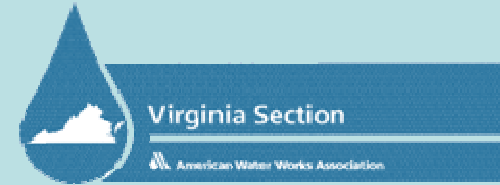


Data Sources for Self-Supplied Users



Presented By:
Taylor "Scott" Bruce, Ground Water Program Manager, DEQ
Andrea Putscher, Senior Water Supply Planner, DEQ

March 28, 2007



Ground Water SOURCE Data

(1 of 10)

- **Importance –**

- Requirement **§70 F** :

For **self-supplied users of >300,000 gallons per month** of ground water for **nonagricultural** uses:

- The name and identification number of each well
- Well depth - Casing depth -Well diameter
- **Screen depth (top and bottom) or water zones**
- The design capacity for the average daily and maximum daily withdrawal
- Any limitation on withdrawal established by permits issued by the board



Ground Water SOURCE Data

(2 of 10)

- How do I gather the information?

1. Identify wells and the well owners

DEQ - Virginia Water Use Data System (VWUDS)

Contact: Ed Morrow at 804.698.4487 or
edward.morrow@deq.virginia.gov.

Be sure to mention you need the following, (along with other standard data) included in your spreadsheet:

- name, address, phone number for owners or facility contact person
- DEQ ID #, PWSID# and Measuring Point ID (MPID) for wells



Ground Water SOURCE Data

(3 of 10)

- How do I gather the information?
 2. Contact well owners and facility operators, and for each of their wells -- ask them for:
 - Well construction reports,
 - Well permits, driller's bills
 - Name of the well driller or drilling company



Ground Water SOURCE Data

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Form GW-2
1978-10,900

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT • BWCN No. 107-688

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

BY: gc (Certification of Completion/County Permit)
DATE: 3/27/90

County/City Augusta County/City Stamp

Virginia Plane Coordinates
• UIC: 02070005 N
• N. Comm: TOWERS E

Latitude & Longitude
38 21 36 N
79 05 28 W

• Topo. Map No. 189-D
• Elevation 1360 ft.
• Formation eco
• Lithology DO
• River Basin
• Province 4
• Type Logs G
• Cuttings Y
• Water Analysis
• Aquifer Test

• Owner TOWERS SCHOOL #2
• Well Designation or Number
Address
Phone
• Drilling Contractor Sydnor
Address
Phone

Tax Map I. D. No.
Subdivision
Section
Block
Lot
Class Well: I _____, IIA _____
IIB _____, 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 6/18/62 • Date completed 6/27/62 Type rig AR

1. WELL DATA: New Reworked _____ Deepened _____
• Total depth 138 ft.
• Depth to bedrock 25 ft.
• Hole size (Also include reamed zones)
• inches from _____ to _____ ft.
• inches from _____ to _____ ft.
• inches from _____ to _____ ft.
• Casing size (I. D.) and material
• 6 inches from 0 to 107 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)
• inches from _____ to _____ ft.
• Mesh size _____ Type _____
• inches from _____ to _____ ft.
• Mesh size _____ Type _____
• inches from _____ to _____ ft.
• Mesh size _____ Type _____
• inches from _____ to _____ ft.
• Mesh size _____ Type _____
• Gravel pack
• From _____ to _____ ft.
• From _____ to _____ ft.
• Grout
• From 00 to 100 ft., Type _____
• From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature _____ °F
• Static water level (unpumped level measured) 22 ft.
• Stabilized measured pumping water level 130 ft.
• Stabilized yield 10 gpm after 6 hours
Natural Flow: Yes _____ No _____ flow rate _____ gpm
Comment on quality _____

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

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

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

6. WELLHEAD: Typ. 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 _____

Owner George F. Tolson
Sutland
Stuffed #648 of #616

9. State law requires submitting to the Virginia State Water Control Board information about groundwater and wells for intended for water, or any other non-exempt well. This information must be submitted whether the well is completed or not. Information required includes: an accuracy and completeness prepared water well completion report; full data from any geologic outcrops taken at ten foot intervals (unless exemption is secured); the results of any chemical analyses, and copies of any geologic purpasse and use reports are required from owners of public supply and industrial wells. County or State permits to drill may be required. Some counties require submission of a water well completion report. The Virginia State Health Department requires a water well report for public supply wells.

10. DRILLERS LOG (use additional sheets if necessary)

DEPTH (feet)	TYPE OF ROCK OR SOIL	REMARKS	Drilling Time (Min.)
0 - 10	Red clay		15
10 - 31	Brown clay		30
31 - 80	Granite		3 hrs

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)

13. Well not 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.e.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 George F. Tolson (Seal), Date 9/25/84
(Well driller or authorized person) License No. _____

State Water Control Board Regional Offices
Valley Reg. Off.
116 North Main Street
P. O. Box 268
Bridgewater, Va. 22812
703 828 2590
Southwest Reg. Off.
408 East Main Street
P. O. Box 476
Abingdon, Va. 24210
703 628 5183
West Central Reg. Off.
Executive Park
3312 Peters Creek Road
Roanoke, Va. 24019
703 - 882 - 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 Pk. 2
Va. Beach, Va. 23462
804 499 8242
Northern Virginia Reg. Off.
5515 Cherokee Avenue
Suite 404
Alexandria, Va. 22312
703 750 9111

Ground Water SOURCE Data

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- How do I gather the information?

3. Contact the **local health department**,

Virginia Department of Health -Local Health Districts

<http://www.vdh.virginia.gov/lhd/>

For wells constructed since about 1990 - -

Explain -- which well owners or facilities, well names, locations of wells – you are working on.

Ask - best way to search: **well construction reports?**



Ground Water SOURCE Data (6 of 10)

- How do I gather the information?

4. Contact VDH-ODW Regional Field Office

Virginia Dept. of Health – Ofc. of Drinking Water

<http://www.vdh.virginia.gov/DrinkingWater/contacts/>

Regulates Public Water Systems (PWS) –

2 of 3 PWS types are Self-Supplied Users

“NonTransient NonCommunity” = Self-Supplied
(Day Schools, Workplaces)

“Transient NonCommunity” = Self-Supplied (Hotels)

-Engineering Description Sheets

-Well Construction Reports



VIRGINIA DEPARTMENT OF HEALTH ENGINEERING DESCRIPTION SHEET

PERMIT NUMBER:	6137001
DATE ISSUED:	January 26, 2004
TYPE OF TREATMENT:	Hypochlorination and Corrosion Control
SOURCE:	One drilled well
DESIGN CAPACITY:	74,800 gallons per day

DESCRIPTION OF SYSTEM:

....

Well No. 4: This well is located off Road No. 1004. It is 10 inches in diameter from 0 to 60 feet and 6 inches in diameter from 60 to 240 feet. It is cased with 6-inch steel to a depth of 61 feet and grouted to 52 feet.



VIRGINIA DEPARTMENT OF HEALTH ENGINEERING DESCRIPTION SHEET

DESCRIPTION OF SYSTEM: (continued)

Well No. 4:

...The yield of the well, determined during a 48-hour test, is 52 gpm. The well is equipped with a 10-hp submersible pump rated at 52 gpm at 250 feet of total dynamic head. A pressure regulator is used to adjust the well output.

Design Basis: The majority of the water demands at this facility are process related and not predictable by the number of employees.

- 1. Well Yield: $52 \text{ gpm} \times 1440 \text{ min/day} = 74,880 \text{ gpd}$
Well Pump Capacity: $52 \text{ gpm} \times 1440 \text{ min/day} = 74,880 \text{ gpd}$**

Based on the limiting value above, this waterworks is limited to a capacity of 74,880 gallons per day.



Ground Water SOURCE Data (8 of 10)

- How do I gather the information?
 5. Contact DEQ – OGWC province office:
 - OGWC is gradually consolidating a database of well information:

OGWCDB = STORET + GWSI + SDWIS

DEQ ← USEPA + USGS + VDH-EPA

- Paper Files – by County, in boxes

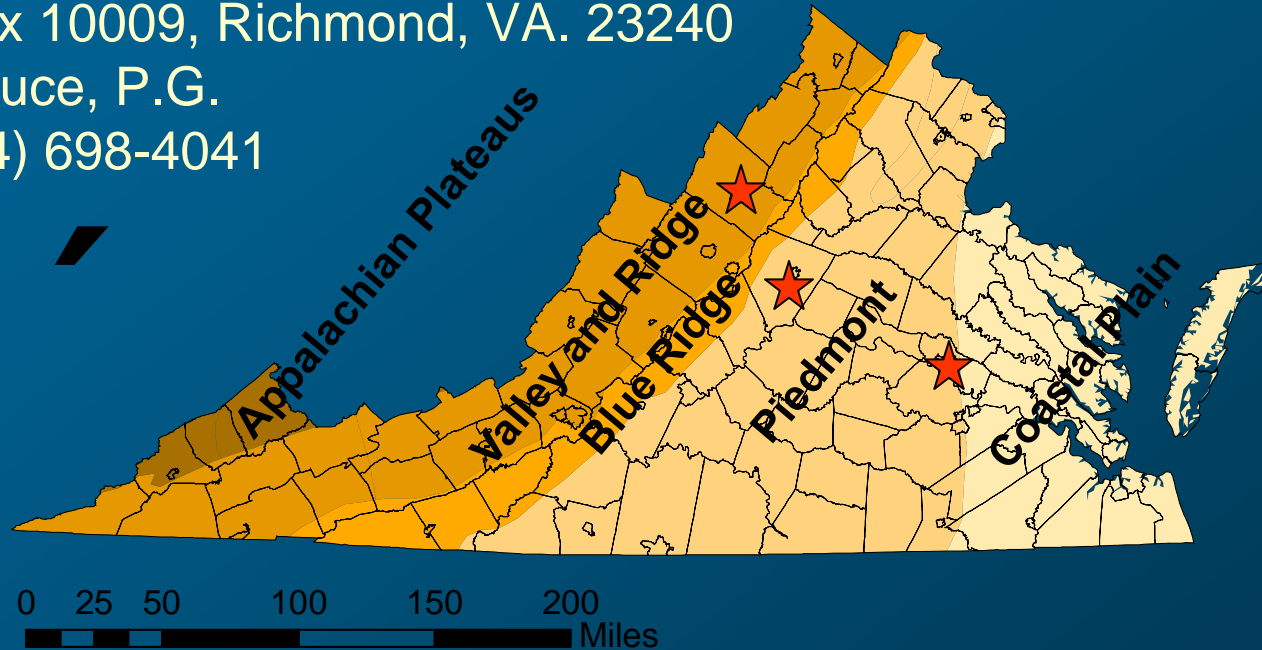
(Contact information on next slide)



Office of Ground Water Characterization

DEQ CENTRAL OFFICE

Office of Ground Water Characterization
629 East Main St., Richmond, VA. 23219
P.O. Box 10009, Richmond, VA. 23240
Scott Bruce, P.G.
Ph. (804) 698-4041



Valley and Ridge
Appalachian Plateau
Joel Maynard
Harrisonburg Office
Ph. (540) 574-7844

Blue Ridge
Piedmont
Brad White
Charlottesville Office
Ph. (434) 293-1028

Coastal Plain
Todd Beach
Central Office
Ph. (804) 698-4281



Ground Water SOURCE Data (10 of 10)

- How do I gather the information?
 6. Ask throughout all **local government departments** whether anyone has a compilation of this data, or earlier reports and studies from any era or a project – prior or on-going.
 7. Old “County Groundwater Reports”
1970’s – 1988, 14 completed
– list available soon
 8. **Ask the Driller**



Data Sources for Self-Supplied Users Ground Water SOURCE Data

Questions ?

Taylor "Scott" Bruce
Office of Groundwater Characterization
Virginia DEQ



General 9 VAC 25 - 780 Data Sources

- **DEQ Office of Water Supply Planning –**

<http://www.deq.virginia.gov/watersupplyplanning/progres.html>

Many of the sources we're discussing are (or will be) included as links on this webpage.

- **DEQ - Virginia Water Use Data System (VWUDS)**

Contact: Ed Morrow at 804.698.4487 or
edward.morrow@deq.virginia.gov

Custom VWUDS printouts are available, be sure to ask for PWSID information if you are using the printout to coordinate with VDH Public Water System Listings. An example follows:



VWUDS Water User & Source ID Data

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1					DEQ-ID					ADDRESS							
2	OWNNAME	SYSTEM	SOURCE	MPID	ST	WELL		LAT	LONG						SUB	CAT	
3					CODE	NO	ACTION	MP	MP	MAIL	MAIL	MAIL	MAIL	TYPE	TYPE	MP	
3	A-Z SERVICES	SIX-O-FIVE	WELL	385823077545801			WL	385823	0775458	PO B	FRED	VA	22402	GW	WE	PWS	
4	DOMINION GEN	NORTH AM	INFORMATION CENTER WELL	380316077475101			WL	380316	0774751	1022 I	MINE	VA	23117	GW	WE	PN	
5	DOMINION GEN	NORTH AM	WELL #2	380332077474001	154	034	WL	380332	0774740	1022 I	MINE	VA	23117	GW	WE	PN	
6	DOMINION GEN	NORTH AM	WELL #3A	380343077474201	154	159	WL	380343	0774742	1022 I	MINE	VA	23117	GW	WE	PN	
7	DOMINION GEN	NORTH AM	WELL #4	380329077473601	154		WL	380329	0774736	1022 I	MINE	VA	23117	GW	WE	PN	
8	DOMINION GEN	NORTH AM	WELL #6	380327077473601	154	199	WL	380327	0774736	1022 I	MINE	VA	23117	GW	WE	PN	
9	KLOCKNER-PE	GORDONS	NEW PROCESS WELL #1	380708078123702	154		WL	380708	0781237	PO B	GORE	VA	22942	GW	WE	MAN	
10	KLOCKNER-PE	GORDONS	NEW PROCESS WELL #2	380708078123703	154		WL	380708	0781237	PO B	GORE	VA	22942	GW	WE	MAN	
11	KLOCKNER-PE	GORDONS	POTABLE WELL #2	380715078123002			WL	380715	0781230	PO B	GORE	VA	22942	GW	WE	MAN	
12	KLOCKNER-PE	GORDONS	PROCESS WELL #3 FILM PLT	380708078123701	154	245	WL	380708	0781237	PO B	GORE	VA	22942	GW	WE	MAN	
13	LOUISA COUNT	LOUISA-M	GREEN SPRINGS WELL #1	380033078112701	154		WL	380033	0781127	PO B	LOUIS	VA	23093	GW	WE	PWS	
14	LOUISA COUNT	LOUISA-M	INDUSTRIAL PARK WELL	380047077582601	154	121	WL	380047	0775826	PO B	LOUIS	VA	23093	GW	WE	PWS	
15	LOUISA COUNT	LOUISA-M	ZION CROSSROADS WELL #1	372824078115701	154		WL	375824	0781157	PO B	LOUIS	VA	23093	GW	WE	PWS	
16	LOUISA COUNT	LOUISA-M	ZION CROSSROADS WELL #2	375827078115601	154		WL	375827	0781156	PO B	LOUIS	VA	23093	GW	WE	PWS	
17	MINERAL, TOW	MINERAL	TWO SPRINGS	380123077524602	154	105	WL	380123	0775246	PO B	MINE	VA	23117	GW	SP	PWS	
18	TANYARD COU	TANYARD	RICHARDSON WELL	380057077593501	154	010	WL	380057	0775935	PO B	LOUS	VA	23093	GW	WE	COM	



Surface Water SOURCE Data

- **Importance –**
- Requirement **§70 E :**

For **self-supplied users of >300,000 gallons per month** of surface water for **nonagricultural uses:**

- **The name of water body utilized**
- **The design capacity for the average daily and maximum daily withdrawal**
- **Any limitation on withdrawal established by permits issued by the board**

Most should be in VWUDS and / or in VDH (NTNC, NC) except some golf courses.



Define Service Areas

- Work with Community Water Suppliers to do this, document early and in WS Plan
- Self-supplied Users and Water Use are required to be specified and accounted separately as “outside” or “within” the service areas of community waters supplies.



Water SOURCE and Water USE Data

- **Importance –**

Requirement **§70 J** (Source) & **§80 B.8., E.** (Use):
For **self-supplied users of $\leq 300,000$ gallons per month** of ground water for **nonagricultural uses**:

§70 J (Source)

- The number of residences and businesses that are self-supplied by wells
- Estimate of the population served by these wells

§80 B.8, also §80 E (Use):

- Number of users
- An estimate of the total amount of water used by them



Water SOURCE and Water USE Data

1. Contact **VDH-ODW Regional Field Office**

Virginia Dept. of Health – Ofc. of Drinking Water

<http://www.vdh.virginia.gov/DrinkingWater/contact>

2 of 3 PWS Types include Self-Supplied Users

“NonTransient NonCommunity” NTNC =

Self-Supplied (Day Schools, Workplaces,)

“Transient NonCommunity” NC =

Self-Supplied (Hotels, Restaurants, Pools)

Water production reports, and other system information is on record. Look up PWSID numbers in advance:






http://www.vdh.virginia.gov/drinkingwater/waterworks_owners.htm

Commonwealth of Virginia | Governor Web Policy | Contact Us

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

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Local Health Districts

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[Information for Waterworks/Owners](#)

[Information for Operators](#)

[Financial and Construction Assistance Programs](#)

[Compliance](#)

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[Source Water Assessment and Protection Program](#)

[Private Laboratories](#)

[Reference Library and Related Links](#)

[Frequently Asked Questions](#)

[ODW Web Manager](#)

[ODW Home](#)

[Home](#) > [Office of Drinking Water](#) > Listing of Waterworks and Owners

Listing of Waterworks and Owners

For a listing of all active Virginia Public Waterworks, city/county, system service connections, system population, name of owner, and address of owner choose one of the desirable formats below.

[Water.exe](#) - As Tab-delimited text file, Executable file (.exe) made with WinZip for (database import)

[Water.pdf](#) - Acrobat PDF, requires Adobe Acrobat Reader

[Water_xls.exe](#) - As a Microsoft Excel file, Executable file (.exe) made with WinZip

Instructions to download and open Excel file:

- Click on the link above titled "Excel".
- Click the "Save" button on the File Download popup window. Save the file "water_xls.exe" to a desired folder on PC. *This is a self-extracting zip file which means the software WinZip does not need to reside on a PC in order to unzip this file.*

Data Sources Public Water Systems

- VDH Office of Drinking Water Programs

- Waterworks Owners List

http://www.vdh.virginia.gov/drinkingwater/waterworks_owners.htm

PWSID	SYSTEM TYPE	SERVICE CONNECTIONS	POPULATION (SERVED)	SOURCE (TYPE)
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- Regional Field Offices

Databases

Paper Flies



Data Sources – Population

(1 of 3)

- 1990 Households served by wells
- Population, Housing Units, Area, and Density for the Commonwealth of Virginia for Census Year 2000 (United States Census Bureau)
- Population Estimates for Counties and Cities for 2004 (United States Census Bureau)
- Population Estimates for 2005 for Virginia Localities (United States Census Bureau)



Data Sources – Population

(2 of 3)

- Population Estimates for Counties and Cities for 2010 & 2020 (Virginia Employment Commission - Virginia's Electronic Labor Market Access)
- Will need extrapolation when used for projections
- Recent local or regional refined population estimates developed for other planning functions
 - document and justify assumptions, variations and significance.



Data Sources – Population

(3 of 3)

- Final 2003 & Provisional 2004 Estimates for Virginia's Localities (Weldon Cooper Center for Public Service)
- Final 2004 & Provisional 2005 Population Estimates for Virginia Localities (Weldon Cooper Center for Public Service)



Agricultural Water SOURCE & Water USE

- **Importance –**

Requirement **§70 I** (Source) & **§80 B.7., D.** (Use):

For **self-supplied users of $\leq 300,000$ gallons per month** of ground water for **Agricultural** uses:

§70 I (Source)

- **A list of Agricultural Users**
- **Estimate of total agricultural usage by source**
- **Whether source is surface water or groundwater**
- **Whether use is irrigation or non-irrigation**

§80 B.7 also §80 D (Use):

- **An estimate of the total amount of water used on an annual average basis.**



Irrigation Agricultural Water Use

- DEQ - Virginia Water Use Data System (VWUDS)

Contact: Ed Morrow at 804.698.4487 or edward.morrow@deq.virginia.gov

- VWUDS Agricultural Irrigation:
Users of >1 million gallons per month, officially, but list is more comprehensive than that.
- **9 VAC 25 780** Agricultural (Irrigation, Live-stock Watering):
Users of >300,000 gallons per month



Data Sources – Population (livestock)

- USDA – NASS
(National Agricultural Statistics Service)

Census of Agriculture

Website:

http://www.nass.usda.gov/Statistics_by_State/Virginia/Publications/Annual_Statistical_Bulletin/index.asp



Data Sources – Livestock Water Use

- From USGS in gallons per day per animal
- Dairy: 35.0
- Beef: 12.0
- Swine: 3.5
- Hens: 0.06
- Broilers: 0.06
- Turkeys: 0.1
- Sheep: 2.0
- Goats: 2.0
- Horses/Mules: 12.0





Data Sources for Self-Supplied Users

Water Source & Use & Population Data

Questions ?

Andrea “Andy” Putscher
Office of Water Supply Planning
Virginia DEQ