRONMENTAL	16.4	33.2
			08-07-00	1750	REPLICATE	16.4	33.2
61D 5 SOW 155	365425076105001	217PPSC	03-29-00	1628	ENVIRONMENTAL	22.7	17.0
62A 22	363714076063501		08-16-00	1520	ENVIRONMENTAL	16.0	27.1
62A 23	363714076063502		08-17-00	1045	ENVIRONMENTAL	15.7	29.2
62B 15	363812076021201		08-16-00	0945	ENVIRONMENTAL	16.6	27.6
62B 16	363812076021202		08-15-00	1115	ENVIRONMENTAL	16.3	25.2
62C 32	365046076041601	--	08-14-00	1410	BLANK	--	--
			08-14-00	1415	ENVIRONMENTAL	17.1	26.1
62C 33	365046076041602		08-11-00	1000	ENVIRONMENTAL	17.4	29.4

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	BARO-METRIC PRES-SURE (MM OF HG) (00025)	FLOW RATE (G/M) (00059)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
				WISE COUNTY					
09D 2	07-12-00	705	51.0	355	.6	6	6.7	--	--
09E 10	07-12-00	712	15.0	183	3.1	32	7.9	--	--
09E 11	07-12-00	711	3.8	235	.6	6	7.1	--	--
10D 24	07-12-00	666	5.0	150	.3	3	7.2	--	--
11D 15	07-13-00	695	650	526	.4	4	6.9	--	--
				WYTHE COUNTY					
21E 1	07-19-00	692	--	207	.5	5	6.8	--	--
	07-19-00	--	--	--	--	--	--	--	--
23D 2	07-17-00	702	233	549	1.3	13	7.1	--	--
24D 1	07-18-00	702	12.0	303	8.9	93	7.5	--	--
				YORK COUNTY					
58FS 14	04-11-00	--	--	315	2.5	25	7.2	7.3	0
	04-11-00	--	--	315	2.5	25	7.2	7.3	0
58FS 17	04-11-00	--	--	577	5.0	50	7.2	7.4	0
58FS 25	04-11-00	764	--	434	2.5	25	7.3	7.3	0
58FS 26	04-12-00	--	--	536	2.4	23	--	7.3	0
58FS 27	04-11-00	764	--	467	.8	8	7.0	7.1	0
58FS 28	04-11-00	764	--	243	6.8	66	7.2	7.2	0
58FS 29	04-11-00	764	--	56	4.4	47	4.5	5.0	0
58FS 37	04-12-00	--	--	458	7.6	75	--	7.4	0
58FS 38	04-12-00	--	--	495	7.8	77	7.8	7.2	0
58FS 40	04-12-00	--	--	451	7.6	74	--	7.3	0
58FS 43	04-11-00	764	--	372	3.5	34	7.2	7.2	0
58FS 50	04-11-00	764	--	130	2.5	25	5.1	5.1	0
58FS 51	04-11-00	764	--	456	4.7	47	7.4	7.5	0
59FS 2	04-12-00	--	--	717	3.7	36	7.4	7.2	0
				CITY OF NEWPORT NEWS					
58F 93	03-28-00	737	5.2	4870	.4	5	7.4	7.8	0
				CITY OF SUFFOLK					
58A 80 SOW 180D	03-24-00	762	2.8	1580	.4	4	8.4	8.5	23
58A 81 SOW 180E	03-31-00	756	3.8	3020	.5	5	8.8	8.9	62
				CITY OF VIRGINIA BEACH					
61C 43	08-10-00	755	1.2	11500	.5	5	7.1	7.3	0
61C 44	08-09-00	757	4.5	2830	.1	1	7.2	7.3	0
61C 45	08-08-00	757	5.0	524	.1	1	7.5	7.7	0
61C 46	08-07-00	756	5.0	359	.1	1	7.8	7.6	0
	08-07-00	756	5.0	359	.1	1	7.8	7.7	0
61D 5 SOW 155	03-29-00	751	5.8	28700	.3	4	7.2	7.1	0
62A 22	08-16-00	755	3.7	3040	.0	0	7.6	7.7	0
62A 23	08-17-00	759	2.0	576	.2	2	7.4	7.5	0
62B 15	08-16-00	756	2.0	10000	.2	2	7.6	7.6	0
62B 16	08-15-00	759	5.0	307	.2	2	7.6	7.8	0
62C 32	08-14-00	--	--	--	--	--	--	7.6	--
	08-14-00	755	4.7	1640	.3	3	7.8	7.9	0
62C 33	08-11-00	753	5.0	593	.4	4	6.9	7.1	0

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)
				WISE COUNTY					
09D 2	07-12-00	--	--	--	--	--	<.050	--	--
09E 10	07-12-00	--	--	--	--	--	<.050	--	--
09E 11	07-12-00	--	--	--	--	--	<.050	--	--
10D 24	07-12-00	--	--	--	--	--	<.050	--	--
11D 15	07-13-00	--	--	--	--	--	<.050	--	--
				WYTHE COUNTY					
21E 1	07-19-00	--	--	--	--	--	<.050	--	--
	07-19-00	--	--	--	--	--	<.050	--	--
23D 2	07-17-00	--	--	--	--	--	.118	--	--
24D 1	07-18-00	--	--	--	--	--	.280	--	--
				YORK COUNTY					
58FS 14	04-11-00	246	.012	<.001	<.10	--	.033	--	.046
	04-11-00	246	.012	<.001	<.10	--	.034	--	.048
58FS 17	04-11-00	324	.031	.001	E.10	--	.697	--	.040
58FS 25	04-11-00	267	.015	<.001	<.10	--	.040	--	.052
58FS 26	04-12-00	340	.024	<.001	<.10	--	.224	--	E.005
58FS 27	04-11-00	277	.016	<.001	<.10	--	.055	--	.032
58FS 28	04-11-00	133	.002	<.001	E.10	--	1.27	--	.052
58FS 29	04-11-00	0	.003	.001	.30	--	<.005	--	.011
58FS 37	04-12-00	274	.017	<.001	<.10	--	.051	--	.021
58FS 38	04-12-00	302	.021	<.001	<.10	--	.051	--	.040
58FS 40	04-12-00	296	.016	<.001	<.10	--	.026	--	.064
58FS 43	04-11-00	209	.006	<.001	<.10	--	.286	--	.029
58FS 50	04-11-00	6	.012	.005	E.10	--	.579	--	E.003
58FS 51	04-11-00	271	.036	.001	E.10	--	.430	--	.010
59FS 2	04-12-00	410	.095	.001	.16	--	.009	--	.006
				CITY OF NEWPORT NEWS					
58F 93	03-28-00	380	--	--	--	--	--	--	--
				CITY OF SUFFOLK					
58A 80 SOW 180D	03-24-00	705	--	--	--	--	--	--	--
58A 81 SOW 180E	03-31-00	794	--	--	--	--	--	--	--
				CITY OF VIRGINIA BEACH					
61C 43	08-10-00	950	10.0	--	--	12	<.005	.173	--
61C 44	08-09-00	492	10.0	--	--	12	<.005	5.23	--
61C 45	08-08-00	237	.218	--	--	.30	<.005	.141	--
61C 46	08-07-00	216	.349	--	--	.48	<.005	.262	--
	08-07-00	216	.411	--	--	.47	<.005	.236	--
61D 5 SOW 155	03-29-00	271	--	--	--	--	--	--	--
62A 22	08-16-00	466	1.50	--	--	1.7	.008	.160	--
62A 23	08-17-00	306	.555	--	--	.73	<.005	.079	--
62B 15	08-16-00	680	5.97	--	--	7.5	<.005	.182	--
62B 16	08-15-00	179	.182	--	--	.21	<.005	.164	--
62C 32	08-14-00	--	<.002	--	--	<.10	<.005	.019	--
	08-14-00	376	4.23	--	--	5.1	<.005	1.10	--
62C 33	08-11-00	318	.724	--	--	.86	<.005	.421	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
				WISE COUNTY					
09D 2	07-12-00	--	.95	--	--	--	--	--	--
09E 10	07-12-00	--	.44	--	--	--	--	--	--
09E 11	07-12-00	--	.75	--	--	--	--	--	--
10D 24	07-12-00	--	.82	--	--	--	--	--	--
11D 15	07-13-00	--	.95	--	--	--	--	--	--
				WYTHE COUNTY					
21E 1	07-19-00	--	E.28	--	--	--	--	--	--
	07-19-00	--	E.17	--	--	--	--	--	--
23D 2	07-17-00	--	.44	--	--	--	--	--	--
24D 1	07-18-00	--	E.27	--	--	--	--	--	--
				YORK COUNTY					
58FS 14	04-11-00	.044	--	73.6	1.21	4.5	.6	6.3	4.0
	04-11-00	.045	--	73.5	1.21	4.4	.6	6.4	4.1
58FS 17	04-11-00	.036	--	102	2.13	10.1	1.3	20.8	5.6
58FS 25	04-11-00	.048	--	81.3	1.30	4.6	.7	5.8	5.1
58FS 26	04-12-00	.004	--	104	2.62	5.8	1.2	8.7	12.4
58FS 27	04-11-00	.030	--	87.9	1.37	5.9	.4	9.1	12.8
58FS 28	04-11-00	.050	--	45.3	.94	2.4	.8	4.8	4.7
58FS 29	04-11-00	.002	--	.75	.72	5.3	.7	9.5	2.8
58FS 37	04-12-00	.018	--	85.1	1.63	10.2	.9	14.7	7.7
58FS 38	04-12-00	.040	--	94.6	1.95	8.8	1.0	14.2	8.9
58FS 40	04-12-00	.060	--	90.6	1.72	6.2	1.6	10.6	2.7
58FS 43	04-11-00	.027	--	65.9	1.59	5.4	1.1	7.3	6.0
58FS 50	04-11-00	<.001	--	5.59	2.28	8.1	1.6	17.0	13.5
58FS 51	04-11-00	.008	--	82.7	2.39	6.7	1.3	10.3	8.8
59FS 2	04-12-00	<.001	--	131	2.95	16.1	1.7	37.3	8.9
				CITY OF NEWPORT NEWS					
58F 93	03-28-00	--	--	28.2	6.16	921	15.2	1300	74.4
				CITY OF SUFFOLK					
58A 80 SOW 180D	03-24-00	--	--	1.11	1.58	337	13.9	117	37.4
58A 81 SOW 180E	03-31-00	--	--	.54	6.31	632	24.6	494	54.0
				CITY OF VIRGINIA BEACH					
61C 43	08-10-00	.015	6.6	81.5	146	2150	6.3	3380	210
61C 44	08-09-00	4.10	6.3	35.5	39.1	459	31.9	677	2.8
61C 45	08-08-00	.062	1.3	61.3	6.05	36.0	2.7	54.8	1.5
61C 46	08-07-00	.112	1.6	52.5	6.04	12.2	3.0	13.9	<.3
	08-07-00	.111	1.4	52.8	6.02	12.4	3.0	13.9	<.3
61D 5 SOW 155	03-29-00	--	--	419	202	5570	96.5	10200	433
62A 22	08-16-00	.130	5.6	41.4	59.8	456	29.4	701	56.6
62A 23	08-17-00	.057	3.9	52.9	23.0	17.2	15.9	35.7	1.0
62B 15	08-16-00	.140	6.2	41.6	90.4	1910	45.3	3080	80.2
62B 16	08-15-00	.135	.96	46.2	2.57	10.3	1.4	9.7	2.2
62C 32	08-14-00	.017	<.33	.19	.03	<.1	<.2	<.3	<.3
	08-14-00	.115	4.2	25.8	40.5	209	30.9	348	.6
62C 33	08-11-00	.001	1.5	54.9	16.5	32.1	7.7	37.2	E.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
			WISE COUNTY					
09D 2	07-12-00	--	--	--	--	--	--	--
09E 10	07-12-00	--	--	--	--	--	--	--
09E 11	07-12-00	--	--	--	--	--	--	--
10D 24	07-12-00	--	--	--	--	--	--	--
11D 15	07-13-00	--	--	--	--	--	--	--
			WYTHE COUNTY					
21E 1	07-19-00	--	--	--	--	--	--	--
	07-19-00	--	--	--	--	--	--	--
23D 2	07-17-00	--	--	--	--	--	--	--
24D 1	07-18-00	--	--	--	--	--	--	--
			YORK COUNTY					
58FS 14	04-11-00	<.1	9.1	<10	<2	<15	--	202
	04-11-00	<.1	9.1	<10	<2	<15	--	202
58FS 17	04-11-00	<.1	12.6	60	21	<15	--	266
58FS 25	04-11-00	<.1	9.8	E10	<2	E12	--	219
58FS 26	04-12-00	<.1	10.6	20	E2	<15	--	279
58FS 27	04-11-00	<.1	9.3	E10	<2	<15	--	227
58FS 28	04-11-00	.1	8.4	E10	<2	E12	--	109
58FS 29	04-11-00	<.1	5.6	770	5	414	--	0
58FS 37	04-12-00	<.1	14.4	10	3	<15	--	225
58FS 38	04-12-00	<.1	12.9	<10	<2	<15	--	248
58FS 40	04-12-00	<.1	11.6	E10	9	<15	--	243
58FS 43	04-11-00	<.1	9.9	E10	<2	E13	--	171
58FS 50	04-11-00	<.1	5.9	320	85	141	--	4
58FS 51	04-11-00	<.1	10.3	90	22	<15	--	222
59FS 2	04-12-00	<.1	12.8	680	207	E10	--	336
			CITY OF NEWPORT NEWS					
58F 93	03-28-00	1.4	36.6	40	48	--	315	311
			CITY OF SUFFOLK					
58A 80 SOW 180D	03-24-00	1.0	9.0	30	E1	--	624	616
58A 81 SOW 180E	03-31-00	2.7	11.3	60	<7	--	772	754
			CITY OF VIRGINIA BEACH					
61C 43	08-10-00	.6	37.4	3370	43	--	779	779
61C 44	08-09-00	.3	38.8	5020	164	--	395	404
61C 45	08-08-00	.2	34.7	940	83	--	190	194
61C 46	08-07-00	.2	31.1	880	53	--	174	177
	08-07-00	.2	31.3	880	53	--	174	177
61D 5 SOW 155	03-29-00	.1	16.9	6680	586	--	214	222
62A 22	08-16-00	.2	20.9	740	11	--	385	382
62A 23	08-17-00	.3	29.2	630	8	--	251	251
62B 15	08-16-00	.7	40.6	1260	41	--	554	558
62B 16	08-15-00	<.1	50.3	560	187	--	143	147
62C 32	08-14-00	<.1	M	<10	<2	--	1	--
	08-14-00	<.1	12.3	1240	9	--	303	308
62C 33	08-11-00	.2	57.1	8740	279	--	247	261

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	BROMIDE DIS-SOLVED (MG/L AS BR) (71870)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	DEPTH OF WELL, TOTAL (FEET) (72008)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT) (72015)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT) (72016)	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)
			WISE COUNTY					
09D 2	07-12-00	--	--	1940	250.00	40	250	--
09E 10	07-12-00	--	--	1660	--	--	--	--
09E 11	07-12-00	--	--	1670	--	--	--	--
10D 24	07-12-00	--	--	3530	400.00	50	66	--
11D 15	07-13-00	--	--	2340	204.00	--	--	--
			WYTHE COUNTY					
21E 1	07-19-00	--	--	2450	130.00	88	186	--
	07-19-00	--	--	2450	--	--	--	--
23D 2	07-17-00	--	--	2080	325.00	72	325	--
24D 1	07-18-00	--	--	2200	510.00	490	500	--
			YORK COUNTY					
58FS 14	04-11-00	224	.04	25.0	--	--	--	--
	04-11-00	228	.04	25.0	--	--	--	--
58FS 17	04-11-00	330	.10	15.0	--	--	--	--
58FS 25	04-11-00	253	.04	50.0	--	--	--	--
58FS 26	04-12-00	332	.05	20.0	--	--	--	--
58FS 27	04-11-00	273	.04	30.0	--	--	--	--
58FS 28	04-11-00	147	.03	30.0	--	--	--	--
58FS 29	04-11-00	53	<.01	30.0	--	--	--	--
58FS 37	04-12-00	276	.06	25.0	--	--	--	--
58FS 38	04-12-00	309	.06	25.0	--	--	--	--
58FS 40	04-12-00	286	.05	25.0	--	--	--	--
58FS 43	04-11-00	213	.05	40.0	--	--	--	--
58FS 50	04-11-00	69	.06	50.0	--	--	--	--
58FS 51	04-11-00	265	.04	5.0	--	--	--	--
59FS 2	04-12-00	447	.06	30.0	--	--	--	--
			CITY OF NEWPORT NEWS					
58F 93	03-28-00	2620	4.93	31.9	932.00	902	932	129.39
			CITY OF SUFFOLK					
58A 80 SOW 180D	03-24-00	926	.73	34.3	440.00	430	440	30.39
58A 81 SOW 180E	03-31-00	1700	1.68	34.0	329.00	319	329	14.74
			CITY OF VIRGINIA BEACH					
61C 43	08-10-00	6580	12.5	5.7	197.50	182	192	11.60
61C 44	08-09-00	1560	2.43	5.8	107.00	92	102	10.75
61C 45	08-08-00	333	.21	20.4	168.00	138	158	15.09
61C 46	08-07-00	240	.04	20.4	77.00	62	72	14.02
	08-07-00	242	.05	20.4	77.00	62	72	14.02
61D 5 SOW 155	03-29-00	17900	36.8	7.0	1378.00	1210	1370	76.52
62A 22	08-16-00	1620	2.31	10.5	178.00	143	168	4.77
62A 23	08-17-00	332	.03	10.4	100.00	88	98	4.29
62B 15	08-16-00	5550	8.17	13.8	208.00	193	203	9.51
62B 16	08-15-00	222	.05	14.0	77.00	65	75	7.56
62C 32	08-14-00	<10	.01	12.7	--	--	--	--
	08-14-00	866	1.03	12.7	168.00	138	148	13.34
62C 33	08-11-00	378	.10	12.7	85.00	70	80	9.76

LOCAL IDENT-I-FIER	STATION NUMBER	GEO-LOGIC UNIT	DATE	TIME	SAMPLE TYPE	TEMPER-ATURE WATER (DEG C) (00010)
		CITY OF WAYNESBORO				
39N 15	380311078541501		07-26-00	1015	ENVIRONMENTAL	12.7

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	TEMPER-ATURE AIR (DEG C) (00020)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	FLOW RATE (G/M) (00059)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)
			CITY OF WAYNESBORO					
39N 15	07-26-00	17.7	723	1800	122	6.8	68	8.2

LOCAL IDENT-I-FIER	DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	DEPTH OF WELL, TOTAL (FEET) (72008)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT) (72015)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT) (72016)
			CITY OF WAYNESBORO				
39N 15	07-26-00	.467	E.19	1360	735.00	260	268

DATA LISTED BY COUNTY

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	STATION NUMBER	GEO-LOGIC UNIT	DATE	TIME	SAMPLE TYPE	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)
		ALBEMARLE COUNTY					
44N 2	380001078203401	000MMPS	10-19-99	1130	ENVIRONMENTAL	14.8	13.0
		ALLEGHANY COUNTY					
33L 1	374719079421201	341BRLR	07-18-00	1400	ENVIRONMENTAL	12.7	23.7
		AUGUSTA COUNTY					
36N 1	380334079201801	341MLBR	10-28-99	1345	ENVIRONMENTAL	12.3	13.8
36NS 2	380255079195601	347DVSL	10-28-99	1010	ENVIRONMENTAL	10.9	7.9
37P 8	381242079134701	347DVSL	07-25-00	1310	ENVIRONMENTAL	12.1	18.5
38N 5	380022079025601		07-25-00	0920	ENVIRONMENTAL	12.4	16.9
		BEDFORD COUNTY					
33F 1	370735079383701	000MMPS	10-18-99	1720	ENVIRONMENTAL	15.4	18.2
		BLAND COUNTY					
21F 1	371042081084901	341BRLR	07-17-00	0950	ENVIRONMENTAL	15.2	16.6
		BOTETOURT COUNTY					
31M 3	375531079585301	341MLBR	07-18-00	1030	ENVIRONMENTAL	11.4	20.7
		BRUNSWICK COUNTY					
48C 3	365146077502201		06-28-00	1440	ENVIRONMENTAL	16.6	25.9
		BUCHANAN COUNTY					
14H 4	372249082000501	324NRTN	07-10-00	1045	ENVIRONMENTAL	15.1	28.3
15G 19	371841081584201	324NRTN	07-10-00	1400	ENVIRONMENTAL	14.4	29.4
		CAMPBELL COUNTY					
38G 1	371635079054401		06-27-00	1500	ENVIRONMENTAL	15.5	31.4
		CAROLINE COUNTY					
50M 2	385814077321401	400PCMB	12-10-99	1100	ENVIRONMENTAL	15.1	12.4
		400PCMB	03-24-00	1035	ENVIRONMENTAL	15.2	6.2
		400PCMB	05-25-00	1650	ENVIRONMENTAL	14.9	26.5
50M 3	385814077321402	121CSPKU	12-10-99	1130	ENVIRONMENTAL	16.6	12.4
		121CSPKU	03-24-00	1110	ENVIRONMENTAL	14.4	--
		121CSPKU	05-25-00	1610	ENVIRONMENTAL	13.9	26.5
50M 4	385812077321801	400PCMB	12-10-99	0900	ENVIRONMENTAL	15.4	14.8
		400PCMB	03-24-00	1255	ENVIRONMENTAL	11.4	--
		400PCMB	05-26-00	1145	ENVIRONMENTAL	12.3	24.0
		400PCMB	09-12-00	1450	ENVIRONMENTAL	16.9	22.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	BARO-METRIC PRES-SURE (MM OF HG) (00025)	FLOW RATE (G/M) (00059)	TUR-BID-ITY (NTU) (00076)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
				ALBEMARLE COUNTY					
44N 2	10-19-99	753	49.0	--	246	3.9	39	7.7	0
				ALLEGHANY COUNTY					
33L 1	07-18-00	723	10.0	--	223	5.3	53	8.4	--
				AUGUSTA COUNTY					
36N 1	10-28-99	720	38.0	2.5	255	8.5	84	7.7	0
36NS 2	10-28-99	703	--	--	163	9.6	94	7.4	0
37P 8	07-25-00	717	72.0	--	223	6.2	61	7.6	--
38N 5	07-25-00	722	300	--	130	8.1	80	7.2	--
				BEDFORD COUNTY					
33F 1	10-18-99	732	2.0	--	350	.6	6	6.1	0
				BLAND COUNTY					
21F 1	07-17-00	698	10.0	--	397	.3	3	7.8	--
				BOTETOURT COUNTY					
31M 3	07-18-00	714	9.0	--	352	7.3	71	7.4	--
				BRUNSWICK COUNTY					
48C 3	06-28-00	748	60.0	--	203	1.5	16	7.3	--
				BUCHANAN COUNTY					
14H 4	07-10-00	726	15.0	--	337	--	--	7.4	--
15G 19	07-10-00	717	6.0	--	394	--	--	6.7	--
				CAMPBELL COUNTY					
38G 1	06-27-00	734	30.0	--	246	5.0	52	7.0	--
				CAROLINE COUNTY					
50M 2	12-10-99	751	--	--	53	4.4	44	5.8	--
	03-24-00	--	--	--	54	5.7	--	6.2	--
	05-25-00	--	--	--	58	5.5	--	6.1	--
50M 3	12-10-99	751	--	--	38	8.6	89	5.2	--
	03-24-00	--	--	--	33	9.9	--	5.2	--
	05-25-00	--	--	--	38	9.8	--	5.4	--
50M 4	12-10-99	753	--	--	51	6.3	63	5.6	--
	03-24-00	--	--	--	44	6.8	--	5.1	--
	05-26-00	--	--	--	51	7.1	--	5.2	--
	09-12-00	751	--	--	56	6.9	72	--	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

	LOCAL IDENT-I-FIER	DATE	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)
				ALBEMARLE COUNTY					
44N	2	10-19-99	144	--	--	--	.375	--	--
				ALLEGHANY COUNTY					
33L	1	07-18-00	--	--	--	--	<.050	--	--
				AUGUSTA COUNTY					
36N	1	10-28-99	113	--	--	--	<.050	--	--
36NS	2	10-28-99	103	--	--	--	<.050	--	--
37P	8	07-25-00	--	--	--	--	<.050	--	--
38N	5	07-25-00	--	--	--	--	.162	--	--
				BEDFORD COUNTY					
33F	1	10-18-99	105	--	--	--	<.050	--	--
				BLAND COUNTY					
21F	1	07-17-00	--	--	--	--	<.050	--	--
				BOTETOURT COUNTY					
31M	3	07-18-00	--	--	--	--	.402	--	--
				BRUNSWICK COUNTY					
48C	3	06-28-00	--	--	--	--	<.050	--	--
				BUCHANAN COUNTY					
14H	4	07-10-00	--	--	--	--	<.050	--	--
15G	19	07-10-00	--	--	--	--	<.050	--	--
				CAMPBELL COUNTY					
38G	1	06-27-00	--	--	--	--	.777	--	--
				CAROLINE COUNTY					
50M	2	12-10-99	--	<.002	<.001	<.10	.242	.008	<.001
		03-24-00	--	<.002	<.001	<.10	.286	E.003	.007
		05-25-00	--	<.002	.002	<.10	.309	.006	<.001
50M	3	12-10-99	--	<.002	<.001	<.10	5.70	E.003	<.001
		03-24-00	--	<.002	<.001	E.10	2.53	<.006	.002
		05-25-00	--	<.002	<.001	<.10	2.38	<.006	<.001
50M	4	12-10-99	--	.002	.001	<.10	3.24	.009	<.001
		03-24-00	--	<.002	<.001	<.10	3.46	<.006	.003
		05-26-00	--	<.002	<.001	<.10	3.08	<.006	<.001
		09-12-00	--	.003	<.001	<.10	3.71	<.006	.001

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

	LOCAL IDENT-I-FIER	DATE	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	DEPTH OF WELL, TOTAL (FEET) (72008)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT) (72015)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT) (72016)	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)
				ALBEMARLE COUNTY					
44N	2	10-19-99	.38	118	400	305.00	--	--	--
				ALLEGHANY COUNTY					
33L	1	07-18-00	E.24	--	1275	255.00	--	--	--
				AUGUSTA COUNTY					
36N	1	10-28-99	E.32	93	1670	627.00	--	--	--
36NS	2	10-28-99	E.21	84	2310	--	--	--	--
37P	8	07-25-00	E.29	--	1715	540.00	192	--	--
38N	5	07-25-00	.60	--	1425	505.00	290	505	--
				BEDFORD COUNTY					
33F	1	10-18-99	.85	86	940	--	--	--	--
				BLAND COUNTY					
21F	1	07-17-00	.55	--	2210	652.00	211	652	--
				BOTETOURT COUNTY					
31M	3	07-18-00	.58	--	1600	265.00	185	227	--
				BRUNSWICK COUNTY					
48C	3	06-28-00	<.33	--	318	345.00	190	305	--
				BUCHANAN COUNTY					
14H	4	07-10-00	.86	--	1130	--	--	--	--
15G	19	07-10-00	.76	--	1440	--	--	--	--
				CAMPBELL COUNTY					
38G	1	06-27-00	E.16	--	875	360.00	265	270	--
				CAROLINE COUNTY					
50M	2	12-10-99	--	--	250	39.94	35	40	15.80
		03-24-00	--	--	250	39.94	35	40	13.21
		05-25-00	--	--	250	39.94	35	40	13.54
50M	3	12-10-99	--	--	250	25.14	20	25	13.80
		03-24-00	--	--	250	25.14	20	25	11.71
		05-25-00	--	--	250	25.14	20	25	12.21
50M	4	12-10-99	--	--	235	15.49	10	15	9.53
		03-24-00	--	--	235	15.49	10	15	7.57
		05-26-00	--	--	235	15.49	10	15	8.45
		09-12-00	--	--	235	15.49	10	15	10.09

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

	LOCAL IDENT-I-FIER	STATION NUMBER	GEO-LOGIC UNIT	DATE	TIME	SAMPLE TYPE	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)
			CAROLINE COUNTY					
50M 4		385812077321801	400PCMB	09-12-00	1455	REPLICATE	16.9	22.5
50M 5		385809077322001	400PCMB	12-09-99	1530	ENVIRONMENTAL	14.2	10.6
			400PCMB	03-24-00	1515	ENVIRONMENTAL	10.3	--
			400PCMB	05-26-00	1320	ENVIRONMENTAL	12.6	25.5
50M 6		385809077322002	110QRNR	12-09-99	1515	ENVIRONMENTAL	12.6	10.6
			110QRNR	03-24-00	1530	ENVIRONMENTAL	9.2	--
			110QRNR	05-26-00	1335	ENVIRONMENTAL	14.5	25.5
50M 7		385806077322501	400PCMB	12-09-99	1040	ENVIRONMENTAL	14.4	13.5
			400PCMB	03-29-00	1305	ENVIRONMENTAL	14.5	--
			400PCMB	05-26-00	0935	ENVIRONMENTAL	14.6	23.1
50M 8		375908077314801	121CSPKU	12-13-99	1200	ENVIRONMENTAL	12.7	9.5
			121CSPKU	03-28-00	1330	ENVIRONMENTAL	10.1	--
			121CSPKU	05-24-00	1505	ENVIRONMENTAL	15.9	23.5
50M 9		375904077315401	400PCMB	12-13-99	1235	ENVIRONMENTAL	14.6	9.6
			400PCMB	03-28-00	1400	REPLICATE	12.1	--
			400PCMB	03-28-00	1405	ENVIRONMENTAL	12.1	--
			400PCMB	05-24-00	1540	ENVIRONMENTAL	14.8	23.5
			400PCMB	09-12-00	0900	ENVIRONMENTAL	18.1	22.4
			400PCMB	09-12-00	0905	REPLICATE	18.1	22.4
50M 10		375904077315402	121CSPKU	12-13-99	1255	ENVIRONMENTAL	14.1	9.7
			121CSPKU	03-28-00	1420	ENVIRONMENTAL	12.2	--
			121CSPKU	05-24-00	1555	ENVIRONMENTAL	15.6	20.0
50M 11		375853077315901	400PCMB	12-13-99	1030	ENVIRONMENTAL	14.4	8.5
			400PCMB	03-29-00	0955	ENVIRONMENTAL	14.4	--
			400PCMB	05-23-00	1325	ENVIRONMENTAL	14.5	23.0
			--	05-24-00	1320	BLANK	--	--
50M 12		375853077315902	121CSPKU	12-13-99	1050	ENVIRONMENTAL	15.5	8.6
			121CSPKU	03-29-00	1020	ENVIRONMENTAL	12.5	--
			121CSPKU	05-24-00	1350	ENVIRONMENTAL	12.8	23.1
50M 13		375853077315903	121CSPKU	12-13-99	1145	ENVIRONMENTAL	14.4	8.6
			121CSPKU	03-29-00	1040	ENVIRONMENTAL	10.9	--
			--	03-29-00	1050	BLANK	--	--
			121CSPKU	05-24-00	1425	ENVIRONMENTAL	13.3	23.0
50M 14		375842077321301	400PCMB	12-13-99	0915	ENVIRONMENTAL	14.1	8.8
			400PCMB	12-13-99	0917	REPLICATE	14.1	8.8
			400PCMB	03-29-00	0855	ENVIRONMENTAL	14.2	--
			400PCMB	05-25-00	1445	ENVIRONMENTAL	14.2	25.5
			400PCMB	09-12-00	0955	ENVIRONMENTAL	14.3	22.8
50M 15		375842077321302		12-13-99	0930	ENVIRONMENTAL	15.2	7.6
				03-29-00	0915	ENVIRONMENTAL	14.6	--
				05-25-00	1505	ENVIRONMENTAL	14.0	25.5
				09-12-00	1015	ENVIRONMENTAL	14.6	22.8
50M 16		385814077321403	121CSPKU	12-10-99	1145	ENVIRONMENTAL	16.6	12.4
			121CSPKU	03-24-00	1140	ENVIRONMENTAL	12.0	--
			121CSPKU	05-25-00	1625	ENVIRONMENTAL	13.7	26.5
50M 17		385814077321404	121CSPKU	03-24-00	1200	ENVIRONMENTAL	11.7	--
50M 18		385812077321802	400PCMB	12-10-99	0945	ENVIRONMENTAL	15.3	14.8
			400PCMB	03-24-00	1315	ENVIRONMENTAL	11.2	--
			400PCMB	05-26-00	1210	ENVIRONMENTAL	12.3	25.0
50M 19		385812077321803	121CSPKU	12-10-99	0930	ENVIRONMENTAL	15.0	14.8
			121CSPKU	03-24-00	1345	ENVIRONMENTAL	10.3	--
			121CSPKU	05-26-00	1240	ENVIRONMENTAL	12.3	25.5
50M 21		375810077321901	400PCMB	12-09-99	1420	ENVIRONMENTAL	14.7	12.6
			400PCMB	12-09-99	1600	ENVIRONMENTAL	13.8	--
			400PCMB	03-24-00	1440	ENVIRONMENTAL	10.2	--
			400PCMB	05-26-00	1410	ENVIRONMENTAL	12.2	25.5
			--	05-30-00	1100	BLANK	--	--
50M 22		375810077321902	400PCMB	03-24-00	1420	ENVIRONMENTAL	9.7	--
50M 25		375808077322001	110QRNR	12-09-99	1130	ENVIRONMENTAL	11.5	13.2
			110QRNR	05-26-00	1105	ENVIRONMENTAL	15.0	24.0
			110QRNR	09-12-00	1340	ENVIRONMENTAL	19.0	21.3
50M 26		375807077322101	400PCMB	12-09-99	1115	ENVIRONMENTAL	13.8	12.1
			400PCMB	05-26-00	1035	ENVIRONMENTAL	12.3	24.5
50M 27		375806077322301	400PCMB	03-29-00	1415	ENVIRONMENTAL	14.1	--
			400PCMB	05-26-00	1010	ENVIRONMENTAL	13.5	23.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	BARO-METRIC PRES-SURE (MM OF HG) (00025)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)
				CAROLINE COUNTY					
50M 4	09-12-00	751	56	6.9	72	--	.002	<.001	E.10
50M 5	12-09-99	755	32	.2	2	5.7	.017	.002	.55
	03-24-00	--	33	7.1	--	5.6	.002	<.001	E.10
	05-26-00	--	38	.1	--	5.1	.019	<.001	<.10
50M 6	12-09-99	755	52	1.0	10	4.8	.006	<.001	E.10
	03-24-00	--	34	.2	--	5.0	<.002	<.001	E.10
	05-26-00	--	47	.4	--	5.3	.024	<.001	.15
50M 7	12-09-99	761	92	.1	1	5.6	.002	.010	<.10
	03-29-00	748	92	M	0	5.6	<.002	.004	E.10
	05-26-00	--	89	.7	--	6.6	.008	.006	<.10
50M 8	12-13-99	754	465	.2	1	5.9	13.0	.023	14
	03-28-00	--	481	.2	--	6.4	10.4	.008	11
	05-24-00	--	579	M	--	6.2	10.0	.007	13
50M 9	12-13-99	753	314	.1	0	5.7	1.41	.002	1.4
	03-28-00	--	292	.1	--	6.7	1.17	<.001	1.2
	03-28-00	--	292	.1	--	6.7	1.18	<.001	1.2
	05-24-00	--	315	M	--	6.5	1.15	<.001	1.3
	09-12-00	754	320	M	0	6.6	1.31	.002	1.5
	09-12-00	754	320	M	0	6.6	1.30	.002	1.5
50M 10	12-13-99	753	251	.1	1	5.7	1.17	.003	1.4
	03-28-00	--	263	.1	--	6.6	1.15	<.001	1.2
	05-24-00	--	251	M	--	6.3	1.15	<.001	1.3
50M 11	12-13-99	754	60	4.1	41	5.5	<.002	<.001	<.10
	03-29-00	747	65	3.8	38	6.1	<.002	<.001	<.10
	05-23-00	--	64	4.3	--	6.0	.004	<.001	<.10
	05-24-00	--	--	--	--	--	<.002	<.001	<.10
50M 12	12-13-99	754	19	6.1	61	4.2	<.002	<.001	<.10
	03-29-00	748	20	6.5	62	5.4	<.002	<.001	<.10
	05-24-00	--	20	6.8	--	5.4	<.002	<.001	<.10
50M 13	12-13-99	754	27	1.4	14	--	<.002	.001	<.10
	03-29-00	--	29	2.4	--	5.5	<.002	<.001	<.10
	03-29-00	--	--	--	--	--	<.002	<.001	<.10
	05-24-00	--	26	1.7	--	5.4	.018	.001	<.10
50M 14	12-13-99	754	36	7.2	71	4.5	.007	<.001	<.10
	12-13-99	754	36	7.2	71	4.5	.014	<.001	<.10
	03-29-00	--	37	7.3	--	5.8	<.002	<.001	<.10
	05-25-00	--	38	8.4	--	6.1	<.002	<.001	<.10
	09-12-00	754	36	7.2	71	5.3	.005	<.001	<.10
50M 15	12-13-99	754	23	7.8	78	--	.005	<.001	<.10
	03-29-00	747	24	8.1	81	4.9	<.002	<.001	<.10
	05-25-00	--	25	9.5	--	5.1	<.002	<.001	<.10
	09-12-00	754	23	7.9	79	4.5	<.002	<.001	<.10
50M 16	12-10-99	751	61	7.5	78	5.5	.031	<.001	E.10
	03-24-00	--	52	9.6	--	5.3	<.002	<.001	E.10
	05-25-00	--	56	9.0	--	5.2	.003	<.001	.12
50M 17	03-24-00	--	50	9.1	--	5.3	.003	<.001	.10
50M 18	12-10-99	753	47	6.8	68	5.7	<.002	<.001	<.10
	03-24-00	--	41	7.0	--	5.1	<.002	<.001	<.10
	05-26-00	--	44	5.9	--	5.2	<.002	<.001	<.10
50M 19	12-10-99	752	56	6.1	61	5.7	.002	<.001	<.10
	03-24-00	--	48	6.3	--	5.1	<.002	<.001	<.10
	05-26-00	--	50	6.3	--	5.3	.007	<.001	<.10
50M 21	12-09-99	755	58	3.4	33	--	.015	<.001	.10
	12-09-99	755	50	3.6	35	5.9	.011	<.001	E.10
	03-24-00	--	36	.6	--	5.2	<.002	<.001	<.10
	05-26-00	--	38	.3	--	5.2	<.002	<.001	<.10
	05-30-00	--	--	--	--	--	<.002	<.001	<.10
50M 22	03-24-00	--	33	1.4	--	5.0	<.002	<.001	<.10
50M 25	12-09-99	761	56	4.3	39	5.5	.014	.001	.10
	05-26-00	--	72	5.2	--	5.4	<.002	<.001	E.10
	09-12-00	752	71	4.4	48	6.6	.018	.002	E.10
50M 26	12-09-99	761	73	5.7	55	4.2	<.002	<.001	<.10
	05-26-00	--	79	5.2	--	5.4	<.002	<.001	<.10
50M 27	03-29-00	748	92	6.3	63	--	.058	<.001	.38
	05-26-00	--	124	7.9	--	5.5	.004	<.001	<.10

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	DEPTH OF WELL, TOTAL (FEET) (72008)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT) (72015)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT) (72016)	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)
				CAROLINE COUNTY					
50M 4	09-12-00	3.71	<.006	.001	235	15.49	10	15	10.09
50M 5	12-09-99	.051	.017	<.001	210	8.62	8.4	8.6	4.15
	03-24-00	.015	<.006	.003	210	8.62	8.4	8.6	3.23
	05-26-00	<.005	<.006	<.001	210	8.62	8.4	8.6	3.81
50M 6	12-09-99	<.005	E.004	<.001	210	4.84	.00	4.8	3.73
	03-24-00	.016	<.006	.002	210	4.84	.00	4.8	1.66
	05-26-00	<.005	E.003	<.001	210	4.84	.00	4.8	3.97
50M 7	12-09-99	.291	.046	.031	240	46.28	41	46	23.72
	03-29-00	.217	.029	.009	240	46.28	41	46	25.92
	05-26-00	.189	.047	.044	240	46.28	41	46	24.83
50M 8	12-13-99	--	.009	.005	200	8.50	6.0	8.3	.66
	03-28-00	<.005	.019	.009	200	8.50	6.0	8.3	-.05
	05-24-00	<.005	<.006	<.001	200	8.50	6.0	8.3	.25
50M 9	12-13-99	<.005	<.006	<.001	215	10.35	9.2	10	3.79
	03-28-00	<.005	<.006	.003	215	10.35	9.2	10	2.99
	03-28-00	.020	<.006	.003	215	10.35	9.2	10	2.99
	05-24-00	<.005	<.006	<.001	215	10.35	9.2	10	3.49
	09-12-00	<.005	<.006	.006	215	10.35	9.2	10	3.57
	09-12-00	<.005	<.006	.004	215	10.35	9.2	10	3.57
50M 10	12-13-99	.008	<.006	.004	215	7.90	5.6	6.6	4.24
	03-28-00	<.005	<.006	.003	215	7.90	5.6	6.6	3.39
	05-24-00	<.005	<.006	<.001	215	7.90	5.6	6.6	3.90
50M 11	12-13-99	.017	.096	<.001	240	41.80	37	42	2.20
	03-29-00	.027	.096	.089	240	41.80	37	42	-.59
	05-23-00	.027	.099	.085	240	41.80	37	42	-.04
	05-24-00	<.005	<.006	.002	240	--	--	--	--
50M 12	12-13-99	.117	E.003	<.001	240	15.40	13	15	1.95
	03-29-00	.131	<.006	.002	240	15.40	13	15	-.73
	05-24-00	.140	<.006	<.001	240	15.40	13	15	-.12
50M 13	12-13-99	.052	E.003	<.001	240	10.20	8.0	10	2.60
	03-29-00	.061	<.006	.002	240	10.20	8.0	10	.94
	03-29-00	<.005	<.006	.001	240	--	--	--	--
	05-24-00	.075	<.006	<.001	240	10.20	8.0	10	1.44
50M 14	12-13-99	.707	E.003	<.001	265	47.50	42	47	15.73
	12-13-99	.248	E.003	<.001	265	47.50	42	47	15.73
	03-29-00	.309	<.006	.002	265	47.50	42	47	8.68
	05-25-00	.259	<.006	<.001	265	47.50	42	47	8.99
	09-12-00	.283	<.006	.002	265	47.50	42	47	13.55
50M 15	12-13-99	2.88	.011	.007	265	27.00	25	27	15.58
	03-29-00	.783	<.006	.001	265	27.00	25	27	8.52
	05-25-00	.752	<.006	<.001	265	27.00	25	27	8.77
	09-12-00	.829	<.006	<.001	265	27.00	25	27	13.55
50M 16	12-10-99	3.60	E.004	<.001	250	16.20	11	16	11.90
	03-24-00	3.82	<.006	.002	250	16.20	11	16	9.84
	05-25-00	3.69	<.006	<.001	250	16.20	11	16	10.42
50M 17	03-24-00	3.74	.009	.004	250	10.50	4.7	10	9.66
50M 18	12-10-99	2.93	E.005	<.001	235	14.70	12	14	9.52
	03-24-00	2.97	<.006	.003	235	14.70	12	14	7.57
	05-26-00	2.33	<.006	<.001	235	14.70	12	14	8.39
50M 19	12-10-99	.260	E.003	<.001	235	11.50	9.3	11	9.08
	03-24-00	3.02	<.006	.003	235	11.50	9.3	11	7.13
	05-26-00	2.81	<.006	<.001	235	11.50	9.3	11	8.03
50M 21	12-09-99	.028	.007	<.001	220	10.10	7.9	9.9	9.36
	12-09-99	<.005	E.004	<.001	220	10.10	7.9	9.9	9.36
	03-24-00	.005	<.006	.002	220	10.10	7.9	9.9	5.45
	05-26-00	<.005	<.006	<.001	220	10.10	7.9	9.9	7.53
	05-30-00	<.005	<.006	<.001	220	--	--	--	--
50M 22	03-24-00	.029	<.006	.002	220	7.60	5.4	7.4	4.44
50M 25	12-09-99	1.61	.008	<.001	210	3.60	1.4	3.4	.76
	05-26-00	3.30	<.006	<.001	210	3.60	1.4	3.4	.43
	09-12-00	3.35	E.003	.003	210	3.60	1.4	3.4	1.11
50M 26	12-09-99	4.25	<.006	<.001	215	9.10	6.9	8.9	3.49
	05-26-00	3.92	<.006	<.001	215	9.10	6.9	8.9	2.98
50M 27	03-29-00	7.42	.070	.165	240	24.80	20	25	22.65
	05-26-00	8.64	<.006	<.001	240	24.80	20	25	21.53

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	STATION NUMBER	GEO-LOGIC UNIT	DATE	TIME	SAMPLE TYPE	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)
		CAROLINE COUNTY					
50M 27	375806077322301	400PCMB	09-12-00	1400	ENVIRONMENTAL	14.0	23.4
50M 29	375808077321901	--	04-10-00	1145	BLANK	--	--
		400PCMB	04-10-00	1300	ENVIRONMENTAL	13.5	60.0
		400PCMB	04-10-00	1315	REPLICATE	13.5	60.0
		400PCMB	09-12-00	1300	ENVIRONMENTAL	18.2	20.8
50M 30	375808077321902	110QRNR	04-10-00	1100	ENVIRONMENTAL	12.9	60.0
		110QRNR	09-12-00	1300	ENVIRONMENTAL	19.1	20.8
50N 4	380046077340401	400GRGS	10-25-99	0920	ENVIRONMENTAL	15.9	6.7
51M 15	385832077253501	121CSPKU	12-15-99	1150	ENVIRONMENTAL	15.9	--
		121CSPKU	03-28-00	0915	ENVIRONMENTAL	13.6	--
		121CSPKU	05-25-00	1245	ENVIRONMENTAL	13.3	23.2
		121CSPKU	09-11-00	1435	ENVIRONMENTAL	15.3	28.8
51M 17	385819077254501	121CSPKU	12-15-99	1305	ENVIRONMENTAL	14.6	--
		121CSPKU	03-28-00	1020	ENVIRONMENTAL	10.6	--
		121CSPKU	05-25-00	0935	ENVIRONMENTAL	12.5	22.5
		121CSPKU	09-11-00	1515	ENVIRONMENTAL	17.3	28.8
51M 18	385811077254901	125PLCN	12-15-99	1400	ENVIRONMENTAL	14.3	--
		125PLCN	03-28-00	1150	ENVIRONMENTAL	14.4	--
		125PLCN	05-26-00	0830	ENVIRONMENTAL	14.4	16.5
51M 19	385811077254902	110QRNR	12-15-99	1350	ENVIRONMENTAL	14.0	--
		110QRNR	03-28-00	1140	ENVIRONMENTAL	10.3	--
		110QRNR	05-25-00	0835	ENVIRONMENTAL	14.2	22.0
51M 20	385759077254501	110QRNR	12-15-99	0950	ENVIRONMENTAL	16.0	11.4
		110QRNR	12-15-99	0952	REPLICATE	16.0	11.4
		110QRNR	03-27-00	1205	ENVIRONMENTAL	11.5	--
		110QRNR	05-25-00	1200	ENVIRONMENTAL	13.2	23.0
		110QRNR	05-25-00	1205	REPLICATE	13.2	23.0
		110QRNR	09-11-00	1230	ENVIRONMENTAL	18.5	24.5
51M 21	385748077255801	121CSPKU	12-15-99	0900	ENVIRONMENTAL	15.4	11.4
		121CSPKU	03-27-00	1110	ENVIRONMENTAL	11.8	--
		121CSPKU	03-27-00	1115	REPLICATE	11.8	--
		121CSPKU	05-25-00	1020	ENVIRONMENTAL	13.5	22.5
51M 22	375729077254301	110QRNR	12-15-99	1035	ENVIRONMENTAL	16.2	8.4
		110QRNR	03-27-00	1255	ENVIRONMENTAL	12.1	--
		110QRNR	05-25-00	1100	ENVIRONMENTAL	13.4	22.0
		110QRNR	09-11-00	1320	ENVIRONMENTAL	18.5	21.6
51M 23	375729077254302	110QRNR	12-15-99	1055	ENVIRONMENTAL	15.8	11.8
		110QRNR	03-27-00	1320	ENVIRONMENTAL	11.8	--
		110QRNR	05-25-00	1115	ENVIRONMENTAL	13.8	22.9
		110QRNR	09-11-00	1340	ENVIRONMENTAL	19.0	21.6
51M 24	375729077254303	110QRNR	03-27-00	1330	ENVIRONMENTAL	14.4	--
		110QRNR	05-25-00	1125	ENVIRONMENTAL	14.6	23.0
		DICKENSON COUNTY					
12E 5	370049082171501	324NRTN	07-11-00	1050	ENVIRONMENTAL	13.8	21.4
13E 13	370507082134201	324NRTN	07-11-00	1115	ENVIRONMENTAL	13.8	20.6
		FREDERICK COUNTY					
44Y 3	391920078190701	341CMNG	10-27-99	0925	ENVIRONMENTAL	13.2	7.3
		GILES COUNTY					
24G 2	372155080514501	331BLFD	07-20-00	1045	ENVIRONMENTAL	14.3	18.2
		331BLFD	07-20-00	1050	REPLICATE	14.3	18.2
24G 3	372217080480501	364MCSN	07-20-00	1430	ENVIRONMENTAL	13.3	19.6
26G 1	372119080321101	364EGLS	07-20-00	0900	ENVIRONMENTAL	10.1	12.8
26G 2	372123080321901	364EGLS	07-20-00	1200	ENVIRONMENTAL	9.2	12.8
		--	07-20-00	1205	BLANK	--	--
26H 1	372234080311901		07-20-00	1740	ENVIRONMENTAL	9.7	17.7

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	BARO-METRIC PRES-SURE (MM OF HG) (00025)	FLOW RATE (G/M) (00059)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)
				CAROLINE COUNTY					
50M 27	09-12-00	751	--	103	6.7	66	6.7	--	--
50M 29	04-10-00	--	--	--	--	--	--	--	--
	04-10-00	--	--	84	.7	--	5.3	--	--
	04-10-00	--	--	84	.7	--	5.3	--	--
	09-12-00	752	--	112	1.1	12	5.8	--	--
50M 30	04-10-00	--	--	120	.6	--	5.4	--	--
	09-12-00	752	--	105	2.1	23	--	--	--
50N 4	10-25-99	755	18.0	172	1.7	17	7.2	0	102
51M 15	12-15-99	760	--	228	8.3	84	--	--	--
	03-28-00	--	--	211	9.5	--	4.3	--	--
	05-25-00	--	--	186	9.9	--	5.3	--	--
	09-11-00	758	--	195	8.7	87	4.5	--	--
51M 17	12-15-99	760	--	40	2.8	27	--	--	--
	03-28-00	--	--	93	3.5	--	4.9	--	--
	05-25-00	--	--	48	2.2	--	5.9	--	--
	09-11-00	758	--	56	1.3	13	5.9	--	--
51M 18	12-15-99	761	--	554	M	0	--	--	--
	03-28-00	--	--	520	.1	--	--	--	--
	05-26-00	--	--	577	.1	--	7.2	--	--
51M 19	12-15-99	760	--	48	4.1	40	--	--	--
	03-28-00	--	--	58	6.9	--	5.4	--	--
	05-25-00	--	--	44	6.3	--	5.1	--	--
51M 20	12-15-99	759	--	204	7.7	78	--	--	--
	12-15-99	759	--	204	7.7	78	--	--	--
	03-27-00	--	--	191	8.3	--	4.7	--	--
	05-25-00	--	--	256	6.4	--	4.8	--	--
	05-25-00	--	--	256	6.4	--	4.8	--	--
	09-11-00	759	--	224	2.9	31	4.4	--	--
51M 21	12-15-99	756	--	108	.9	9	--	--	--
	03-27-00	--	--	47	6.4	--	4.9	--	--
	03-27-00	--	--	47	6.4	--	4.9	--	--
	05-25-00	--	--	36	2.4	--	4.7	--	--
51M 22	12-15-99	759	--	182	6.8	69	--	--	--
	03-27-00	--	--	158	8.2	--	4.9	--	--
	05-25-00	--	--	133	7.5	--	4.7	--	--
	09-11-00	759	--	167	7.2	77	5.6	--	--
51M 23	12-15-99	759	--	164	6.0	61	--	--	--
	03-27-00	--	--	151	8.1	--	4.9	--	--
	05-25-00	--	--	181	7.4	--	4.7	--	--
	09-11-00	759	--	170	6.4	69	4.6	--	--
51M 24	03-27-00	--	--	144	10.1	--	5.3	--	--
	05-25-00	--	--	325	9.8	--	5.0	--	--
				DICKENSON COUNTY					
12E 5	07-11-00	707	32.0	637	.4	4	7.1	--	--
13E 13	07-11-00	711	20.0	340	1.2	12	7.0	--	--
				FREDERICK COUNTY					
44Y 3	10-27-99	734	76.0	266	.7	7	7.7	0	162
				GILES COUNTY					
24G 2	07-20-00	709	16.0	576	3.0	32	7.2	--	--
	07-20-00	709	16.0	576	3.0	32	7.2	--	--
24G 3	07-20-00	699	28.0	423	6.0	63	7.3	--	--
26G 1	07-20-00	656	60.0	87	10.0	103	6.2	--	--
26G 2	07-20-00	656	53.0	129	12.7	128	6.5	--	--
	07-20-00	--	--	--	--	--	--	--	--
26H 1	07-20-00	657	22.0	65	.9	9	6.3	--	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)
				CAROLINE COUNTY					
50M 27	09-12-00	.028	.001	.16	--	6.55	--	.008	.007
50M 29	04-10-00	<.020	<.010	E.10	<.10	<.050	<.008	<.006	<.010
	04-10-00	<.020	.013	<.10	E.10	1.02	E.007	<.006	<.010
	04-10-00	<.020	.012	E.10	<.10	1.06	E.006	<.006	<.010
	09-12-00	.003	<.001	E.10	--	1.11	--	<.006	.003
50M 30	04-10-00	.020	<.010	.16	.46	<.050	.057	<.006	<.010
	09-12-00	.169	.004	.16	--	.265	--	<.006	.002
50N 4	10-25-99	--	--	--	--	<.050	--	--	--
51M 15	12-15-99	--	<.001	<.10	--	14.7	--	E.003	<.001
	03-28-00	<.002	<.001	E.10	--	15.2	--	<.006	.002
	05-25-00	<.002	<.001	<.10	--	13.4	--	<.006	<.001
	09-11-00	.004	<.001	E.10	--	12.7	--	<.006	.002
51M 17	12-15-99	<.002	.001	<.10	--	.315	--	E.004	<.001
	03-28-00	<.002	<.001	<.10	--	1.39	--	<.006	.002
	05-25-00	.112	.002	.20	--	.873	--	.022	.021
	09-11-00	1.16	.004	1.3	--	.594	--	.119	.104
51M 18	12-15-99	.004	<.001	E.10	--	.117	--	.038	.034
	03-28-00	.115	<.001	.19	--	.011	--	.041	.040
	05-26-00	.105	<.001	.19	--	<.005	--	.035	.031
51M 19	12-15-99	<.002	<.001	<.10	--	.093	--	E.003	<.001
	03-28-00	<.002	<.001	<.10	--	.161	--	<.006	.002
	05-25-00	<.002	<.001	<.10	--	.153	--	<.006	<.001
51M 20	12-15-99	--	<.001	E.10	--	6.25	--	E.003	<.001
	12-15-99	--	<.001	E.10	--	6.39	--	E.004	<.001
	03-27-00	<.002	<.001	E.10	--	5.22	--	<.006	.002
	05-25-00	.009	<.001	E.10	--	2.79	--	<.006	<.001
	05-25-00	.016	<.001	E.10	--	2.90	--	<.006	<.001
	09-11-00	.012	.001	E.10	--	3.51	--	E.003	.002
51M 21	12-15-99	.375	<.001	.50	--	.167	--	E.003	<.001
	03-27-00	<.002	<.001	<.10	--	<.005	--	<.006	.003
	03-27-00	<.002	<.001	<.10	--	.021	--	<.006	.003
	05-25-00	<.002	<.001	E.10	--	<.005	--	<.006	<.001
51M 22	12-15-99	--	<.001	E.10	--	4.45	--	.022	.074
	03-27-00	<.002	<.001	E.10	--	5.02	--	<.006	.003
	05-25-00	<.002	<.001	<.10	--	3.56	--	.008	.002
	09-11-00	.002	<.001	E.10	--	4.56	--	.009	.008
51M 23	12-15-99	--	.001	E.10	--	5.93	--	E.003	<.001
	03-27-00	<.002	<.001	E.10	--	5.47	--	<.006	.002
	05-25-00	.005	<.001	E.10	--	4.69	--	<.006	<.001
	09-11-00	.004	<.001	E.10	--	6.20	--	<.006	.001
51M 24	03-27-00	<.002	<.001	E.10	--	6.57	--	E.003	.004
	05-25-00	.040	.005	E.10	--	14.4	--	E.003	.002
				DICKENSON COUNTY					
12E 5	07-11-00	--	--	--	--	<.050	--	--	--
13E 13	07-11-00	--	--	--	--	<.050	--	--	--
				FREDERICK COUNTY					
44Y 3	10-27-99	--	--	--	--	<.050	--	--	--
				GILES COUNTY					
24G 2	07-20-00	--	--	--	--	.911	--	--	--
	07-20-00	--	--	--	--	.913	--	--	--
24G 3	07-20-00	--	--	--	--	1.04	--	--	--
26G 1	07-20-00	--	--	--	--	.834	--	--	--
26G 2	07-20-00	--	--	--	--	.428	--	--	--
	07-20-00	--	--	--	--	<.050	--	--	--
26H 1	07-20-00	--	--	--	--	<.050	--	--	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	DEPTH OF WELL, TOTAL (FEET) (72008)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT) (72015)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT) (72016)	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)
			CAROLINE COUNTY					
50M 27	09-12-00	--	--	240	24.80	20	25	23.45
50M 29	04-10-00	--	--	210	--	--	--	--
	04-10-00	--	--	210	7.00	5.4	7.0	2.21
	04-10-00	--	--	210	7.00	5.4	7.0	2.21
	09-12-00	--	--	210	7.00	5.4	7.0	2.91
50M 30	04-10-00	--	--	210	3.40	2.1	3.4	1.05
	09-12-00	--	--	210	3.40	2.1	3.4	2.98
50N 4	10-25-99	E.19	84	295	475.00	243	463	--
51M 15	12-15-99	--	--	190	25.29	20	25	21.12
	03-28-00	--	--	190	25.29	20	25	20.99
	05-25-00	--	--	190	25.29	20	25	21.29
	09-11-00	--	--	190	25.29	20	25	22.04
51M 17	12-15-99	--	--	130	13.98	9.0	14	11.12
	03-28-00	--	--	130	13.98	9.0	14	10.92
	05-25-00	--	--	130	13.98	9.0	14	11.06
	09-11-00	--	--	130	13.98	9.0	14	10.80
51M 18	12-15-99	--	--	110	52.54	48	53	11.09
	03-28-00	--	--	110	52.54	48	53	10.54
	05-26-00	--	--	110	52.54	48	53	10.73
51M 19	12-15-99	--	--	110	9.80	4.8	5.9	7.06
	03-28-00	--	--	110	9.80	4.8	5.9	7.01
	05-25-00	--	--	110	9.80	4.8	5.9	7.50
51M 20	12-15-99	--	--	115	14.89	9.9	15	9.62
	12-15-99	--	--	115	14.89	9.9	15	9.62
	03-27-00	--	--	115	14.89	9.9	15	8.25
	05-25-00	--	--	115	14.89	9.9	15	7.89
	05-25-00	--	--	115	14.89	9.9	15	7.89
	09-11-00	--	--	115	14.89	9.9	15	9.37
51M 21	12-15-99	--	--	185	17.53	13	18	13.36
	03-27-00	--	--	185	17.53	13	18	11.39
	03-27-00	--	--	185	17.53	13	18	11.39
	05-25-00	--	--	185	17.53	13	18	11.25
51M 22	12-15-99	--	--	110	13.40	11	13	8.09
	03-27-00	--	--	110	13.40	11	13	6.81
	05-25-00	--	--	110	13.40	11	13	6.45
	09-11-00	--	--	110	13.40	11	13	7.87
51M 23	12-15-99	--	--	110	11.50	12	13	7.94
	03-27-00	--	--	110	11.50	9.2	11	6.67
	05-25-00	--	--	110	11.50	9.2	11	6.31
	09-11-00	--	--	110	11.50	9.2	11	7.71
51M 24	03-27-00	--	--	110	--	2.7	7.5	6.51
	05-25-00	--	--	110	--	2.7	7.5	6.45
			DICKENSON COUNTY					
12E 5	07-11-00	.88	--	1840	222.00	118	222	--
13E 13	07-11-00	1.0	--	1560	305.00	--	--	--
			FREDERICK COUNTY					
44Y 3	10-27-99	.45	133	1020	810.00	--	--	--
			GILES COUNTY					
24G 2	07-20-00	.67	--	1735	855.00	300	655	76.00
	07-20-00	.72	--	1735	855.00	300	655	--
24G 3	07-20-00	.53	--	2120	602.00	502	510	--
26G 1	07-20-00	E.18	--	3910	198.00	120	198	--
26G 2	07-20-00	E.31	--	3930	605.00	62	118	--
	07-20-00	.73	--	3930	--	--	--	--
26H 1	07-20-00	E.30	--	3845	140.00	130	140	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	STATION NUMBER	GEO-LOGIC UNIT	DATE	TIME	SAMPLE TYPE	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)
		GLOUCESTER COUNTY					
57H 21	372621076404202	211CRCSU	02-23-00	1255	ENVIRONMENTAL	19.4	20.0
		GOOCHLAND COUNTY					
49J 4	373452077395401	231VINT	06-29-00	1540	ENVIRONMENTAL	16.0	23.8
		HALIFAX COUNTY					
40C 1	364523078475401	231NWRK	06-28-00	0920	ENVIRONMENTAL	16.4	23.3
		HENRY COUNTY					
30B 1	364248080015201		06-27-00	1035	ENVIRONMENTAL	14.8	23.8
		JAMES CITY COUNTY					
56H 25 SOW 177A	372506076511701	217PTXN	03-02-00	1504	ENVIRONMENTAL	19.6	14.5
58F127	371149076353401	211CRCSU	03-27-00	1529	ENVIRONMENTAL	19.4	18.0
		KING WILLIAM COUNTY					
55J 16	373523076523402	217PPSC	02-22-00	1205	ENVIRONMENTAL	20.7	21.0
		LEE COUNTY					
07C 3	364809082551601		07-13-00	1108	ENVIRONMENTAL	13.4	24.5
		LOUDOUN COUNTY					
49X 10	390832077430001	400GRGS	10-26-99	0947	ENVIRONMENTAL	13.4	9.4
50W 7B	390711077332501	231BLBF	10-26-99	1324	ENVIRONMENTAL	13.4	17.7
		MADISON COUNTY					
45Q 1	381735078075001	231MNSS	10-19-99	1545	ENVIRONMENTAL	14.6	16.7
		--	10-20-99	0800	BLANK	--	--
		MECKLENBURG COUNTY					
43B 1	363942078231301	000MPVS	10-18-99	1030	ENVIRONMENTAL	17.3	17.1
		MONTGOMERY COUNTY					
27F 3	371214080291601	377ROME	07-19-00	0925	ENVIRONMENTAL	13.4	22.5
27E 2	370328080263101	377ROME	07-18-00	1330	ENVIRONMENTAL	13.0	26.1
27F 4	371158080291201	371ELBK	07-19-00	1125	ENVIRONMENTAL	12.9	25.5

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	BARO-METRIC PRES-SURE (MM OF HG) (00025)	FLOW RATE (G/M) (00059)	TUR-BID-ITY (NTU) (00076)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)
GLOUCESTER COUNTY									
57H 21	02-23-00	770	1.8	--	922	.0	0	8.3	8.5
GOOCHLAND COUNTY									
49J 4	06-29-00	745	4.0	--	153	.6	6	6.1	--
HALIFAX COUNTY									
40C 1	06-28-00	746	56.0	--	454	1.6	17	7.1	--
HENRY COUNTY									
30B 1	06-27-00	729	6.0	--	201	5.5	57	6.7	--
JAMES CITY COUNTY									
56H 25 SOW 177A	03-02-00	751	4.0	--	1770	--	--	8.0	8.0
58F127	03-27-00	740	5.2	--	2030	.5	5	8.3	8.4
KING WILLIAM COUNTY									
55J 16	02-22-00	768	25.0	--	444	.9	10	8.1	8.3
LEE COUNTY									
07C 3	07-13-00	714	18.0	--	114	.9	9	6.4	--
LOUDOUN COUNTY									
49X 10	10-26-99	744	--	--	446	1.3	13	6.2	--
50W 7B	10-26-99	749	390	--	493	8.0	78	6.8	--
MADISON COUNTY									
45Q 1	10-19-99	752	120	--	206	.9	9	6.2	--
	10-20-99	--	--	--	--	--	--	--	--
MECKLENBURG COUNTY									
43B 1	10-18-99	744	100	--	390	1.1	12	7.2	--
MONTGOMERY COUNTY									
27F 3	07-19-00	703	15.0	.8	431	1.2	12	7.2	--
27E 2	07-18-00	706	34.0	--	299	6.8	70	7.7	--
27F 4	07-19-00	703	22.0	.0	449	1.1	11	7.1	--

DATA LISTED BY COUNTY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
				GLOUCESTER COUNTY					
57H 21	02-23-00	12	413	--	--	1.37	.37	208	5.5
				GOOCHLAND COUNTY					
49J 4	06-29-00	--	--	<.050	E.18	--	--	--	--
				HALIFAX COUNTY					
40C 1	06-28-00	--	--	.070	.85	--	--	--	--
				HENRY COUNTY					
30B 1	06-27-00	--	--	1.05	E.16	--	--	--	--
				JAMES CITY COUNTY					
56H 25 SOW 177A	03-02-00	0	508	--	--	34.8	6.87	321	12.3
58F127	03-27-00	18	412	--	--	3.71	1.66	406	11.6
				KING WILLIAM COUNTY					
55J 16	02-22-00	0	283	--	--	.45	.09	107	1.8
				LEE COUNTY					
07C 3	07-13-00	--	--	<.050	.38	--	--	--	--
				LOUDOUN COUNTY					
49X 10	10-26-99	0	164	<.050	1.3	--	--	--	--
50W 7B	10-26-99	0	260	4.08	.55	--	--	--	--
				MADISON COUNTY					
45Q 1	10-19-99	0	116	<.050	.50	--	--	--	--
	10-20-99	--	--	<.050	<.33	--	--	--	--
				MECKLENBURG COUNTY					
43B 1	10-18-99	0	216	.057	.55	--	--	--	--
				MONTGOMERY COUNTY					
27F 3	07-19-00	--	--	.064	E.32	--	--	--	--
27E 2	07-18-00	--	--	.744	E.18	--	--	--	--
27F 4	07-19-00	--	--	.050	.35	--	--	--	--

DATA LISTED BY COUNTY--Continued

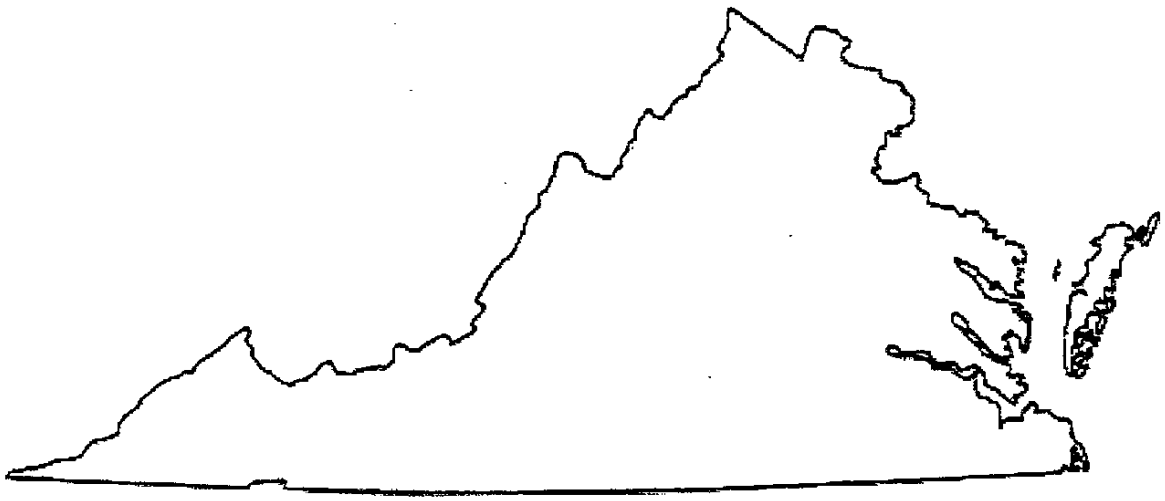
WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

LOCAL IDENT-I-FIER	DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
				GLOUCESTER COUNTY					
57H 21	02-23-00	65.9	31.3	2.2	15.6	20	5	359	358
				GOOCHLAND COUNTY					
49J 4	06-29-00	--	--	--	--	--	--	--	--
				HALIFAX COUNTY					
40C 1	06-28-00	--	--	--	--	--	--	--	--
				HENRY COUNTY					
30B 1	06-27-00	--	--	--	--	--	--	--	--
				JAMES CITY COUNTY					
56H 25 SOW 177A	03-02-00	293	44.9	2.3	20.2	450	69	427	416
58F127	03-27-00	387	42.5	2.2	E20.2	90	10	369	367
				KING WILLIAM COUNTY					
55J 16	02-22-00	2.7	5.3	2.0	33.6	80	12	232	232
				LEE COUNTY					
07C 3	07-13-00	--	--	--	--	--	--	--	--
				LOUDOUN COUNTY					
49X 10	10-26-99	--	--	--	--	--	--	--	134
50W 7B	10-26-99	--	--	--	--	--	--	--	213
				MADISON COUNTY					
45Q 1	10-19-99	--	--	--	--	--	--	--	95
	10-20-99	--	--	--	--	--	--	--	--
				MECKLENBURG COUNTY					
43B 1	10-18-99	--	--	--	--	--	--	--	177
				MONTGOMERY COUNTY					
27F 3	07-19-00	--	--	--	--	--	--	--	--
27E 2	07-18-00	--	--	--	--	--	--	--	--
27F 4	07-19-00	--	--	--	--	--	--	--	--

APPENDIX E - DRINKING WATER STANDARDS

STOKES ENVIRONMENTAL ASSOCIATES, LTD. • 4101 Granby Street, Suite 404, Norfolk, Virginia 23504 • TEL (757) 623-0777 • FAX (757) 623-2785

VIRGINIA SOURCE WATER ASSESSMENT PROGRAM



Virginia Department of Health

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

DATE: October 15, 1999

Appendix O

Current Drinking Water Standards

National Primary and Secondary Drinking Water Regulations

National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect drinking water quality by limiting the levels of specific contaminants that can adversely affect public health and are known or anticipated to occur in public water systems. Table 1 divides these contaminants into Inorganic Chemicals, Organic Chemicals, Radionuclides, and Microorganisms.

Table 1

National Primary Drinking Water Regulations

Contaminants	MCLG[1] (mg/L)[4]	MCL[2] or TT[3] (mg/L)[4]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Inorganic Chemicals				
Antimony	0.006	0.006	Increase in blood cholesterol; decrease in blood glucose	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	none[5]	0.05	Skin damage; circulatory system problems; increased risk of cancer	Discharge from semiconductor manufacturing; petroleum refining; wood preservatives; animal feed additives; herbicides; erosion of natural deposits
Asbestos (fiber 10 micrometers)	7 million fibers per Liter	7 MFL	Increased risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; erosion of natural deposits
Barium	2	2	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Beryllium	0.004	0.004	Intestinal lesions	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries

Cadmium	0.005	0.005	Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (total)	0.1	0.1	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposits
Copper	1.3	Action Level=1.3 ; TT[6]	Short term exposure: Gastrointestinal distress. Long term exposure: Liver or kidney damage. Those with Wilson's Disease should consult their personal doctor if their water systems exceed the copper action level.	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Cyanide (as free cyanide)	0.2	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
Fluoride	4.0	4.0	Bone disease (pain and tenderness of the bones); Children may get mottled teeth.	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Lead	zero	Action Level=0.015; TT[6]	Infants and children: Delays in physical or mental development. Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits
Inorganic Mercury	0.002	0.002	Kidney damage	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and cropland
Nitrate (measured as Nitrogen)	10	10	"Blue baby syndrome" in infants under six months - life threatening without immediate medical attention. Symptoms: Infant looks blue and has shortness of breath.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (measured as Nitrogen)	1	1	"Blue baby syndrome" in infants under six months - life threatening without immediate medical attention. Symptoms: Infant looks blue and has shortness of breath.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium	0.05	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from petroleum refineries; erosion of natural deposits; discharge from mines
Thallium	0.0005	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems	Leaching from ore-processing sites; discharge from electronics, glass, and pharmaceutical companies
Organic Chemicals	**MCLG[6] (mg/L)[4]**	**MCL[2] or TT[3] (mg/L)[4]**	**Potential Health Effects from Ingestion of Water**	**Sources of Contaminant in Drinking Water**

Acrylamide	zero	TT[7]	Nervous system or blood problems; increased risk of cancer	Added to water during sewage/wastewater treatment
Alachlor	zero	0.002	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer	Runoff from herbicide used on row crops
Atrazine	0.003	0.003	Cardiovascular system problems; reproductive difficulties	Runoff from herbicide used on row crops
Benzene	zero	0.005	Anemia; decrease in blood platelets; increased risk of cancer	Discharge from factories; leaching from gas storage tanks and landfills
Benzo(a)pyrene	zero	0.0002	Reproductive difficulties; increased risk of cancer	Leaching from linings of water storage tanks and distribution lines
Carbofuran	0.04	0.04	Problems with blood or nervous system; reproductive difficulties.	Leaching of soil fumigant used on rice and alfalfa
Carbon tetrachloride	zero	.005	Liver problems; increased risk of cancer	Discharge from chemical plants and other industrial activities
Chlordane	zero	0.002	Liver or nervous system problems; increased risk of cancer	Residue of banned termiticide
Chlorobenzene	0.1	0.1	Liver or kidney problems	Discharger from chemical and agricultural chemical factories
2,4-D	0.07	0.07	Kidney, liver, or adrenal gland problems	Runoff from herbicide used on row crops
Dalapon	0.2	0.2	Minor kidney changes	Runoff from herbicide used on rights of way
1,2-Dibromo-3-chloropropane (DBCP)	zero	0.0002	Reproductive difficulties; increased risk of cancer	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
o-Dichlorobenzene	0.6	0.6	Liver, kidney, or circulatory system problems	Discharge from industrial chemical factories
p-Dichlorobenzene	0.075	0.075	Anemia; liver, kidney or spleen damage; changes in blood	Discharge from industrial chemical factories
1,2-Dichloroethane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical factories
1-1-Dichloroethylene	0.007	0.007	Liver problems	Discharge from industrial chemical factories
cis-1, 2-Dichloroethylene	0.07	0.07	Liver problems	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene	0.1	0.1	Liver problems	Discharge from industrial chemical factories
Dichloromethane	zero	0.005	Liver problems; increased risk of cancer	Discharge from pharmaceutical and chemical factories
1-2-Dichloropropane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical factories

Di(2-ethylhexyl)adipate	0.4	0.4	General toxic effects or reproductive difficulties	Leaching from PVC plumbing systems; discharge from chemical factories
Di(2-ethylhexyl)phthalate	zero	0.006	Reproductive difficulties; liver problems; increased risk of cancer	Discharge from rubber and chemical factories
Dinoseb	0.007	0.007	Reproductive difficulties	Runoff from herbicide used on soybeans and vegetables
Dioxin (2,3,7,8-TCDD)	zero	0.00000003	Reproductive difficulties; increased risk of cancer	Emissions from waste incineration and other combustion; discharge from chemical factories
Diquat	0.02	0.02	Cataracts	Runoff from herbicide use
Endothall	0.1	0.1	Stomach and intestinal problems	Runoff from herbicide use
Endrin	0.002	0.002	Nervous system effects	Residue of banned insecticide
Epichlorohydrin	zero	TT[7]	Stomach problems; reproductive difficulties; increased risk of cancer	Discharge from industrial chemical factories; added to water during treatment process
Ethylbenzene	0.7	0.7	Liver or kidney problems	Discharge from petroleum refineries
Ethelyne dibromide	zero	0.00005	Stomach problems; reproductive difficulties; increased risk of cancer	Discharge from petroleum refineries
Glyphosate	0.7	0.7	Kidney problems; reproductive difficulties	Runoff from herbicide use
Heptachlor	zero	0.0004	Liver damage; increased risk of cancer	Residue of banned termiticide
Heptachlor epoxide	zero	0.0002	Liver damage; increased risk of cancer	Breakdown of hepatachlor
Hexachlorobenzene	zero	0.001	Liver or kidney problems; reproductive difficulties; increased risk of cancer	Discharge from metal refineries and agricultural chemical factories
Hexachlorocyclopentadiene	0.05	0.05	Kidney or stomach problems	Discharge from chemical factories
Lindane	0.0002	0.0002	Liver or kidney problems	Runoff/leaching from insecticide used on cattle, lumber, gardens
Methoxychlor	0.04	0.04	Reproductive difficulties	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Oxamyl (Vydate)	0.2	0.2	Slight nervous system effects	Runoff/leaching from insecticide used on apples, potatoes, and tomatoes
Polychlorinated biphenyls (PCBs)	zero	0.0005	Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; increased risk of cancer	Runoff from landfills; discharge of waste chemicals
Pentachlorophenol	zero	0.001	Liver or kidney problems; increased risk of cancer	Discharge from wood preserving factories
Picloram	0.5	0.5	Liver problems	Herbicide runoff
Simazine	0.004	0.004	Problems with blood	Herbicide runoff

Styrene	0.1	0.1	Liver, kidney, and circulatory problems	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene	zero	0.005	Liver problems; increased risk of cancer	Leaching from PVC pipes; discharge from factories and dry cleaners
Toluene	1	1	Nervous system, kidney, or liver problems	Discharge from petroleum factories
Total Trihalomethanes (TTHMs)	None[5]	0.10	Liver, kidney or central nervous system problems; increased risk of cancer	Byproduct of drinking water disinfection
Toxaphene	Zero	0.003	Kidney, liver, or thyroid problems; increased risk of cancer	Runoff/leaching from insecticide used on cotton and cattle
2,4,5-TP (Silvex)	0.05	0.05	Liver problems	Residue of banned herbicide
1,2,4-Trichlorobenzene	0.07	0.07	Changes in adrenal glands	Discharge from textile finishing factories
1,1,1-Trichloroethane	0.20	0.2	Liver, nervous system, or circulatory problems	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane	0.003	0.005	Liver, kidney, or immune system problems	Discharge from industrial chemical factories
Trichloroethylene	Zero	0.005	Liver problems; increased risk of cancer	Discharge from petroleum refineries
Vinyl chloride	Zero	0.002	Increased risk of cancer	Leaching from PVC pipes; discharge from plastic factories
Xylenes (total)	10	10	Nervous system damage	Discharge from petroleum factories; discharge from chemical factories
Radionuclides	**MCLG[1] (mg/L)[4]**	**MCL[2] or TT[3] (mg/L)[4]**	**Potential Health Effects from Ingestion of Water**	**Sources of Contaminant in Drinking Water**
Beta particles and photon emitters	None[5]	4 millirems per year	Increased risk of cancer	Decay of natural and man-made deposits
Gross alpha particle activity	None[5]	15 picocuries per Liter (pCi/L)	Increased risk of cancer	Erosion of natural deposits
Radium 226 and Radium 228 (combined)	None[5]	5 pCi/L	Increased risk of cancer	Erosion of natural deposits
Microorganisms	**MCLG[1] (mg/L)[4]**	**MCL[2] or TT[3] (mg/L)[4]**	**Potential Health Effects from Ingestion of Water**	**Sources of Contaminant in Drinking Water**
Giardia lamblia	Zero	TT[8]	Giardiasis, a gastroenteric disease	Human and animal fecal waste
Heterotrophic plate count	N/A	TT[8]	HPC has no health effects, but can indicate how effective treatment is at controlling microorganisms.	n/a
Legionella	Zero	TT[8]	Legionnaire's Disease, commonly known as pneumonia	Found naturally in water; multiplies in heating systems

Total Coliforms (including fecal coliform and *E. Coli*)	Zero	5.0%[9]	Used as an indicator that other potentially harmful bacteria may be present[10]	Human and animal fecal waste
Turbidity	N/A	TT[8]	Turbidity has no health effects but can interfere with disinfection and provide a medium for microbial growth. It may indicate the presence of microbes.	Soil runoff
Viruses (enteric)	Zero	TT[8]	Gastroenteric disease	Human and animal fecal waste

National Secondary Drinking Water Regulations

National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards. See Table 2.

Table 2

Contaminant	Secondary Standard
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 (color units)
Copper	1.0 mg/L
Corrosivity	Noncorrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.10 mg/L
Sulfate	250 mg/L
Total Dissolved Solids	500 mg/L
Zinc	5 mg/L

Notes

[1] Maximum Contaminant Level Goal (MCLG) - The maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health effect of persons would occur, and which allows for an adequate margin of safety. MCLGs are non-enforceable public health goals.

[2] Maximum Contaminant Level (MCL) - The maximum permissible level of a contaminant in water which is delivered to any user of a public water system. MCLs are enforceable standards. The margins of safety in MCLGs ensure that exceeding the MCL slightly does not pose significant risk to public health.

[3] Treatment Technique - An enforceable procedure or level of technical performance which public water systems must follow to ensure control of a contaminant.

[4] Units are in milligrams per Liter (mg/L) unless otherwise noted.

[5] MCLGs were not established before the 1986 Amendments to the Safe Drinking Water Act. Therefore, there is no MCLG for this contaminant.

[6] Lead and copper are regulated in a Treatment Technique which requires systems to take tap water samples at sites with lead pipes or copper pipes that have lead solder and/or are served by lead service lines. The action level, which triggers water systems into taking treatment steps if exceeded in more than 10% of tap water samples, for copper is 1.3 mg/L, and for lead is 0.015mg/L.

[7] Each water system must certify, in writing, to the state (using third-party or manufacturer's certification) that when acrylamide and epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows:

- **Acrylamide** = 0.05% dosed at 1 mg/L (or equivalent)
- **Epichlorohydrin** = 0.01% dosed at 20 mg/L (or equivalent)

[8] The Surface Water Treatment Rule requires systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water to meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:

- ***Giardia lamblia:*** 99.9% killed/inactivated
  Viruses: 99.99% killed/inactivated
- ***Legionella:*** No limit, but EPA believes that if *Giardia* and viruses are inactivated, *Legionella* will also be controlled.
- **Turbidity**: At no time can turbidity (cloudiness of water) go above 5 nephelolometric turbidity units (NTU); systems that filter must ensure that the turbidity go no higher than 1 NTU (0.5 NTU for conventional or direct filtration) in at least 95% of the daily samples for any two consecutive months.
- **HPC**: NO more than 500 bacterial colonies per milliliter.

[9] No more than 5.0% samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive). Every sample that has total coliforms must be analyzed for fecal coliforms. There cannot be any fecal coliforms.

[10] Fecal coliform and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms.

WATERWORKS REGULATIONS

EFFECTIVE DATE
November 15, 1995

THIS COPY OF THE REGULATIONS IS IN WORD 6.0. THIS VERSION HAS THE NEW PHASE II, IIB, AND V REGULATIONS AND THE LEAD AND COPPER REGULATIONS (WHICH WERE BOTH EFFECTIVE 11/15/95). ALSO, THE VAC NUMBERS ARE INCLUDED.

Copies of these Regulations can be obtained from: Virginia Department of Health, Division of Water Supply Engineering, 1500 East Main Street, Room 109, Richmond, Virginia 23219 – Telephone Number (804) 786-5566 Fax Number (804) 786-5567.

Table 2.2
Inorganic Chemicals.

Substance	Primary Maximum Contaminant Level (mg/L)
Antimony	0.006
Arsenic (As)	0.05
Asbestos	7 Million Fibers/Liter (longer than 10 um)
Barium (Ba)	2
Beryllium	0.004
Cadium (Cd)	0.005
Chromium (Cr)	0.1
Cyanide (as free Cyanide)	0.2
Fluoride (F)	4.0 #
Mercury (Hg)	0.002
Nickel (Ni)	0.1
Nitrate (as N)	10**
Nitrite (as N)	1
Total Nitrate and Nitrite (as N)	10
Selenium (Se)	0.05
Thallium (Tl)	0.002
Substance	**Secondary Maximum Contaminant Level (mg/L)**
Chloride (Cl)	250.0
Corrosivity	Non-Corrosive, See Appendix B
Fluoride	2.0
Foaming Agents	0.5*
Iron (Fe)	0.3
Manganese (Mn)	0.05
Sodium (Na)	No Limits Designated
Sulfate (SO_4)	250.0
Zinc (Zn)	5.0
Substance	**Action Level (mg/L)**
Lead (Pb)	0.015
Copper (Cu)	1.3

Note. For artificially fluoridated waterworks the minimum concentration of fluoride should be 0.8 mg/L and the maximum should be 1.0 mg/L. The optimum control limit is 0.9 mg/L. (See Appendix B)

* Note. Concentration reported in terms of Methylene Blue Active Substances.

**Note. See Appendix B for Exception Regarding Noncommunity Waterworks.

Table 2.3
Organic Chemicals.

SUBSTANCE		Primary Maximum Contaminant Levels (mg/L)
VOC		
1.	Vinyl Chloride	0.002
2.	Benzene	0.005
3.	Carbon Tetrachloride	0.005
4.	1,2-Dichloroethane	0.005
5.	Trichloroethylene (TCE)	0.005
6.	1,1-Dichloroethylene	0.007
7.	1,1,1-Trichloroethane	0.2
8.	para-Dichlorobenzene	0.075
9.	cis-1,2-Dichloroethylene	0.07
10.	1,2-Dichloropropane	0.005
11.	Ethylbenzene	0.7
12.	Monochlorobenzene	0.1
13.	o-Dichlorobenznen	0.6
14.	Styrene	0.1
15.	Tetrachloroethylene	0.005
16.	Toluene	1
17.	trans-1,2-Dichloroethylene	0.1
18.	Xylene (total)	10
19.	Dichloromethane	0.005
20.	1,2,4-Trichlorobenzene	0.07
21.	1,1,2-Trichloroethane	0.05
THM		
	Total Trihalomethanes	0.10
SOC		
1.	Alachlor	0.002
2.	Atrazine	0.003
3.	Carbofuran	0.04
4.	Chlordane	0.002
5.	Heptachlor	0.0004
6.	Heptachlor epoxide	0.0002
7.	Polychlorinated biphenyls (PCBs)	0.0005
8.	Dibromochloropropane (DBCP)	0.0002
9.	Ethylene dibromide (EDB)	0.00005
10.	Lindane	0.0002
11.	Methoxychlor	0.04
12.	Toxaphene	0.003
13.	2,4-Dichlorophenoxyacetic Acid (2,4-D)	0.07
14.	2,4,5-Trichlorophenoxypropionic Acid (2,4,5-TP or Silvex)	0.05
15.	Reserved	
16.	Reserved	
17.	Reserved	
18.	Pentachlorophenol	0.001
19.	Benzo(a)pyrene	0.0002
20.	Dalapon	0.2
21.	Di(2-ethylhexy)adipate	0.4
22.	Di(2-ethylhexy)phthalate	0.006
23.	Dinoseb	0.007
24.	Diquat	0.02
25.	Endothall	0.1
26.	Endrin	0.002
27.	Glyphosate	0.7
28.	Hexachlorobenzene	0.001
29.	Hexachlorocyclopentadiene	0.05
30.	Oxamyl (Vydate)	0.2
31.	Picloram	0.5
32.	Simazine	0.004
33.	2,3,7,8-TCDD (Dioxin)	3×10^{-8}

Table 2.4
Physical Quality.

Parameter	*MAXIMUM CONTAMINANT LEVEL*	*Concentration*
Color	Secondary	15 Color Units
Odor	Secondary	3 Threshold odor numbers
pH	Secondary	6.5-8.5
Total Dissolved Solids (TDS)	Secondary	500 mg/L
Turbidity	Primary	*1 Turbidity Unit

* See Appendix B for operational requirements. The PMCL for turbidity is being phased out of existence. This PMCL will apply to waterworks that filter with surface water sources or groundwater sources under the direct influence of surface water until June 29, 1993. This PMCL will apply to waterworks that do not filter and have surface water sources or groundwater sources under direct influence of surface water until June 29, 1993, or until filtration is installed, whichever is later.

Table 2.5
Radiological Quality.

SUBSTANCE	Primary Maximum Contaminant Level
A. Total Radium (Radium-226 and Radium-228)	5 pCi/L
B. Gross Alpha Activity (including Radium-226 and excluding Radon and Uranium)	15 pCi/L

Primary Maximum Contaminant Levels for Beta Particle and Photon Radioactivity from Man-Made Radionuclides

1. The average annual concentration of Beta particle and Photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year.

2. Except for the radionuclides listed in Schedule I, the concentration of man-made radionuclides causing 4 MREM total body or organ dose equivalents shall be calculated on the basis of a 2 liter per day drinking water intake using the 168 hour data listed in "Maximum Permissible Body Burdens and Water for Occupational Exposure," MBS Handbook 69 as amended August 1963, U.S. Department of Commerce. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ exceed 4 millirem/year.

Schedule I

Average annual concentrations assumed to produce a total body organ dose of 4 MREM/year.

Radionuclide	Critical Organ	pCi/liter
Tritium	Total Body	20,000
Strontium-90	Bone Marrow	8

* See Appendix B

Table 2.6
Unregulated Contaminants Organics to be Monitored.

Group A

1.	Chloroform	12.	Chloromethane
2.	Bromodichloromethane	13.	Bromoethane
3.	Chlorodibromomethane	14.	1,2,3-Trichloropropane
4.	Bromoform	15.	1,1,1,2-Tetrachloroethane
5.	Chlorobenzene	16.	Chloroethane
6.	m-Dichlorobenzene	17.	2,2-Dichloropropane
7.	Dibromomethane	18.	o-Chlorotoluene
8.	1,1-Dichloropropene	19.	p-Chlorotoluene
9.	1,1-Dichloroethane	20.	Bromobenzene
10.	1,1,2,2-Tetrachloroethane	21.	1,3-Dichloropropene
11.	1,3-Dichloropropane		

Group B

1.	Aldrin	8.	Metoachlor
2.	Butachlor	9.	Metribuzin
3.	Carbaryl	10.	Propachlor
4.	Dicamba	11.	Aldicarb
5.	Dieldrin	12.	Aldicarb sulfone
6.	Methomyl	13.	Aldicarb sulfoxide
7.	3-Hyposycarbofuran		

Table 2.7
Organic Chemical Monitoring Implementation Schedule
Inorganics to be Monitored.

1. Sulfate

Table 2.8
Organic Chemical Monitoring Implementation Schedule.

Number of Persons Served	Monitoring to Begin During the Quarter that Begins
over 10,000	January 1, 1988
3,300 to 10,000	January 1, 1989
less than 3,300	January 1, 1991

Table 2.9
PMCL Effective Dates.

Table 2.3, Organics Chemicals, VOC 1 through 8 (Phase I)	January 9, 1989
Total Trihalomethanes and Fluoride	July 1, 1991
Table 2.3, Organics Chemicals, VOC 9 through 18 and SOC 1 through 14 (Phase II VOCs and SOCs)	July 30, 1992
Asbestos, Cadmium, Chromium, Mercury, Nitrate, Nitrite, Total Nitrate+Nitrite, Selenium (Phase II IOCs)	July 30,1992
Table 2.3, Organics Chemicals, SOC 15 through 18 and Table 2.2, Inorganic Chemicals, Barium (Phase II SOCs and IOCs)	January 1, 1993
Table 2.3, Organics Chemicals, VOC 19 through 21, SOC 19 through 33 and Table 2.2, Inorganic Chemicals; antimony, beryllium, cyanide (as free cyanide), nickel, and thallium	January 17, 1994

QUALIFICATIONS

Project Number SEA 01-1359.2

STOKES ENVIRONMENTAL ASSOCIATES, LTD.

COMPANY PROFILE

STOKES ENVIRONMENTAL ASSOCIATES, Ltd. (SEA, Ltd.), incorporated in 1990, provides consulting services on environmental issues to clients in industry, government, and the private sector. SEA, Ltd. give you access to highly qualified professionals in diverse disciplines. The corporate mission is to provide timely comprehensive assessments of environmental factors and any correlations to health, in compliance with environmental regulatory requirements and good management practices, based on investigative services, environmental sampling, accurate analytical services, and interpretation of data within existing regulatory guidance. Our professional credentials include advanced degrees in disciplines such as biology, engineering, geology, oceanography, risk assessment, and other technical areas. Many of our professionals are active participants in professional organizations and education. Many hold professional licenses and certifications, such as Registered Environmental Manager (REM certification is based on experience and examination, and is the highest level of professional recognition provided by the National Registry of Environmental Professionals).

In general, SEA, Ltd. can evaluate prospective sites for environmental feasibility (e.g., Environmental Impact Statements, Wetland Delineations, Phase I and II Environmental Site Assessments), obtain all necessary environmental permits for site development, prepare documentation and permit applications for facility operation, provide monitoring services, and assist, as needed, with compliance to applicable USEPA, OSHA, and other governmental environmental regulations. Our *turn-key* compliance services will assist you to meet production/development schedules and operate in accordance with environmental regulations. Whether you require a single professional for a short period of time or the combined efforts of and interdisciplinary team for larger efforts, STOKES ENVIRONMENTAL ASSOCIATES, LTD. is capable of providing an efficient and effective response.

Key areas in which STOKES ENVIRONMENTAL ASSOCIATES, LTD., can assist you are:

ENVIRONMENTAL REGULATORY MANAGEMENT

- EPA and OSHA Compliance Evaluations
- Industrial Wastewater and Storm Water Permits/Pollution Prevention Plans
- Air Permits
- Landfill Permits, Monitoring, and Compliance Audits
- Asbestos and Lead-based Paint Inspections, Risk Assessments, and Abatement
- NEPA Documentation, Environmental Impact Statement and Assessments
- ISO 14000 Compliance
- Endangered and Threatened Species Surveys and Assessments

WETLANDS

- Identification, Delineation, Permitting, and Mitigation
- Compliance with Federal, State, and Local Regulations related to the Chesapeake Bay

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SHORELINE STRUCTURES

Permit Assistance for piers, bulkheads, breakwaters
Design of shoreline erosion controls

ENVIRONMENTAL ASSESSMENTS AND AUDITS

Phase I and II Environmental Site Assessments
Real Estate Transactional Consultation
Environmental Compliance Audits for USEPA, OSHA, and other Governmental Agencies

ENVIRONMENTAL REMEDIAL RESPONSE

Petroleum and Hazardous Waste Management Consultations
Underground Storage Tank (UST) Closures and Compliance Services
Emergency Response Planning

INDOOR ENVIRONMENTAL QUALITY

Microbial and Bioaerosol Identification and Health Risk Assessment
Operational and Management Plan Consultation
Indoor Hazardous Material Detection and Risk Assessment
Building-related Illness Assessment

INDUSTRIAL HYGIENE SERVICES

Asbestos project monitoring and design
Asbestos inspections
Lead-based paint inspections and risk assessment

CREDENTIALS FOR ENVIRONMENTAL CONSULTING SERVICES

Registered Environmental Manager (REM 5854)
Court-qualified Expert Witnesses
OSHA-certified for Hazardous Waste Site Operations
Virginia -licensed Asbestos Inspectors, Management Planners, project Monitors
NIOSH 582-certified Analysts
Virginia-licensed Lead Inspectors and Risk Assessors
Virginia Real Estate Board License 0225-050070
Virginia Class A Contractors License 2705-046193A
Associate Professional Engineers (PE), Professional Geologists, and Certified Industrial Hygienists (CIH)
Management Consultants for Environmental-related Issues

LABORATORY ANALYSES

All necessary analyses are preformed by accredited and licensed laboratories specializing in environmental methodologies

Please call STOKES ENVIRONMENTAL ASSOCIATES, LTD., at (757) 623-0777, for additional information.

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SUMMARY OF INSURANCE COVERAGES

In order to provide a positive working environment for professional employees, as well as to protect the interest of our clients, Stokes Environmental Associates, Ltd., maintains appropriate insurances with properly capitalized insurance companies, including the following coverages:

Comprehensive General Liability Insurance

- Single limit of $1,000,000.00 per occurrence and aggregate.

Worker's Compensation Insurance

- Employer's liability insurance and occupational disease coverage, with limits as required by applicable law.

Automobile and Property Damage Insurance

- Limits of $1,000,000.00 per occurrence for all owned, non-owned, and hired vehicles.

Professional Liability Insurance

- Includes Errors and Omissions coverage and pollution coverage
- Limit of $1,000,000.00 per occurrence and aggregate which specifically covers the scope items of environmental site assessments, and other services provided by Stokes Environmental Associates, Ltd.

Excess Liability Umbrella

- Limits of $2,000,000.00 per occurrence and aggregate.

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STOKES ENVIRONMENTAL ASSOCIATES, LTD.

Thomas L. Stokes, Jr.
President

Education: Degree(s), Year, Specialization, Institution

M.B.A., 1988, Statistics, *New York University*, New York, New York
M.S., 1982, Biology, *Old Dominion University*, Norfolk, Virginia
B.A., 1979, Biology, *Hampden-Sydney College*, Hampden-Sydney, Virginia

Registration, Certification, and License: Discipline/Years Registered

Registered Environmental Manager, REM 5854, 1993 - Current
National Registry of Environmental Professionals.
Hazardous Waste Site Operations and Emergency Response, 1991 - Current
OSHA 1910.120 Worker and Supervisor Certifications
Asbestos Inspector/Management Planner, 1992 - 1999
ASTM, Environmental Assessment Committee Member, 1996 - Current
Virginia Association of Wetlands Professionals, Member, 1996 - Current
Society of Wetland Scientists, Member, 1992 - Current

Continuing Education

Wetland Functions, Assessment, and Management, Society of Wetland Scientists, 40 hrs., 1999

Wetland Mitigation: Preservation Seminar, 8-hr., 2000

Managing Growth-Frontier for Environmental Law, William & Mary Law School, April 1999

Environmental Business Council, 8-hr., ECS, Exton, PA, May 1999

ISO 14000 - Environmental Management System Seminar, 16-hr ODU, 1997

Environmental Risk Reduction Seminar, ECS Risk Management, 1997

Asbestos Inspector/Management Planner Annual 8-hr Refreshers, 1992 - 1998

Hazardous Waste Site Operations/Emergency Response Annual 8-hr Refreshers, 1991 - 1999

DC Briefing on Environmental Due Diligence, 8-hr Seminar, 1996

Assessment, Control and Remediation of LNAPL Contaminated Sites, 40-hr, 1994

Environmental Regulatory Updates, ODU, EPA, and Other Courses and Seminars, 48 hours 1992-1997

Environmental Site Assessments Conferences, 80 hrs, 1991 and 1992

Interagency Multimedia Pollution Prevention and Toxic Release Inventory Workshops, 16-hr, 1992

Wetlands Delineation, Soils, Hydrology, Vegetation, Winter Botany, Functional Assessment, and Regulation Seminars, VIMS, VAWP, SWS Courses and Seminars, 192 hours 1990-1997

Experience

Mr. Stokes has over 20 years of progressive responsible experience in the environmental field, including areas of Phase I/II/III environmental assessments, environmental compliance audits, UST/AST closures and management, preparation of SPCC and other oil discharge contingency plans, environmental regulatory management, NPDES permit application and implementation, sludge management, wetlands delineation and permitting, endangered species surveys and permits, preparation and evaluation of NEPA documents such

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as environmental assessments and environmental impact statements, asbestos and lead inspections and management plans, remedial programs, litigation support and related work.

A listing of prior employment history, showing dates of employment and last position held, is as follows:

- **Stokes Environmental Associates, Ltd.**, Norfolk, Virginia, 1990-Present/*President*
- **Department of Environmental Protection,** New York, New York, 1984-1990/*Chief, Water Quality Section*
- **Hampton Roads Sanitation District**, Virginia Beach, Virginia, 1982-1984/*Water Quality Technician*
- **Old Dominion University, Biology Department**, Norfolk, Virginia, 1980-1982/*Research Assistant*

STOKES ENVIRONMENTAL ASSOCIATES, LTD.

W. Robert Crumpton IV
Environmental Scientist

Higher Education:

B.S., 1999, Business Management, *University of Maryland*, College Park, Maryland

Registration and Certification

Registered Environmental Manager, REM 10255, 1999-Current
National Registry of Environmental Professionals

OSHA 1910.120 Worker and Supervisor Certifications, 2000-Current
OSHA Hazardous Waste Operations & Emergency Response

Certified Environmental Auditor, CEA 8011, 2001-Current
National Registry of Environmental Professionals

Continuing Education

- Environmental Law, 40 hr, 2001
- OSHA HazWOPER Supervisor, 8hr, 2000
  (Annual Refresher, 8hr, 2001)
- OSHA HazWOPER Worker, 40hr, 2000
- DOT HazMat Transportation, 12hr, 2000
- Pollution Prevention, 12hr, 2000
- Resource Conservation & Recovery Act, 7hr, 1998
- Environmental Management, 15hr, 1998
- Quality Team Leader, 40hr, 1996
- Quality Team Facilitator, 40hr, 1996
- Pollution Prevention, 40hr, 1995
- Environmental Management, 24hr, 1994
- Dangerous Cargo Transportation, 24hr, 1994
- Hazardous Waste Management, 24hr, 1993
  (Annual Refresher, 4hr, 1994-1997)
- Safety Specialist, 186 hr, 1988

Professional Experience

Mr. Crumpton has 10 years environmental management experience in the regulatory compliance discipline. He is one of the firm's environmental professionals responsible for environmental services including Phase I and II Environmental Site Assessments; compliance planning; and regulatory permitting. Mr. Crumpton has managed hazardous materials and above-ground/underground storage tank (AST/UST) programs. He has also performed environmental audits, assessments, and evaluations with experience in Resource Conservation and Recovery Act (RCRA) and Clean Water Act (CWA) issues. In his capacity as a contractor with the U.S. Department of Defense, Air Force, Army and Navy, he conducted compliance monitoring for adherence with Federal codes and regulations.

Employment history:

Stokes Environmental Associates, Ltd., Norfolk, Virginia; August 2001 to present/*Environmental Scientist*
J & J Enterprises, Suffolk, Virginia; October 2000 to August 2001/ *Environmental Coordinator*
Hyatt Resorts and Hotels, Henderson, Nevada; December 1999 to September 2000/*Purchasing Agent*
We Serve, Inc., Las Vegas, Nevada; June 1999 to June 2000/*Safety Officer*
City of Wilson, Wilson, North Carolina; May 1998 to May 1999/*Fleet Manager*
Vinnel-Brown & Root, Republic of Turkey, October 1990 to April 1998/*Operations Manager*

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STOKES ENVIRONMENTAL ASSOCIATES, LTD.

David A. Balsley
Environmental Scientist

Certifications

NEPA-404 Wetland Identification and Delineation
OSHA Safety Training Course (40 Hour) and Refreshers
OSHA Supervisor Training Course
Asbestos Building Inspector Training and Certification
Radiation Worker Training

Professional Summary

Mr. Balsley's expertise includes Phase I, II and III environmental assessments, Wetland delineations, asbestos surveys, site, risk and remediation studies of leaking underground storage tank (UST) sites and preparation of Site Characterization Reports (SCRs) and Corrective Action Plans (CAPs). Mr. Balsley has performed long term monitoring activities at a variety of sites including landfills, CERCLA sites, oil terminal facilities, nuclear power testing facilities, and sewage sludge land application study sites. Mr. Balsley has helped design site remediation projects, and has provided field monitoring services during site remediation activities. Site remediation experience includes pump and treat, in-situ, and excavation and treatment of surface and subsurface contamination sites involving soil and groundwater contaminated with petroleum products, volatile and semi-volatile organic compounds, solvents, and wood preservatives. His duties include environmental site investigations, wetland delineations, hazardous waste closures, and National Environmental Policy Act (NEPA) investigations, preparation of reports, and technical review of reports to ensure technical and regulatory accuracy.

Education

M.S., Biology, Emphasis Plant Community Ecology, Idaho State University (Pending)
B.S., Biology, Old Dominion University (1985)

Prior Employment History

Stokes Environmental Assoc., Ltd., Norfolk, Va., 1997-Present, Environmental Scientist
Environmental Monitoring Laboratory, Idaho State Univ., 1993-1997, Graduate Assistant
Froehling & Robertson, Inc., Chesapeake, Va., 1989-1993, Environmental Project Manager
Hall-Kimbrell Env. Services,.Richmond, Va., 1987-1989, Field Industrial Hygienist

Selected Project Experience

- Project Manager for Phase I and II Pre-acquisition environmental site assessments (ESAs) and wetland delineations for private clients.
- Project Manager for numerous UST site investigations including site characterization, risk and remediation assessments at leaking UST and pipeline sites at US Army, U.S. Navy and U.S. Airforce sites in Virginia.
- Project Manager for site remediation activities involving excavation and composting of large volumes of petroleum contaminated soils, and installation of a pump and treat systems at leaking underground fuel bunker and USTs at government facilities in Virginia. Duties included analysis, design, installation, O&M. agency coordination, and personnel and site condition monitoring during site activities.

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Jesse A. Redd
Environmental Scientist

Education

B.S., Environmental Resource Management from the College of Forestry, Virginia Polytechnic Institute and State University (2001)

Minor in Crop, Soil, and Environmental Science from the College of Agriculture and Life Sciences, Virginia Polytechnic Institute and State University (2001)

Prior Employment History

Stokes Environmental Assoc., Ltd., Norfolk, VA, July 2001- Present, Environmental Scientist

USDA Forest Service, Center for Forested Wetlands Research, Charleston, SC, 2000, Biological Science Technician

Tidewater Research and Extension Center, Holland VA, 1996-1999, Agricultural Technician

Selected Project Experience

- Project Assistant for Groundwater movement study around Carolina Bays for the USDA Forest Service, Center for Forested Wetlands Research. Duties included collection of well samples, analysis of samples, and data entry.
- Project Assistant for organic matter decomposition study for the USDA Forest Service, Center for Forested Wetlands Research. Duties included design, installation, and data collection.

STOKES ENVIRONMENTAL ASSOCIATES, LTD.

W. Robert Crumpton IV
Environmental Scientist

Higher Education:

B.S., 1999, Business Management, *University of Maryland*, College Park, Maryland

Registration and Certification

Registered Environmental Manager, REM 10255, 1999-Current
National Registry of Environmental Professionals

OSHA 1910.120 Worker and Supervisor Certifications, 2000-Current
OSHA Hazardous Waste Operations & Emergency Response

Certified Environmental Auditor, CEA 8011, 2001-Current
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Continuing Education

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- OSHA HazWOPER Worker, 40hr, 2000
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J & J Enterprises, Suffolk, Virginia; October 2000 to August 2001/ *Environmental Coordinator*
Hyatt Resorts and Hotels, Henderson, Nevada; December 1999 to September 2000/*Purchasing Agent*
We Serve, Inc., Las Vegas, Nevada; June 1999 to June 2000/*Safety Officer*
City of Wilson, Wilson, North Carolina; May 1998 to May 1999/*Fleet Manager*
Vinnel-Brown & Root, Republic of Turkey, October 1990 to April 1998/*Operations Manager*

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STOKES
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PHASE I ENVIRONMENTAL SITE ASSESSMENT

APPROXIMATELY 216 ACRES
ETHERIDGE GREEN
CENTERVILLE TURNPIKE AT WHITTAMORE ROAD
CHESAPEAKE, VIRGINIA

PREPARED FOR:
Mr. ROBERT DIBERARDINIS
NATIONAL DIRECTOR OF GOLF COURSE DEVELOPMENT
COMBUSTION PRODUCTS MANAGEMENT
1229 KINGSBURY DRIVE
CHESAPEAKE, VIRGINIA 23322

PREPARED BY:
STOKES ENVIRONMENTAL ASSOCIATES, LTD.
PROJECT NUMBER SEA 01-1359
REPORT ISSUED: 23 AUGUST 2001

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PHASE I ENVIRONMENTAL SITE ASSESSMENT

CONDUCTED AT

Etheridge Green
Centerville Turnpike at Whittamore Road
Chesapeake, Virginia

for

Mr. Robert DiBerardinis
National Director of Golf Course Development
Combustion Products Management
1229 Kingsbury Drive
Chesapeake, Virginia 23322

The following Environmental Professionals prepared this Phase I Environmental Site Assessment:

Thomas L. Stokes, Jr., President
Registered Environmental Manager REM 5854

23 August 2001
Date

Jesse A. Redd, Environmental Scientist

23 August 2001
Date

Stokes Environmental Associates, Ltd.
StokesEA@aol.com
4101 Granby Street, Suite 404
Norfolk, Virginia 23504
(757) 623-0777 voice • (757) 623-2785 fax

Report Issued: 23 August 2001

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

INTRODUCTION 2
- Objectives 2
- Period of Investigation and Key Investigators 3

SITE DESCRIPTION 4
- Site Overview 4
- Current Site Use 4
- Structures: Interior and Exterior Characteristics 4
- Land 5

SITE HISTORY 6
- Introduction 6
- Current Ownership 6
- Prior Ownership 6
- City Directories 7
- Maps 7
- Aerial Photographs 7
- Interviews 8
- Prior Uses of Properties in Surrounding Vicinity 9

ENVIRONMENTAL SETTING 11
- Topography 11
- Surface Water Characteristics 11
- Floodplains 11
- Soils 11
- Geology and Groundwater Hydrogeology 12
- Radon and Other Geologic Hazards 13
- Wetlands and Chesapeake Bay Preservation Areas 14
- Endangered and Threatened Species 14
- Historic and Cultural Resources 14
- Location of Sensitive Receptors 15
- Regional Climate 15

SITE RECONNAISSANCE 16
- Introduction 16
- Subject Property 16
  - Exterior reviews 16
  - Identification of Wastestreams and Regulated Substances 16
- Surrounding Properties 17
- Asbestos-Containing Materials (ACMs) 18
- Drinking Water Quality 18
- Fill Materials 18
- Lead-based Paint and Other Lead-Containing Materials 19
- Polychlorinated Biphenyls: Transformers and Other PCB Equipment 19
- Storage Tanks and Pipelines 19

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Above Ground Storage Tanks and Pipelines 19
On-site
Off-site
Underground Storage Tanks and Pipelines 19
On-site
Off-site
Utilities 20

REGULATORY AGENCY REVIEW 21
ASTM Standard Databases 22
Additional Databases 25
Local Agencies 30

OTHER ISSUES 32
Additional Considerations By User of Report 32
Other Environmental Issues 32
Indoor Air Quality 32
Electromagnetic Fields 32
Facility-related Off-Site Conditions 33
Regulatory Compliance Issues 33

CONCLUSIONS AND RECOMMENDATIONS 34

REFERENCES AND COMMUNICATIONS 35

SITE ASSESSMENT DISCLAIMER AND LIMITATIONS 37

APPENDIX SECTION 38
APPENDIX A – MAPS AND AERIAL PHOTOGRAPHS
APPENDIX B – SITE PHOTOGRAPHS
APPENDIX C – ENVIRONMENTAL DATABASES
APPENDIX D – ADDITIONAL DOCUMENTATION
QUALIFICATIONS

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EXECUTIVE SUMMARY

Stokes Environmental Associates, Ltd., (SEA, Ltd.), performed a Phase I Environmental Site Assessment of the 216 acre farm known as the Etheridge Green property located at Centerville Turnpike at Whittamore Road in Chesapeake Virginia. The purpose of this assessment was to identify, to the extent feasible pursuant to the investigative method, recognized environmental conditions in connection with the property.

The investigative method applied in this assessment was based on the ASTM Standard Practice E1527-97, as expanded based on additional selected standards available in the industry which Stokes Environmental Associates, Ltd. considers appropriate to this specific case. Any exceptions to, or deletions from the ASTM practice are described in the report.

The information found during this investigation did not indicate presence of recognized environmental conditions at the subject site, and no further environmental investigation or evaluation appears to be warranted at this time, except as follows:

Additional information is provided in the text of this report to appropriately document the scope, limitations, and findings of this assessment.

1. Soils at the site are poorly drained, and a network of ditches is present throughout the property. The Natural Resources Conservation Service has been requested to confirm the site does not contain wetlands. Confirmation that wetlands are not present has also been requested from the U.S. Army Corps of Engineers. IT is anticipated that the U.S. Army Corps of Engineers may claim jurisdiction on the south side of the property, and possibly over small areas within the wooded triangle at the southeast corner of the property.

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INTRODUCTION

Stokes Environmental Associates, Ltd., (SEA, Ltd.), was authorized by Mr. Robert DiBerardinis, National Director of Golf Course Development, of Combustion Products Management to perform a Phase I Environmental Site Assessment of a 216 acre property known as the Etheridge Green at Centerville Turnpike at Whittamore Road in Chesapeake, Virginia.

Objectives

The objective of this Phase I Environmental Site Assessment was to identify and record recognized environmental conditions (RECs) on the subject property. The term "recognized environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. RECs include hazardous substances or petroleum products even under conditions in compliance with applicable laws. RECs do not include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment, and that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies. The investigation also includes evaluation of selected environmental conditions, other than hazardous substances or petroleum products, that may impose liabilities to, or restrict the use of, the subject property.

This investigation is intended to satisfy one of the requirements to qualify for the innocent landowner defense to CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) liability; that is, the investigation is intended to constitute "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice." The assessment cannot wholly eliminate uncertainty regarding the potential for adverse environmental conditions in connection with the property. However, by performing appropriate inquiry within reasonable limits of time and cost, it is possible to substantially reduce uncertainties regarding the existence of adverse environmental conditions.

The investigative method applied in this assessment was based on the ASTM Standard Practice E1527-97, as expanded based on additional selected standards available in the industry which Stokes Environmental Associates, Ltd. considers appropriate to this specific case. Any exceptions to, or deletions from the ASTM practice are described in the report.

Tasks completed in the course of this assessment included, without limitation:

> Examine deeds, maps, surveys, aerial photographs, and other information pertaining to property location and use.
>
> Perform an on-site inspection of the subject property, including an overall characterization of the property, assessment of environmental practices, site conditions, property access, landscape and topography, land uses, adjoining properties, and other conditions in the general vicinity of the subject property which pertain to environmental liabilities.

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Evaluate the potential for occurrence of jurisdictional wetlands on the subject property based on review of readily available documentation and on site observations.

Review zoning requirements, the types of businesses and activities operating in the area, and the surrounding land uses to reveal potential environmental influences on the subject property.

Review other available historical records and agency lists to reveal potential existence of adverse environmental conditions at the site caused by prior activities at the property.

Perform appropriate interviews with individuals knowledgeable of environmental practices affecting the property. Pertinent information obtained from interviews and a listing of people contacted is included in the References and Communications section of the report.

Investigate structures or storage tanks, the nature of trash or rubble found on the site, evident storage and disposal practices, and other conditions indicative of environmental liabilities at the site.

This report presents a summary of findings, a statement of conclusions and recommendations, and a determination of whether additional site investigation or remedial action is appropriate.

Period of Investigation and Key Investigators

Investigation of the subject site was performed during the period of 9 August 2001 through 23 August 2001 as Stokes Environmental Associates, Ltd., Project SEA 01-1359.

The following Environmental Professionals performed this investigation:

Mr. Jesse A. Redd was the Project Manager for this Phase I Environmental Site Assessment, and performed the site visit on 14 August 2001.

Mr. Thomas L. Stokes, Jr. assisted in research, analysis, and technical review of this report, and supervised this Phase I Environmental Site Assessment.

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SITE DESCRIPTION

Site Overview

The subject site is an approximately 216 acre property known as Etheridge Green and located at Centerville Turnpike at Whittamore Road in Chesapeake Virginia. The property is designated as Tax Map 62 Parcel 2. Land uses and general characteristics on the property included approximately 215 acres of agricultural land and one acre of forested land. There are no Improvements on the property. Please see maps, aerial photographs, and site sketch in Appendix A, and photographs in Appendix B for a visual overview of the subject site.

According to Mr. C. W. Bradshaw of Weaver Fertilizer Company Inc. , current and future uses of the site are to include agriculture production. It is understood that the property is also being considered as a Combustion Products Management/Golf Course site.

According to information obtained by phone during this investigation from the City of Chesapeake Zoning Department, date of contact 14 August 2001 , the site is currently zoned A1.

According to the City of Chesapeake Public Works Department the surrounding area does not currently have city sewer service; therefore, the residences, churches and businesses are serviced by septic systems.

Land uses found in the vicinity of the subject site included single family residential, silviculture, agricultural, and light industrial, and is described more fully in the Site Reconnaissance section of this report.

Current Site Use

Current activities and processes conducted on site or believed to be conducted at the site based on the results of this assessment, included:

agriculture production

Equipment and vehicle maintenance and cleaning operations were not found to be conducted at the site.

Potable water was not found to be provided on the property.

Wastewater treatment is not provided on the property.

Structures: Interior and Exterior Characteristics

There were no structures found on the subject property at the time of the site visit, 14 August 2001.

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Land

The subject site is irregular in shape, and includes approximately 216 acres of agricultural and forest land, as shown on the site sketch in Appendix A. The property borders include approximately 2390 feet of frontage on Centerville Turnpike and approximately 3990 feet of frontage on Whittamore Road. The property is bounded by Whittamore Road to the north, woods to the east, residential neighborhood to the south, and Centerville Turnpike to the west.

The property was generally level, and occurred roughly at street grade.

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SITE HISTORY

Introduction

Reasonably available historical information source evaluated during this investigation included property tax files, recorded land title records, local city directories, Sanborn fire insurance maps, USGS topographic maps, other historic land use maps, aerial photographs, building permits and inspection records, and other historic information sources, such as, other zoning/land use records, and previous environmental investigations found during this review. The time period included in this review is based on the extent of reasonably available data and the evident dates of initial development of the subject property. The search intervals used and the data reported below are believed to be adequate to identify prior uses, considering the dates when changes in use occurred at this site.

Current Ownership

According to information obtained from the City of Chesapeake Tax Assessor's Office, date of contact 14 August 2001, the current owner of the subject property is Weaver Fertilizer Company Inc.

Prior Ownership

A review of title records by Mr. Jesse A. Redd from1890 through current on file at the Clerk's Office of the Circuit Court of the City of Chesapeake indicated prior owners as listed in the table below.

Date	Deed Book	Page	Seller	Buyer
12/8/48	935	357	Frank V. Atkinson	Weaver Fertilizer Company Inc.
12/7/46	851	35	Richard B. Kellam Sp. Comm. et al	Frank V. Atkinson
2/25/38	641	365	Reginald E. Hearring et al	A. W. Weaver, Trustee
2/13/28	577	12	W. E. Hearring, et al	Federal Land Bank of Baltimore
9/20/27	570	547	Rena Hearring et al	W. E. Hearring
4/25/18	499	12	William J. Hearring et ux.	William E. Hearring
11/21/1895	196	401	W. A. Jackson	W. J. and Bettie Hearring

This chain of ownership has not been verified by a professional title company for accuracy or completeness, and is not represented as a final determination of prior ownership. Considering other information obtained in the assessment, the ownership data is believed sufficient to the objective of this investigation.

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City Directories

City directories for Chesapeake, Virginia were not reviewed during this investigation. It appears that the subject site had not been previously developed. This observation is made from aerial photographs.

Sanborn Maps

Sanborn Maps for Chesapeake Virginia were not found for the area in and around the subject site.

Maps

The U. S. Geological Survey Topographic Map for Fentress Quadrangle, Virginia (1954, photo revised 1964, scale 1" = 2,000') showed the subject site to occur at an elevation of approximately 15 feet above mean sea level (please see topographic map in Appendix A). The map showed the nearest major highway as Battlefield Boulevard at approximately 12,000 feet west from the site. A rail line was identified as Norfolk Southern at approximately 1000 feet west from the site. Industrial-sized or evident commercial buildings were not indicated within a mile of the site. No evidence of large above ground storage tanks, sewage lagoons, major fill or excavation areas, or other significant condition was noted within one mile of the subject site.

The local vicinity map (ADC of Alexandria, Inc., dated 2000, scale 1"=2,000') showed no evidence of adverse environmental conditions in the vicinity of the subject site (please see site vicinity map in Appendix A).

Other Maps and Drawings

Air Installations Compatible Use Zones (AICUZ) map, provided by U.S. Department of the Navy 1999, was also reviewed and it appears that the majority of the property is included in the noise level zone marked greater than 75Ldn. Land use compatibility for this noise zone has this area listed for non compatible with land uses such as athletic fields, golf courses, etc. A portion of the property appears in the Accident Potential Zone marked APZ2. This means that the potential for an accident it is less likely to happen in this area than in the clear zone or APZ1. It is recommended that people intensive uses such as regional shopping malls, theaters, etc. not be placed in these areas.

Aerial Photographs

Overflight photographs are used to identify structures and land uses. They sometimes can reveal disturbed areas, suspect landfills, pits or piles, tanks, drums, and other indications of potential hazardous materials. However, the absence of stereoscopic images, small scale, and limited clarity of the photographs reviewed makes all findings subject to confirmation. It is also noted that changes in land uses which occur between the dates of photography may not be evident in the photographic record.

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Readily available aerial black and white photographs of the site vicinity were obtained from City of Chesapeake Natural Resources Conservation Service, and were evaluated by Mr. Jesse A. Redd, with findings as follows:

1949	DGF 2E 19, Scale 1"=1250'
	Subject site appeared as agricultural land with an extensive ditching system throughout the land. The surrounding properties appeared to be used for agriculture and forest land. There appeared to be several residential sites close to the property.
1958	DGF 1V 215, Scale 1"=1650'
	Subject site appeared as agricultural land with an extensive ditching system throughout the land. The surrounding properties appeared to be used for agriculture and forest land. There appeared to be several residential sites close to the property.
1964	4EE 134, Scale 1"=1650'
	Subject site appeared as agricultural land with an extensive ditching system throughout the land. The surrounding properties appeared to be used for agriculture and forest land. There appeared to be more residential sites close to the property.
1981	Subject site appeared as agricultural land with an extensive ditching system throughout the land. There appeared to be some modification to the ditching system. The surrounding properties appeared to be used for agriculture and forest land. There appeared to be small residential sections or neighborhoods near to the property.

Interviews

Mr. Jesse Redd spoke with Mr. C. W. Bradshaw on 17 August 2001. Mr. Bradshaw is the owner and site manager and has been familiar with the property for over fifty years. Mr. Bradshaw indicated that he had no knowledge of any environmental related problems with the subject site.

Interviews were attempted, but could not be completed with the following individuals:

> Mr. Frank T. Williams, current farmer, was unable to be reached before the report date. Mr. Williams has farmed the property for thirty years according to the property owner, Mr. Bradshaw of Weaver Fertilizer.

Interviews with government officials are discussed in the Agency Review portion of this report.

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None of the interviewees indicated knowledge of adverse or suspected adverse environmental conditions at the subject site.

Limited evaluation of information regarding purchase price and valuation of the property does not indicate major discrepancies with comparable properties (please see "further evaluations" below).

Environmental liens on the subject property were not reported to the Environmental Professional conducting this investigation. Additionally, specialized knowledge or experience of the Client material to any recognized environmental conditions on the site were not reported to the Environmental Professional.

Prior Uses of Properties in Surrounding Vicinity

Properties in the immediate vicinity of the subject site appear to have been historically used for agricultural, silvicultural, and residential, based on information reviewed in this assessment.

Evident or anticipated adverse environmental conditions associated with historic uses of the adjoining property are estimated as follows:

None

This review of site history has been extended back through available documentation to a point where the records evaluated showed no significant potential environmental hazards associated with use of the property. The search intervals used appeared adequate to identify prior uses, considering the dates when changes in use occurred at the site.

Based on the review of historical documents discussed above the following items of concern were investigated during site reconnaissance and are reported in the Site Reconnaissance section of this report.

Summary of Site History

Based on the review of historical information reported above, it appears that the following prior land uses and businesses have operated at this site:

prior to 1949 cropland and undeveloped land

cropland from 1949 to current

Prior uses of the property likely to have involved the use, treatment, storage, disposal, or generation of hazardous substances, petroleum products, or hazardous wastes include agriculture and silviculture.

No evidence of historic fires, chemical discharges, train derailments, or occurrences of other

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environmentally significant events was found during this investigation, with regard to the subject site.

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ENVIRONMENTAL SETTING

Topography

Based on the USGS Fentress Quadrangle, Virginia map, elevations at the subject site were estimated in the range of 15 feet above mean sea level (see USGS map in Appendix A). Topography is relatively flat.

Surface Water Characteristics

According to information reviewed and on-site observations surface water drainage at the subject site appeared to be generally toward the East. There appeared to be an extensive ditching system installed on the subject property. There appeared to be one main ditch situated in the center of the field running from west to east. The ditch was approximately 6 feet deep by 5 feet wide at the bottom and 15 feet across at the top. There appeared to be numerous ditches running into the main ditch on the north and south side of the main ditch. These ditches were approximately 2 feet deep and 3 feet wide. Most of the ditches occurred at intervals of 175 to 200 feet. On the south boundary of the property there appeared to be a large drainage ditch which was approximately 7 feet deep and 20 feet across at the top and 6 feet wide at the bottom. This ditch appeared to cross the southeast corner of the property. Surface drainage appeared to lead to a unnamed ditch which is a perennial/intermittent stream located on the boundary of the property east from the site.

Floodplains

According to information found in Flood Hazard Boundary Map H-17 and Flood Insurance Rate Map I-17 dated 2 February 1977 for Chesapeake Virginia, reviewed by Jesse A. Redd, the majority of the property is located above the 500-year flood plain. The nearest 100-year flood plain is located 800 feet east from the subject site.

Soils

According to the *Soil Survey of Norfolk County* soils at this site are classified as Portsmouth Loam, Othello-Fallsington, Elkton, Elkton-Othello, Bladen, and Othello series. These soils generally exhibit the following characteristics:

Series	Texture	Permeability	Shrink-swell potential
Portsmouth	Loam	Moderate	Low to Moderate
Othello-Fallsington	Fine Sandy Loam	Slow	Low to Moderate

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Elkton	Silt Loam	Slow	Low to Moderate
Elkton-Othello	Very Fine Sandy Loam	Slow	Low to Moderate
Bladen	Silt Loam	Slow	Moderate to High
Othello	Very Fine Sandy Loam	Slow	Low to Moderate

These soils are shown on the list of Hydric Soils of the United States, 1991.

The moderate to slow permeability of loamy surface soils on most of the site may slightly inhibit the rate of vertical migration of materials from the ground surface to the water table aquifer. The rapid permeability of the subsoil and the sandy substratum indicate a significant risk of pollutant migration associated with subsurface contaminant sources in this soil type. It is important to recognize that some solvents may alter soil permeability, resulting in potential for atypical rapid flow velocities of solvent through clays or other soils which normally have slow permeability rates.

Geology and Groundwater Hydrogeology

The subject site is situated within the Atlantic Coastal Plain Physiographic Province of Virginia, which consists of an eastward-thickening wedge of stratified, unconsolidated and semi-consolidated alluvial and marine deposits above a crystalline basement surface. These sediments are composed primarily of gravels, sands, silts, and clays. At the project site, depth to the crystalline basement rocks is greater than 2000 feet.

The groundwater flow system in the Atlantic Coastal Plain consists of an unconfined, water table aquifer and an underlying sequence of semi-confined to confined aquifers and intervening confining units. The aquifers are composed of permeable sands and gravels through which water readily flows. The confining layers are composed of clayey materials which retard water flow. In the Atlantic Coastal Plain, the confining layers are often "leaky" allowing exchange of water between aquifers.

The regional geologic map (Mixon *et al.*, 1989) has assigned the sediments to the Quaternary-age Lynnhaven Member of the Tabb Formation which is described as fine to coarse gray sand grading upward into clayey and silty fine sand and sandy silt. These materials form the surficial deposits of river- and coast-parallel plains. Permeable portions of the Lynnhaven Member form a part of the water table, or Columbia aquifer, beneath the site; overall, the Lynnhaven Member functions as a leaky aquitard to underlying aquifers.

Site-specific hydrologic reports and maps were not found to be readily available for the subject site during this investigation. Information regarding the groundwater characteristics in the vicinity of the site was obtained from published information from the Virginia State Water Control Board and the United States Geological Survey (Siudyla, May and Hawthorne, 1981; Hamilton and Larson, 1988; and Meng and Harsh, 1988). The following discussion is abstracted from these publications.

One unconfined and one confined aquifer are present beneath the site in the interval from the ground surface to 100 feet below ground surface (BGS). The uppermost aquifer is the unconfined water

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table, or Columbia, aquifer. According to hydrogeologic cross sections, the water table aquifer generally occurs in the depth interval from immediately below the surface to approximately 10 feet BGS. The surface of the water table at this site is estimated to occur within a few feet of the surface. Saturated thickness of the Columbia aquifer in this area is less than 10 feet. Precipitation is the principal source of recharge for this aquifer, and averages about 44 inches per year. Approximately 12 to 20 inches per year of the total precipitation (27 - 45 percent) is estimated to infiltrate the ground surface and reach the Columbia aquifer; the remainder of the annual precipitation is lost due to surface runoff, evaporation, etc. The following median values have been reported for hydraulic characteristics of the Columbia aquifer in other areas: well yield of 30 gallons per minute, specific capacity of 6.1 gallons per minute per foot of well drawdown, median transmissivity of 1070 square feet per day, and a horizontal hydraulic conductivity of 28.7 feet per day. However, the surficial sediments are less permeable in this area and surficial wells may not produce as much available water as in other areas.

The Yorktown-Eastover confined aquifer system underlies the Columbia aquifer. The Yorktown-Eastover aquifer system is generally separated from the overlying Columbia aquifer by beds of silt, clay and sandy clay which function as an aquitard between the two aquifers. Although the Yorktown Formation is 300 to 400 feet thick, the major water-bearing zones comprising the Yorktown-Eastover aquifer system are restricted to the upper portion of the Yorktown Formation. The remainder of the Yorktown Formation serves as aquitards between the aquifers. The Yorktown-Eastover aquifer system is divided into three distinct aquifers. According to geologic cross sections, the top of the Yorktown-Eastover aquifer occurs at a depth of approximately 70 feet BGS . Recharge to the Yorktown aquifer system is primarily through downward leakage of water from the overlying Columbia aquifer. The following median values have been reported for hydraulic characteristics of the Yorktown aquifer: well yield of 46 gallons per minute, specific capacity of 8.1 gallons per minute per foot of well drawdown, a transmissivity of 2460 square feet per day, and a horizontal hydraulic conductivity of 23.1 feet per day.

The flow of shallow groundwater generally follows the regional topography. Since the topography at the subject site slopes toward the east, recharge of the water table aquifer by infiltration of precipitation should result in groundwater flow in the vicinity of the site that is generally east toward the Pocaty River. However, published reports of groundwater flow directions for the site and adjacent areas were not available, and further research and/or subsurface testing would be necessary to confirm the flow direction and to identify the location and characteristics of deeper groundwater aquifers.

A water supply well was not found at the subject site. General utilization and consumption of ground water within one half mile of the subject site is from private wells, and is generally used in older residences for potable water, irrigation, and possible other nonpotable uses. Water supply for human consumption in this area for the recent subdivisions is generally provided by private wells.

Geotechnical reports were not found to be readily available for the subject site.

Oil and gas exploration do not appear to be of concern at the subject site.

Radon and Other Geologic Hazards

Radon is an odorless, colorless, carcinogenic gas which results from decay of naturally occurring

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radioactive elements found in rocks and certain sediments. Radon gas can enter buildings through openings in the foundation, sumps, or other spaces, and may accumulate in harmful quantities within enclosed spaces, and is of concern in residences and other occupied buildings.

Radon is rarely encountered at harmful concentrations in Tidewater. Tidewater is considered to be an area of low geologic radon potential, according to USEPA's 1993 data on radon zones in Virginia. Nevertheless, radon hazards are occasionally found in the low risk areas. Further testing would be necessary to provide a greater degree of assurance that radon contamination is not present at levels of concern at the subject site. Based on available information, the risk of radon contamination at the subject site is estimated as low.

Other geologic hazards such as subsidence and collapse features, landslide scarps, etc., were not apparent at the subject site.

Wetlands and Chesapeake Bay Preservation Areas

The National Wetlands Inventory Map for the Fentress Quadrangle, Virginia, based on photographs dated March 1973, shows designated wetlands on the southeast part of the subject site (see NWI map in Appendix A). The designation is Riverine Lower perennial Open water Sub-tidal (R2OWL).

According to the city of Chesapeake the property is not located within a Chesapeake Bay Preservation Area and is not regulated under the Chesapeake Bay Preservation Ordinance. Resource Protection Areas (RPAs) were not found on the property. The drainage of this property flows into an unnamed ditch which flows into the Pocaty River. The Pocaty River flows into the North Landing River. Therefor this property has no RPAs and is not located within a Chesapeake Bay Preservation Area.

During the site reconnaissance the site appeared to be moderately well drained with no evidence of flooding.

Jurisdictional wetlands were not found at the subject site, based on preliminary visual inspection. The larger drainage ditches on the site may be potentially jurisdictional. It should be noted that only the U.S. Army Corps of Engineers and Natural Resources Conservation Service (formerly Soil Conservation Service) can make the final official jurisdictional determination for nonagricultural and agricultural areas, respectively.

Endangered and Threatened Species

Investigation of listed endangered, threatened, or rare species, or the critical habitats of such species and other unique habitats was not conducted during this Phase I Environmental Site Assessment. However, conditions observed did not suggest a high potential for the presence of endangered species.

Historic and Cultural Resources

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Investigation of historic and cultural resources, including sites listed or potentially eligible for listing on the National Register of Historic Places (NRHP), was not conducted during this Phase I Environmental Site Assessment.

Location of Sensitive Receptors

The stringency of environmental quality required by regulatory agencies depends significantly on the location of sensitive receptors which could be affected by any contaminants which are present at or migrate from the subject site.

Sensitive receptors in this vicinity include occupants of the site, residential areas, aquatic life in the nearby rivers and streams, any nearby water supply wells (wells not noted in the immediate vicinity), and surface waters in the vicinity. Wells were not found at the site. Property in the general vicinity uses municipal water for domestic and industrial purposes, according to local government officials in Chesapeake. Further review of receptors is not recommended at this time.

Regional Climate

Virginia's climate is classified as humid subtropical. Prevailing winds flow from west to east, although occasional storms track up the coast producing northeasterly winds. These "northeasters", tropical storms, and hurricanes can produce substantial flooding and wind damage in Tidewater Virginia. According to climatological data compiled by the National Oceanic and Atmospheric Administration, average annual precipitation in the Tidewater region of Virginia is 43.87 inches. Average annual temperature is 58.5 degrees Fahrenheit. According to U.S. EPA (1986), the mid-Atlantic region, in which the site is located, has an average of 62 rainstorms per year, with an average duration of ten hours, intensity of 0.09 inches per hour, volume of 0.64 inches, and average time between rainstorms of six days.

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SITE RECONNAISSANCE

Introduction

The site was visually and physically inspected by Mr. Tom Stokes and Mr. Jesse Redd on 14 August 2001 by walking the following areas: entire perimeter of property and grid pattern through the property, and perimeter of drainage ways and ditches. All roads or paths on the site were physically inspected. The subject site and neighboring sites were viewed from all adjacent public thoroughfares.

Obstructions and inaccessible areas at the subject site included wooded area obscured by dense vegetation and large drainage way southeast portion of the subject property. General environmental assessment limitations are discussed in an attachment to this report.

Weather during the inspection was sunny at approximately 83 degrees Fahrenheit. Wind was westerly at approximately 2 to 5 miles per hour.

Site representatives were not present during the visit.

Subject Property

Exterior reviews. Housekeeping in all exterior areas was characterized as good.

Visible spills, noxious odors, or leaks were not observed within the property exterior.

The current land owner of the subject property, Mr. C. W. Bradshaw, reported that he owned the property for over fifty years. He indicated that biosolids (municipal sewage sludge) have not been used as a soil amendment and fertilizer at the subject site. Additionally, Mr. C. W. Bradshaw indicated no knowledge of any pesticide storage areas, spills, or improper application of agricultural chemicals at or near the site.

Observed routes of surface access to and egress from the site included: No evidence of recent vehicular access, such as tire tracks or tire rutting, was observed at the site. The majority of the accessible areas on the site were visible from roadways and neighboring properties, and do not indicate high risk of unauthorized dumping.

Evidence of the following was noted at the subject property.

jugs
monitoring wells
wooded areas

Identification of Wastestreams and Regulated Substances. Based on observations during the site reconnaissance and research during this investigation, wastestreams at this appeared to be non-

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existing.

No evidence of routine wastestreams involving hazardous wastes was found during our inspection of the subject property.

Regulated substances observed to be present, and materials identified in Material Safety Data Sheets and confirmed by interviews, include: pesticides that have been applied to the agriculture crops.

Information reviewed during this investigation did not indicate that hazardous or toxic materials have been used, treated, stored, or disposed on-site in violation of federal, state, or local laws, regulations, or ordinances. Activities at the subject site did not appear to require state or federal environmental permits.

Based on the current usage of the site, it may be anticipated that the following classes of chemicals have been used at the site: lawn care supplies (e.g., fertilizers, pesticides, motor oils/fuels/solvents), and equipment maintenance supplies (e.g., oils, lubricants, paints, and solvents). No current uses other than normal agricultural activity are likely to involve the use, treatment, storage, disposal, or generation of hazardous substances or petroleum products.

Prior uses of the site have included agriculture and silviculture, according to information found during this investigation. Based on these uses, it may be anticipated that the following classes of chemicals have been used at the site: fertilizers, pesticides, motor oils, fuels, and solvents. Prior bulk storage, significant spillage, overapplication, or environmentally problematic use of such materials are not anticipated based on observations at the site, and other information obtained during this investigation.

According to Mr. C. W. Bradshaw, no hazardous wastes are, or have been, produced or discovered on the subject property. Therefore, no hazardous waste disposal records or manifests were available for review.

No further review of wastestreams and regulated materials at the subject site appears warranted at this time.

Surrounding Properties

The following observations of surrounding properties were made during the site reconnaissance:

Property immediately north of the subject site included farm land and Fentress Fire Service Facility. Adverse environmental conditions were not observed in connection with these properties.

Property immediately east of the subject site included farm land and residential homes. Adverse environmental conditions were not observed in connection with these properties.

Property immediately south of the subject site included Green Haven neighborhood. Adverse environmental conditions were not observed in connection with these properties.

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Property immediately west of the subject site included residential homes, farm land, and Adverse environmental conditions were not observed in connection with these properties.

Other businesses and land uses observed in the general vicinity of the subject site included:

U S Naval Reservation (Fentress landing field)

Evidence of the following was noted at the adjacent neighboring properties, based on research conducted, evaluation from the subject site and from public roads, but not including any on-site physical examination of the adjacent properties:

Above Ground Storage Tanks
Drums
Wooded Areas
Septic Systems
Five Gallon Buckets

Considering land use at the subject site, observations of neighboring properties, topographic and drainage conditions, and anticipated geologic and hydrologic conditions in the vicinity, it appears that the adjoining properties are unlikely to cause recognized adverse environmental conditions, in connection with the subject property.

Asbestos-Containing Materials (ACMs)

There were no structures located on the subject property, therefor it is not anticipated that any ACMs will be present on the subject site.

Drinking Water Quality

Potable water did not appear to be provided on this site. There were no wells or other sources of potable water at the time of the site visit.

Drinking was not tested at the subject site for lead content during this preliminary review. Additional testing is needed for properties which are not connected to municipal water supplies, and is recommended for all properties constructed prior to 1978. Local agency data concerning drinking water is provided in a subsequent section of this report.

Fill Materials

Evident landfill areas, mounds, or depressions suggesting trash or other solid waste disposal were not found at the site.

It is reasonable to assume that some fill material may have been added to the site during construction of the existing drainage system. Fill material along the under ground utilities may enhance migration

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of subsurface contaminants onto or off of the site.

Lead-based Paint and Other Lead-Containing Materials

Testing for lead-containing materials was not conducted during this Phase I Environmental Site Assessment.

Polychlorinated Biphenyls: Transformers and Other PCB Equipment

Polychlorinated biphenyls (PCBs) are toxic chemicals whose use, handling, and disposal are regulated by the U.S. Environmental Protection Agency. Suspect or potential PCB equipment observed at the subject site include the following: transformers

No evidence of subsurface transformer vaults was found at the subject site.

Several transformers were located on or near the subject property. All but three transformers appeared to be labeled as non PCB containing. Evidence of existing leaks was observed on the outer casing of a transformers near the site. Streaking and weathering of the casings was observed.

The transformers on the property appeared to be owned by Virginia Power. No further evaluation of these evidently non-leaking utility-owned transformers in good condition is recommended at this time.

Storage Tanks and Pipelines

Information regarding storage tanks included observations of the site, interviews, and other research. Such research is documented within the appropriate sections of this report. The following is a summary of the information found during site reconnaissance.

Above Ground Storage Tanks and Pipelines

On-site. No evidence of above ground storage tanks (ASTs) was found at the subject site. Indicators of ASTs, such as suspect retaining walls, vaults, pumping equipment, manometers or other volumetric indicators, petroleum or chemical odors, were not found at the site.

Off-site. Neighboring properties were inspected from the subject site and from public right of way areas for the presence of ASTs. No visible leakage was observed at neighboring ASTs (based on review from the subject site and public property). ASTs observed on adjacent properties are as follows:

One Above Ground Storage Tank, located at the Fentress Fire Service Station, was observed from public road ways. The tank site is at the northwest corner of the subject site.

Underground Storage Tanks and Pipelines

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On-site. No evidence of unregistered existing or prior underground storage tanks (USTs), such as manhole covers, vent or fill pipes, UST-sized patched areas of asphalt or cement, pumping equipment, volume indicators, petroleum or chemical odors, sheening on ditch banks, or sheening on surface water was observed on site or indicated by other research performed during this investigation.

No evident sheening or petroleum seepage was observed on ditch banks or on surface water at this site.

Off-site. Records maintained by the Virginia Department of Environmental Quality/Water Division concerning USTs and leaking USTs in the vicinity of the subject site are discussed in the Regulatory Review section of this report. Evidence of unregistered USTs was not observed on adjacent properties.

Considering the relatively low estimated risk associated with the off-site tanks, no further investigation of on-site or off-site USTs with regard to environmental conditions at the subject site is recommended at this time.

Utilities

Underground utilities were indicated or anticipated in the vicinity of the subject site, including electric, telephone, and natural gas. Verification of specific locations of such underground utilities was beyond the scope of this preliminary investigation.

Virginia Power overhead high voltage transmission lines (typical tower supported or multi-pole supported lines) and overhead distribution lines (typical single-pole supported lines) were observed at or adjacent to the site.

Accelerated contaminant migration along the soil-conduit interface or within the sand/gravel deposited as backfill in utility excavations can increase the risk of contaminant migration from on-site or off-site sources. No evident adverse conditions were noted at the site with regard to utilities. No further investigation of environmental conditions associated with utilities at the subject site is recommended at this time.

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REGULATORY AGENCY REVIEW

Federal, State and Local databases were searched on-line by SEA, Ltd., based on the city and zip code area(s) of the subject site encompassing a pre-specified radius around the property. In this instance, the zip code area searched was in Chesapeake Virginia. The resultant database printouts are enclosed as an Appendix of this report.

A review of data available from regulatory agencies can provide useful information regarding the potential for contamination at or near the site. However, the databases are known to be incomplete and contain numerous inaccuracies, with the result that all positive or negative findings are considered tentative and are subject to confirmation.

The databases searched are updated by the various agencies on an irregular basis. Some databases are maintained relatively up to date by the agencies, while others are updated only infrequently by the agencies. This investigation has used the most recent update of each database, which we have found to be publicly available, practically reviewable, and obtainable within a reasonable time and cost.

Sites identified within the approximate minimum search distances (AMSD) using EDR® on-line geographic information system (GIS) are listed below. Additional sites which may occur within the AMSD, but could not be accurately located by the GIS, are provided in an appendix to this report. The database and AMSD specified by the ASTM Standard 1527 - 97 are as follows:

DATABASE	AMSD, miles (kilometers)	Version Date
Federal NPL site list	1.0 (1.6)	13 June 2000
Federal CERCLIS list	0.5 (0.8)	16 April 2000
Federal RCRA TSD Facilities (CORRACTS and non-CORRACTS)	1.0 (1.6)	20 April 2000
Federal RCRA generators list (RCRIS)	property and adjoining properties	18 May 2000
Federal ERNS list	property only	30 May 2000
State lists of hazardous waste sites (HWS) identified for investigation or remediation (NPL and CERCLIS equivalents)	1.0 (1.6)	24 Feb 2000
State landfill (SWF/LF) and/or solid waste disposal site lists	0.5 (0.8)	13 June 2000
State leaking UST (LUST) lists	0.5 (0.8)	24 July 2000
State registered UST (UST) lists	0.25	22 Sept 1999

Several additional databases are included in the research below in order to provide thorough analysis of available agency information. Among these are the following databases:

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DATABASE	AMSD, miles (kilometers)	Version Date
Federal TRIS – Toxic Release Inventory	property only	31 Dec 1997
Federal FINDS – Facility Index System	property and adjoining properties (within 0.25 mile)	13 Oct 1999
Federal CONSENT – Superfund Decrees	1.0 (1.6)	Varies
Federal NFRAP – No Further Remedial Action Planned	property and adjoining properties (within 0.25 mile)	16 April 2000
Federal NPL Liens – Superfund Liens	property only	15 October 1991
Federal PADS – PCB Activity	property only	1 Jan 2000
Federal RAATS – RCRA Administrative Tracking System	property only	17 April 1995
Federal HMIRS – Hazardous Materials Incident reporting System	property only	30 June 1999
Federal ROD – Records of Decision	1.0	31 January 1999
Nuclear Regulatory Commission, Material License Tracking System (MLTS)	property only	23 April 2000
TSCA – Toxic Substances Control Act	property only	31 Dec 1998
MINES – Mines Master Index File	0.25	1 Aug 2000
Virginia Voluntary Remeditation Program (VRP) Site Listing	0.5 (0.8)	1 April 2000
CEDS – Comprehensive Environmental Data System	property only	1 July 2000
Aboveground Storage Tank (AST) Database	Property and adjoining	22 September 1999
State SPL – State Spill	property only	1 June 1996

The findings of the database investigations are presented below:

ASTM Standard Databases

U.S. Environmental Protection Agency - National Priorities List (NPL) Database. The NPL is a listing of contaminated sites that have been tested and found by U.S. EPA Hazard Ranking System to present a demonstrated high risk to human health or the environment. NPL sites are designated

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by EPA as national priorities for cleanup.

The subject site was NOT FOUND in the NPL database.

Our review found the following NPL facilities within an approximate minimum search distance of one mile of the subject site:

NONE FOUND.

U. S. Environmental Protection Agency - CERCLA (Comprehensive Emergency Response, Compensation and Liability Act)(CERCLA) Information System (CERCLIS) Database. CERCLIS is an inventory of hazardous and potentially hazardous waste sites being investigated or cleaned under CERCLA. The CERCLIS database provides site names, addresses, and status of any investigation or cleanup.

The subject site was NOT FOUND in the CERCLIS database.

Our review found the following CERCLIS facilities within an approximate minimum search distance of one-half mile of the subject site:

NONE FOUND.

U. S. Environmental Protection Agency - Resource Conservation and Recovery Act (RCRA) Information System (RCRIS) Database. RCRIS is a compilation of data concerning hazardous waste activity, including the status of registrations, permits, reports, inspections, enforcement activities, and financial data for facilities regulated under the Resource Conservation and Recovery Act (RCRA).

This database categorizes RCRA facilities by type (large or small generator, conditionally exempt, transporter and treatment, storage or disposal), and provides information on the existence of violations, corrective action requirements, and other details. Such classifications are abbreviated as follows in the information provided in this report:

RCRACE - RCRA Conditionally Exempt Generator
RCRALG - RCRA Large Quantity Generator
RCRAOT - RCRA status unknown
RCRASM - RCRA Small Quantity Generator
RCRATR - RCRA Transporter
TSD - RCRA Treatment Storage or Disposal Facility

The subject site was NOT FOUND in the RCRIS database.

The RCRA Generator and TSD listing contains facilities which use, generate, handle, transport, treat, store, or dispose hazardous materials regulated under RCRA. The RCRA Violator listing contains facilities which have been cited by EPA for violations of the requirements of RCRA. Such violations may include deviations from regulations, compliance orders, consent agreements, or permit conditions. The RCRA Enforcement Site Report contains facilities at which enforcement

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action has been taken by EPA for violations of the requirements of RCRA. Our review included RCRA TSD facilities within an AMSD of one mile of the site, and RCRA generators, violators, and enforcement sites within an AMSD encompassing the subject site and adjoining sites. This review found the following facilities within the specified AMSD:

NONE FOUND.

U. S. Environmental Protection Agency - Resource Conservation and Recovery Act (RCRA) Information System (RCRIS) Corrective Action Report (CORRACTS) Database. CORRACTS is a compilation of data concerning hazardous waste corrective action activity for facilities regulated under the Resource Conservation and Recovery Act (RCRA). This database categorizes RCRA facilities with corrective action activity.

The subject site was NOT FOUND in the CORRACTS database.

Our review found the following CORRACTS facilities within an approximate minimum search distance one mile of the subject site:

NONE FOUND.

U.S. Environmental Protection Agency - Emergency Response Notification System (ERNS) Database. ERNS is a national database providing information on releases of oil or hazardous substances to the environment.

The subject site was NOT FOUND in the ERNS database.

Our review found the following ERNS facilities within an approximate minimum search distance encompassing the subject site and adjacent sites:

NONE FOUND.

Virginia Department of Environmental Quality, Waste Division - State Superfund-Equivalent Sites. The Virginia Department of Environmental Quality maintains a database of Alleged Abandoned Solid and Hazardous Waste Sites (AWS) and Voluntary Remediation Program (VRP) Facilities which collectively constitute the State "Superfund" List. These facilities are designated in the database printouts as State Hazardous Waste Sites, or SHWS.

The subject site was NOT FOUND in the SHWS database.

Our review of the SHWS Database found the following facilities within an approximate minimum search distance of one mile of the subject site:

NONE FOUND

Virginia Department of Environmental Quality, Waste Division - State Landfill/Solid Waste Facilities. The Virginia Department of Environmental Quality maintains a listing of landfills and

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which routinely or accidentally release toxic chemicals to the environment are required to report such releases to the U.S. EPA under SARA Title III. The TRIS is an inventory of these releases.

The subject site was NOT FOUND in the TRIS database.

U.S. Environmental Protection Agency - Facility Index System (FINDS) Database. FINDS gives the location of facilities which are known to be regulated by EPA. FINDS indexes data relating to sites or facilities covered in 13 other site-oriented databases maintained by EPA.

A description of principal databases contained in FINDS follows:

RCRIS, or RCRA Information System, lists the names and locations of facilities which are regulated under the federal Resource Conservation and Recovery Act (RCRA). These sites are involved in the use, generation, handling, treatment, disposal, or transportation of hazardous wastes.

PCS, or Permit Compliance System, is a computerized management information system which contains data on National Pollutant Discharge Elimination System (NPDES).

AIRS(AFS), or Aerometric Information Retrieval System (AIRS Facility Subsystem), lists facilities that are subject to air quality monitoring or reporting under the Clean Air Act.

DOCKET, the Civil Enforcement Docket database, contains information on civil enforcement cases filed against suspect violators by the Environmental Protection Agency.

NCDB(FTTS) is the National Compliance Database (FIFRA/TSCA Tracking System). FIFRA is the Federal Insecticide, Fungicide, and Rodenticide Act and TSCA is the Toxic Substances Control Act. NCDB(FTTS) is a database that lists sites subject to inspections, enforcement actions, or settlements undertaken under the authority of FIFRA and TSCA.

SSTS or Section Seven Tracking System tracks the registration of all pesticide-producing establishments and tracks annually the types and amounts of pesticides, active ingredients, and devices that are produced, sold, or distributed in each year.

TRI, or Toxic Release Inventory, contains entries for facilities reporting releases of certain toxic substances regulated by the Superfund Amendments and Reauthorization Act of 1986.

FFIS, the Federal Facility Information System, contains a listing of facilities that have submitted specific environmental project budget plans.

CICIS, the Chemicals in Commerce Information System, contains data on manufactured or imported chemicals, including information on facilities which submit information to the system.

PADS, or PCB Activity Data System, identifies PCB generators, storers, transporters, or permitted disposers.

CUS, or Chemical Update System, identifies facilities which manufacture or import specific toxic chemicals in excess of 10,000 pounds per year.

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The subject site was NOT FOUND in the FINDS database.

Our review found the following FINDS facilities within an approximate minimum search distance encompassing the subject site and adjoining properties:

NONE FOUND.

U.S. Environmental Protection Agency – Superfund (CERCLA) Consent Decrees (CONSENT) Database. The Superfund Consent Decrees is the system used by EPA to track major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites.

The subject site was NOT FOUND in the CONSENT database.

Our review found the following CONSENT facilities within an approximate minimum search distance encompassing the subject site and adjacent sites:

NONE FOUND.

U.S. Environmental Protection Agency – No Further Remedial Action Planned (NFRAP) Database. Facilities formerly listed on CERCLIS and designated as "no further remedial action planned" were removed from that database as of February, 1995. NFRAP facilities may be sites where, after an initial investigation, no contamination was found, contamination was removed quickly without need of the site being placed on the National Priorities List (NPL), or sites where the contamination was not serious enough to require NPL consideration or Federal Superfund action.

The subject site was NOT FOUND in the NFRAP database.

Our review found the following NFRAP facilities within an approximate minimum search distance encompassing the subject site and adjacent sites:

NONE FOUND.

U.S. Environmental Protection Agency – PCB Activity Database System (PADS) Database. The PCB activity database identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

The subject property was NOT FOUND on the PADS database.

U.S. Environmental Protection Agency – RCRA Administrative Action Tracking System (RAATS) Database. The RAATS database contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civl actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA retains a copy of the database for historical records.

The subject property was NOT FOUND on the RAATS database.

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U.S. Department of Transportation (DOT) – Hazardous Materials Incident Report Subsystem (HMIRS) Database. HMIRS is a listing of incidents involving the unintentional release of hazardous materials incidents reported by carriers of hazardous materials.

The subject site was NOT FOUND in the HMIRS database.

Our review found the following HMIRS incidents within an approximate search distance of one quarter mile of the subject site.

NONE FOUND

U. S. Environmental Protection Agency – Records of Decision Database (ROD). ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

The subject site was NOT FOUND in the ROD database.

Our review found the following ROD facilities within an approximate search distance of one mile of the subject site.

NONE FOUND

Nuclear Regulatory Commission (NRC) – Material License Tracking System (MLTS) Material License-Radioactive Database. MLTS database lists the NRC's licenses issued for the operation of nuclear power plants or nuclear waste repositories or medical, industrial, or research applications. The MLTS database lists license quantities and uses of nuclear materials.

The subject site was NOT FOUND in the MLTS database.

Our review found the following MLTS licensed facilities within an approximate minimum search distance of one mile of the subject site:

NONE FOUND.

U.S. Environmental Protection Agency – Toxic Substances Control Act (TSCA) Database. The TSCA database identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

The subject property was NOT FOUND on the TSCA database.

Department of Labor, Mine Safety and Health Administration – Mines Master Index File (MINES) Database. The MINES database list all the mines legally recorded in the United States.

The subject site was NOT FOUND on the MINES database.

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Our review found the following MINES facilities within an approximate minimum search distance encompassing the subject site and adjoining properties:

NONE FOUND.

Virginia Voluntary Remediation Program (VRP) Site Listing Database. The Virginia Voluntary Remediation Program Site List tracks summary information pertaining to facilities which have undertaken or completed on-site remediation activities.

The subject site was NOT FOUND in the VRP database.

Our review found the following pollution incidents within an approximate minimum search distance of one-half mile of the subject site:

NONE FOUND.

Virginia Department of Environmental Quality -- Comprehensive Environmental Data System (CED) Database. The CED reports Virginia Water Protection Permits, Virginia Discharge System (point discharge) permits and Virginia Pollution Abatement (no point discharge) permits.

The subject site was NOT FOUND in the CED database.

Virginia Department of Environmental Quality, Water Division - Aboveground Storage Tank (AST) Database. Regulated underground storage tanks are required to be registered with the DEQ. Facilities with registered tanks are inventoried on the DEQ/Water Division AST database.

The subject site was NOT FOUND in the AST database.

Our review found the following AST facilities within an approximate minimum search distance encompassing the subject site, immediately adjacent sites.

NONE FOUND

Virginia Water Control Board Office of Spill Response And Remediation Response Investigation (SPILL) Database. The Pollution Complaint report includes the initial release reporting of leaking underground storage tanks and all other releases of petroleum to the environment as well as releases to State waters.

The subject site was NOT FOUND in the SPILL database.

Our review found the following pollution incidents within an approximate minimum search distance of one-half mile of the subject site:

NONE FOUND.

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U.S. Army Corps of Engineers – Regulatory Branch. Information on jurisdictional wetlands determinations, or wetlands applications identified by the Corps for the subject site, based on selected review of available computer records, included the following:

NONE FOUND.

Local Agencies

Southeastern Virginia Planning District Commission - Elizabeth River Basin Environmental Management Program. Portions of this study were based on a preliminary EPA study (Elizabeth River Basin Study, or ERBS) which identified 649 potential hazardous waste sites in the Elizabeth River drainage basin, based on a review of historical aerial photography covering the period of 1937 through 1986. The preliminary study was reviewed and the following types of sites were eliminated from the listing: existing CERCLIS sites, existing TSD sites, "blacked out" sites (generally military lands), federal facilities, auto junkyards, sewage treatment impoundments, dry docks, and tanks and containers. The final list resulted in 285 potential hazardous waste sites which needed additional investigation. The study provided site locations only; facility names were not available.

ERBS were NOT FOUND at the subject site.

Our review found the following number of final list ERBS sites within an approximate minimum search distance of one mile of the subject site:

NONE FOUND.

Chesapeake Health Department. The Health Department was requested to provide information on septic systems, water wells, nuisance complaints, or other available data on 17 August 2001. A response to our inquiry was not received prior to the issue date of this report.

It is noted that permits were not required for well installation prior to 1982. Between 1982 and 1990, permits were issued for well installation if associated with new house construction. No permits were required for replacement wells at existing homes. In 1990, new regulations were enacted to require permitting of new and replacement water wells as well as irrigation wells.

Information received from respondents during the most recent Census, in 1990 (NGWA), indicates that there are 3019 households within Chesapeake having the same zip code, 23322, as the site. Of the respondents, 513 of these households indicated they are served by a privately or publicly owned water supply company. The respondents of the other 2506 households indicated they obtained water from private wells, drilled and dug, or some other unspecified source such as a creek or a spring. No reports of poor water quality or unacceptable water, relative to federal drinking water quality standards, were forwarded by the Chesapeake Health Department.

Chesapeake Fire Department. A telephone interview with Marilyn Dewispelaere on 20 August 2001 indicated no knowledge or records of UST installations, closures, leaks, hazardous material events, emergency response, or other significant event. Fire Department inspections of the subject site indicated no instances of environmentally significant conditions at the subject site or adjacent properties.

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Chesapeake Building Inspector's Office. An interview with the Chesapeake Building Inspector's Office was not conducted, as there were no structures located on the property. An office visit confirmed this on 14 August 2001. The office had no records on the subject property.

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OTHER ISSUES

Additional Considerations By User of Report

This Phase I Environmental Site Assessment (ESA) has been conducted generally in accordance with the ASTM standard. The ASTM standard indicates additional issues which may help to support CERCLA's innocent landowner defense.

According to ASTM, the user of this Phase I report should consider his or her own specialized knowledge or expertise when evaluating site conditions. The user of this report should discuss any questions or concerns regarding environmental conditions at this site with the preparer of this report. Such discussion will facilitate incorporation of the user's knowledge in the overall evaluation of the property.

According to ASTM, a title company or title professional should be engaged by the user of a Phase I report to check reasonably ascertainable recorded land title records for environmental liens currently recorded against the property. The Environmental Professional preparing this report was not notified of any environmental liens encumbering the property.

If the user of this report has actual knowledge that the purchase price of the subject property is significantly less than the purchase price of comparable properties, the user should try to identify a reason for the lower price, make a written record of such reason, and discuss any concerns with the Environmental Professional who prepared this report. Information provided in the Phase I ESA should be included when evaluating the purchase price.

The user should make known to the environmental professional conducting this assessment any questions which arise on review of the report, and should determine whether any further investigation is desired in order to answer any questions and meet the users objectives with regard to this study. The user should confirm his understanding of whether the investigation has satisfied one of the requirements to quality for the innocent landowner defense to CERCLA liability, or his understanding of any potential environmental liabilities that could materially impact the operation of the business associated with the parcel of commercial real estate.

Other Environmental Issues

Other environmental issues exist which persons may want to assess in connection with commercial real estate. The following comments are not intended to imply the relative importance of inquiry into such matters, and the following topics are not intended to be an all-inclusive listing of other environmental issues.

Indoor Air Quality. Indoor air quality is a complex, controversial, and subjective issue. While radon and asbestos concerns have been briefly evaluated, other indoor air quality concerns are beyond the scope of this preliminary investigation. Such concerns may include ventilation and air exchange rates, air filtration, pollutant source evaluation, and other issues. This preliminary investigation is not intended to evaluate indoor air quality, with the exception of limited review of radon and asbestos.

Electromagnetic Fields. Electromagnetic fields (EMFs) are a controversial, much studied, and poorly understood with regard to human health effects. Evaluation of high voltage power lines, switching stations, and other EMF sources is beyond the scope of this investigation. Research literature, policies, on-site testing, and other data may be provided on request.

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Facility-related Off-Site Conditions. Facility-related environmental liabilities may extend beyond the boundaries of the property. Such liabilities may arise from petroleum or hazardous waste releases that have migrated off-site, from contamination occurring at treatment, storage, or disposal facilities that received wastes from the subject facility, or from other forms of offsite contamination related to the facility's operations. The determination of off-site, contingent liabilities is beyond the scope of the Phase I Environmental Site Assessment.

Regulatory Compliance Issues. Complete assessment of existing and proposed site uses with environmental regulations is beyond the scope of this initial assessment. A regulatory compliance assessment may be conducted on request in order to assist the facility to comply with environmental regulations. Matters which may be assessed during a regulatory compliance audit may include occupational safety and health compliance, industrial hygiene assessments, environmental impact assessment, regulatory reporting requirements, and facility environmental compliance history.

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CONCLUSIONS AND RECOMMENDATIONS

Stokes Environmental Associates, Ltd., (SEA, Ltd.), performed a Phase I Environmental Site Assessment of the 216 acre farm known as the Etheridge Green property located at Centerville Turnpike at Whittamore Road in Chesapeake Virginia. The purpose of this assessment was to identify, to the extent feasible pursuant to the investigative method, recognized environmental conditions in connection with the property.

The investigative method applied in this assessment was based on the ASTM Standard Practice E1527-97, as expanded based on additional selected standards available in the industry which Stokes Environmental Associates, Ltd. considers appropriate to this specific case. Any exceptions to, or deletions from the ASTM practice are described in the report.

The information found during this investigation did not indicate presence of recognized environmental conditions at the subject site, and no further environmental investigation or evaluation appears to be warranted at this time, except as follows:

Additional information is provided in the text of this report to appropriately document the scope, limitations, and findings of this assessment.

1. Soils at the site are poorly drained, and a network of ditches is present throughout the property. The Natural Resources Conservation Service has been requested to confirm the site does not contain wetlands. Confirmation that wetlands are not present has also been requested from the U.S. Army Corps of Engineers. IT is anticipated that the U.S. Army Corps of Engineers may claim jurisdiction on the south side of the property, and possibly over small areas within the wooded triangle at the southeast corner of the property.

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SITE ASSESSMENT DISCLAIMER AND LIMITATIONS

Stokes Environmental Associates, Ltd. is pleased to assist Mr. Robert DiBerardinis of Combustion Products Management in the preliminary assessment of environmental conditions at the subject property, as outlined in this report. This report has been prepared solely for the exclusive use of Combustion Products Management and its agents for specific application to the property assessed. No other person or business entity shall have any rights with regard to our contract for this project, or any rights of reliance on this report or related documents prepared by Stokes Environmental. The scope of services included in this study may not be appropriate to the needs of other users of this document, and any such use is at the risk of user. This investigation was conducted in accordance with the scope of work, terms, and conditions outlined in the applicable contract or letter of agreement between Combustion Products Management and Stokes Environmental Associates, Ltd. In the event of any conflict between this disclaimer and the applicable contract or letter of agreement, the contract or letter of agreement shall take precedence.

This work has been performed using reasonable care within the scope of work and in accordance with budgetary limitations. Stokes Environmental Associates strives to conduct its services in keeping with industry standards and in accordance with generally accepted environmental science practice. No other warranty, expressed or implied, is made.

Our conclusions and recommendations are based upon our observations at the site, the reviewed documentation, any test results reviewed, interviews, any other information provided and our previous experience in this area. The conclusions and recommendations assume that data and other information provided are reasonably accurate. It must be recognized that available agency records, addresses, maps, and other information reviewed in this assessment are often incomplete, contain errors, may not be current, may list alternate facility names or addresses, or may provide otherwise misleading data. Verification of agency data, determination of facility locations that are listed by post office box, continuous updating and other tasks related to database information are generally beyond the scope and cost allowances of this investigation. However, the Environmental Professional performing the review has made a reasonable effort to compensate for mistakes or insufficiencies in the information reviewed that are obvious in light of other information actually known to the Environmental Professional. It should also be recognized that information may be available which was not found or reviewed in this assessment. The conclusions and recommendations are based on a limited review of the site and cannot provide complete assurance that all liabilities were detected. The conclusions and recommendations do not reflect variations in site conditions not visually apparent or which could exist intermediate of the sample locations or which could exist in the future.

Stokes Environmental Associates, Ltd. has analyzed the information obtained in this investigation in keeping with existing guidelines and regulations, but cannot accurately predict what actions or interpretations any given agency may take presently, or what standards and practices may apply to the site in the future. Should such variations in regulations, guidelines or site conditions become apparent in the future, it will be necessary to reevaluate our conclusions and recommendations based upon additional analyses and on-site observations as appropriate. It should be noted that only the appropriate regulatory agencies can make the final decision with respect to the extent of their jurisdiction. This site assessment report is not intended to provide a regulatory compliance audit. Unless known conditions indicate other durations, it is generally assumed that a site assessment is viable for a period of 180 days.

The pricing for this work is based on the absence of personal liability of the preparers with respect to the work, and the understanding that any claim associated with the work shall look solely to Stokes Environmental Associates, Ltd.

Stokes Environmental Associates, Ltd. acknowledges that it maintained in full force and effect at the time the services described in the investigation were performed, professional liability (errors and omissions) insurance with minimum policy limits of one million dollars each occurrence and one million dollars in the aggregate. Stokes Environmental Associates, Ltd. currently maintains such insurance in full force and effect and currently has no plan to terminate such insurance in the foreseeable future. Stokes Environmental Associates, Ltd.'s liability in connection with this investigation shall cease after a period of three years from the date of completion of the study, and Stokes Environmental Associate's total aggregate liability in connection with the investigation shall not exceed that amount actually covered by insurances on any such claim.

Please note that no environmental investigation can wholly eliminate uncertainty regarding the potential for adverse environmental conditions in connection with a property. This study is intended to reduce, but not eliminate, such uncertainty. The investigation recognizes reasonable limits of time and cost, and is designed to provide an appropriate level of inquiry, based on existing industry standards.

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