



Charlotte County Source Water Protection Plan

2011

Source Water Protection Plan

Charlotte County, VA

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In order to remain effective, this plan must be reviewed and updated yearly by the steering committee. In the table below please indicate the date of review and provide an accompanying signature.

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1.0 Introduction

1.1 Background

In 1974 the United States Congress enacted the Safe Drinking Water Act (SDWA) with the goal of providing safe drinking water for public water supplies and their users. The SDWA gave the U.S. Environmental Protection Agency (EPA) the authority to develop a uniform national drinking water protection program, and to establish standards for known or suspected drinking water contaminants. In 1986, Congress amended the SDWA to reflect a growing awareness of potential biological and chemical threats to drinking water. The amendments to the SDWA authorized two new provisions for groundwater protection. One of these is the Wellhead Protection program. The SDWA allowed states to design and implement their own Wellhead Protection programs in order to maximize effectiveness at the local level.

In June 2005, the U. S. Environmental Protection agency approved a formula for Virginia's Groundwater Protection Program. It was designed by the state Department of Environmental Quality and the state Department of Health. Groundwater Protection is a local government and/or system effort and remains voluntary in Virginia. The Groundwater Protection Steering Committee provides resources that include model ordinances for local governments, case studies, and information on funding. The Department of Health updates the Source Water Assessments by request, which it had completed for all systems by 2003, and contracts with an engineering firm to do Wellhead Protection Plans for high risk systems.

The 2009-2010 Source Water Protection Program encompasses both groundwater and surface water sources. It is overseen in this case by the EPA. The Source Water Protection Program requires a minimum of five entities or sources be joined in a united effort to create regional protection.

State agencies with input to the Virginia Rural Water Association technician's operating plan set a priority for protection plans. They agreed that sources existing within karst and fractured rock terrains should be addressed. These geologies are the most vulnerable (in Virginia) to groundwater contamination.

1.2 Purpose of Source Water Protection Plan

Recognizing that action must be taken to protect their water supply, including from potential contamination, a volunteer committee of the governments and citizens of Charlotte County has developed this source water protection plan.

The Charlotte County Source Water Protection Plan is a grassroots-driven tool to protect the drinking water sources of Charlotte County. The Plan aims to do the following:

- Create an awareness of the drinking water sources of the community and the potential risks to water quality and quantity within Charlotte County,
- Encourage education and voluntary solutions to alleviate pollution risks,
- Promote management practices to protect and enhance their drinking water supply, and
- Provide for a comprehensive action plan in case of an emergency to the water source

The primary reason for developing a Source Water Protection Plan in Charlotte County is to provide a local, common-sense framework for protecting local water resources. Local education and voluntary action may do as much or more than regulations, and especially may fill gaps in federal, state and county laws to protect local water resources.

1.3 Protection of Private Sources

While this plan focuses on public water supplies, it is important to note that it will also effectively protect private sources in the well head protection area as well (Figure 1). Just as customers of the public water supply protecting their groundwater will protect the supplies of private well owners, so will the actions of private well owners protect the public supplies. It is therefore essential that this plan target not only public water supply users but all citizens within the well head protection areas. One important message that must always be present in outreach activities is that everyone is protecting not only their own water supply but everyone around them as well. Figure 1 illustrates the importance of focusing on private as well as public wells.

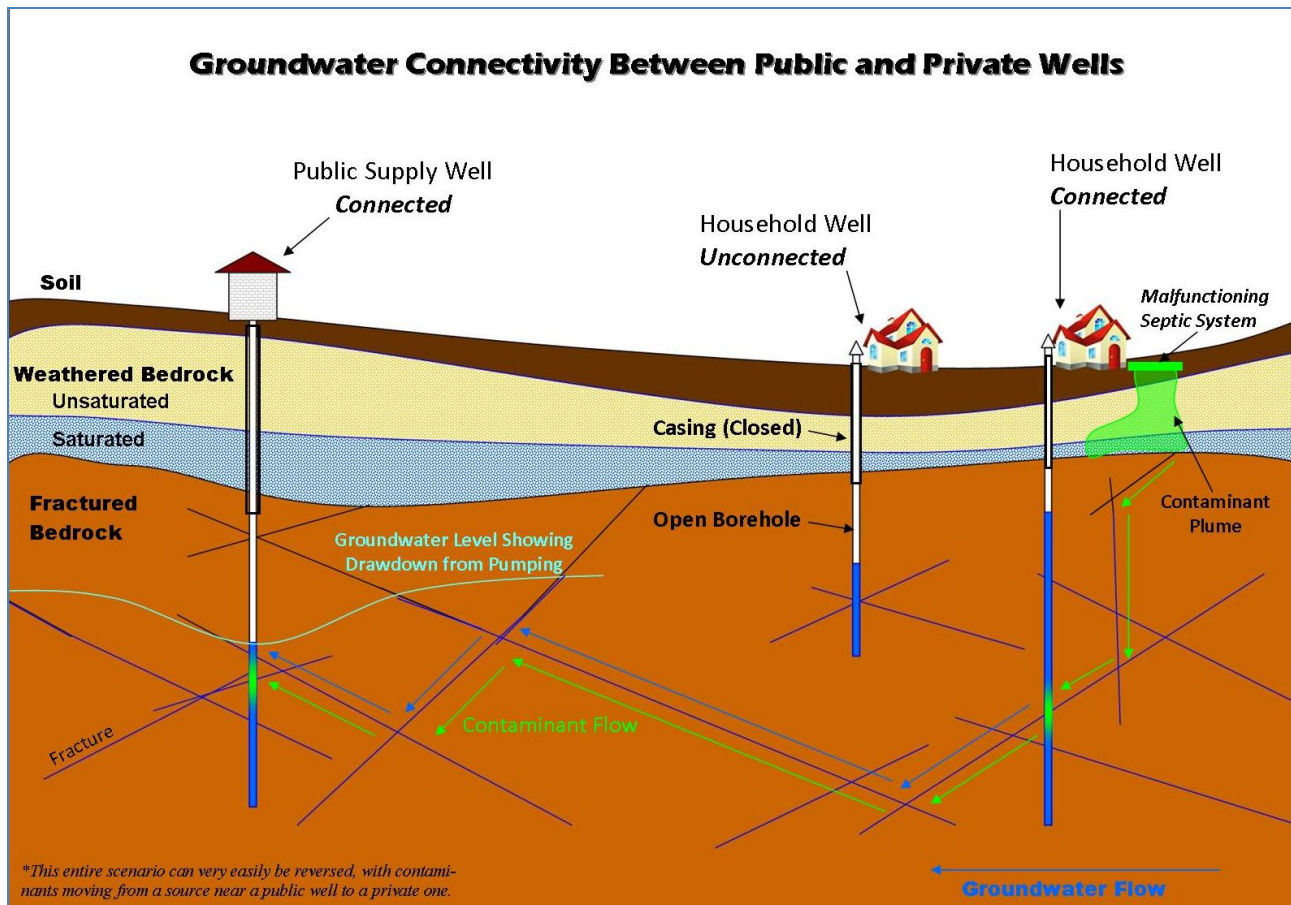


Figure 1: Groundwater Connectivity Between Public and Private Wells

1.4 Protection Plan Development – Steering Committee

As this is a grassroots effort, the public was involved in every aspect of the plan. This is essential for a good plan. No one understands the water issues in Charlotte County more than its residents. It is only by utilizing that knowledge that an effective plan can be created.

A public presentation was held in Charlotte Court House on the topic of source water protection. The presentation described the source water protection program and what the steering committee's role would be in the formation and implementation of the plan. At the end of the presentation, attendees were asked to join the steering committee in order to have a say in the creation of the plan.

A steering committee was formed from the attendees of these meetings to guide the creation of this plan. The steering committee then began having regular meetings in order to determine the content of the protection plan. This steering committee will implement and manage the source water protection plan as well as meet regularly to make sure the plan is kept up to date.

Source Water Protection Plan Steering Committee

Name	<i>Association</i>
John P Gannon	<i>Virginia Rural Water Association</i>
Susan Adams	<i>Charlotte County</i>
Monica Elder	<i>Charlotte County</i>
Patrick Shay	<i>Citizen</i>
Julie Hamlett	<i>Southside Soil and Water Conservation District</i>
David Martin	<i>Virginia Department of Health</i>
Miller Adams	<i>Department of Forestry</i>
Patricia Mays	<i>Southside Soil and Water Conservation District</i>
Beverly Renfro	<i>Citizen</i>
Robert Jones	<i>Virginia Cooperative Extension</i>

Table 1: Steering Committee

2.0 Water Supply Setting

2.1 Geology

Charlotte County is located in the Piedmont physiographic province (Figure 3), which is made up of a variety of Igneous and Metamorphic rock. In Virginia, the Piedmont is located to the west of the Coastal Plain and to the east of the Blue Ridge. Charlotte County's landscape has remained generally stable for a long time, which has allowed for extensive weathering of the upper parts of its bedrock. This has led to the development of saprolite, or weathered bedrock layers extending as deep as 50 feet in places.

Figure 3. Segment 11 includes parts of the Coastal Plain, the Piedmont, the Blue Ridge, the New England, the Valley and Ridge, the Appalachian Plateaus, and the Central Lowland Physiographic Provinces. Two of these provinces—the Blue Ridge and the Reading Prong, which is part of the New England Province—are discussed together because they have similar geology and hydrology.

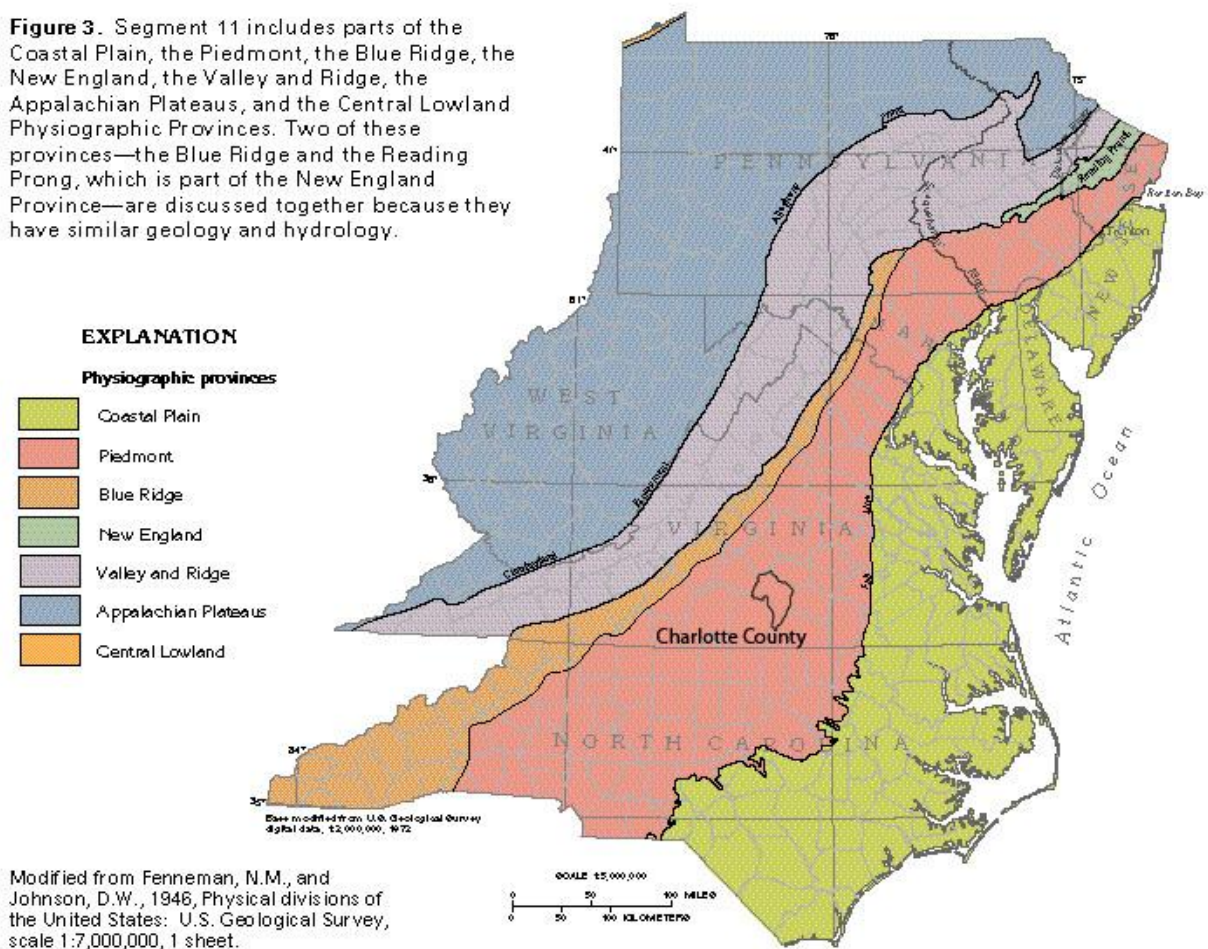


Figure 2: Physiographic provinces in the eastern United States

The rocks below Charlotte County are a mixture of many types of Igneous and Metamorphic rocks, which are mapped in Figure 3. These rocks exist in close proximity to each other in many places, while in others only one or two of them are present. It is also important to note that because of the chemical composition of the rocks through which Charlotte County's groundwater is flowing, Manganese, Iron, and Sulfur can be found naturally in the groundwater.

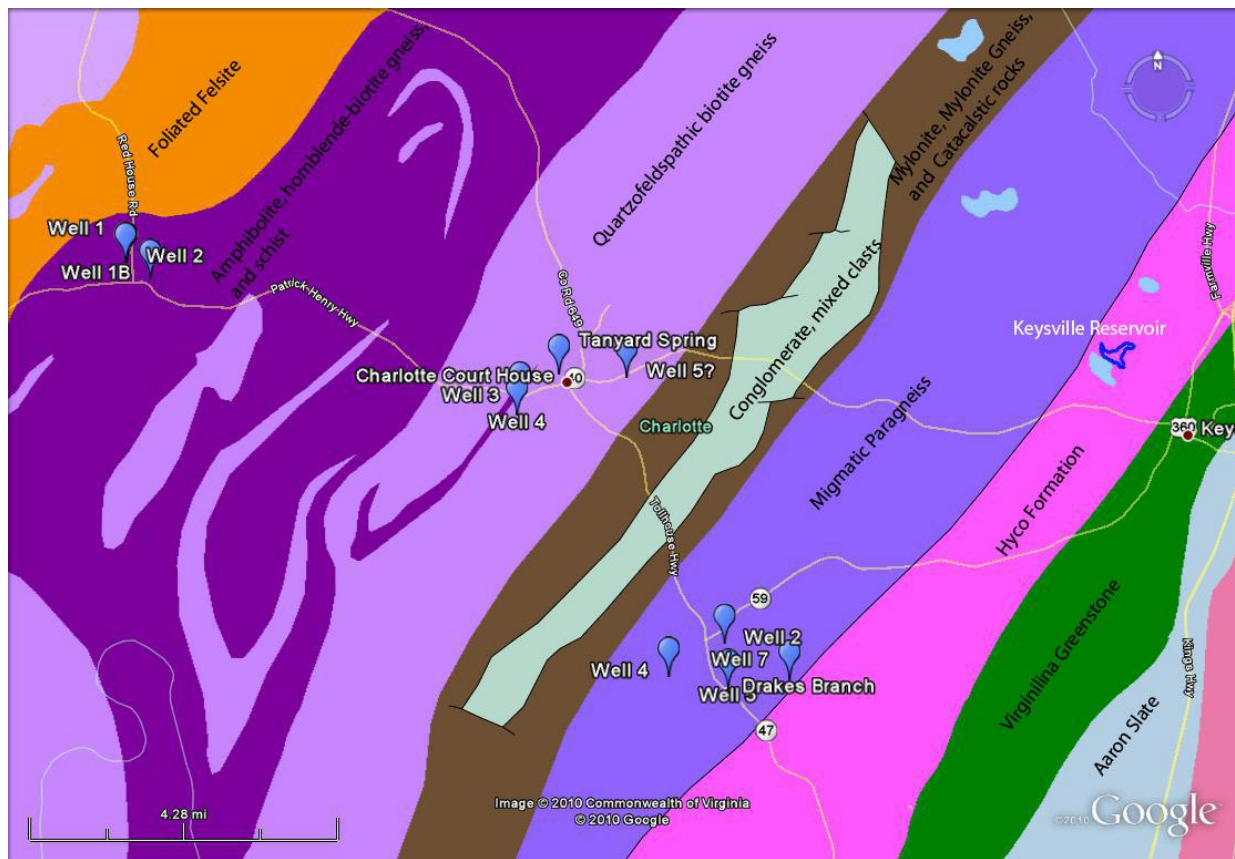


Figure 3: Geologic map of Charlotte County, VA. Bubbles indicate public supply wells. Black text denotes geologic units.

2.2 Hydrogeology

As Charlotte County is located in the Piedmont physiographic province, the county draws water from fractured bedrock (Figure 4). Filtration of recharge water in this system is provided by the overburden, or top soil. This layer varies greatly in thickness. With this

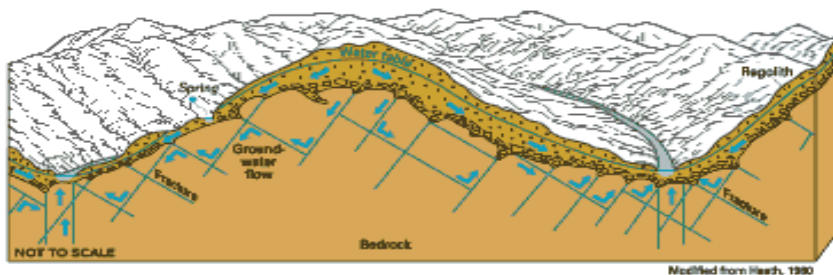


Figure 4: Typical fractured bedrock hydrogeology

variation comes a variation in filtration capability. Generally in the Piedmont this layer of overburden is underlain by weathered bedrock called saprolite. The zone is made up of the same bulk rock as the bedrock below but has been weathered into a

highly fractured material capable of storing and transmitting water. This layer of broken up rock does not have the filtration properties of the soil above it. Therefore, areas where this

rock is exposed are extremely susceptible to contamination. Drainage such as storm water that can have high levels of contaminants should be kept away from these areas as much as possible.

Below the saprolite water exists in fractures in the bedrock (Figures 4 and 5). These fractures vary in both size and connectivity. Depending on their size and the size of the fracture network they belong to, they will produce greatly varying quantities of water. The complex varieties of rock in Charlotte County likely limit large scale connectivity of ground water systems. This means it is likely that the county draws groundwater from a number of isolated fracture networks rather than just one “aquifer”.

Drinking water wells are required to be cased through the saprolite zone and only pull water from the fractured bedrock below. This is due to the lower quality water present in the saprolite. The water present in the fractured bedrock is generally high quality, but as described below, it is also very susceptible to contamination.

In a study of the susceptibility of Virginia’s aquifers, it was found that water supplies in the Piedmont are highly susceptible to contamination (Nelms, 2003). This determination was based partly on the age of water sampled from wells and springs in the Piedmont. When water falls as precipitation and enters the groundwater system, it holds a signature unique to the atmosphere it fell through to hit the ground. By testing gases present in groundwater, scientists are able to determine dates of recharge for water taken from wells and springs. In the Piedmont the age of the waters tested was very young. In many places ages younger than 20 years were common. This means that water entering the ground can find its way to drinking water sources in a relatively short amount of time and with minimal natural filtration. It is therefore imperative that places like Charlotte County act quickly to limit harmful chemicals from entering their groundwater.

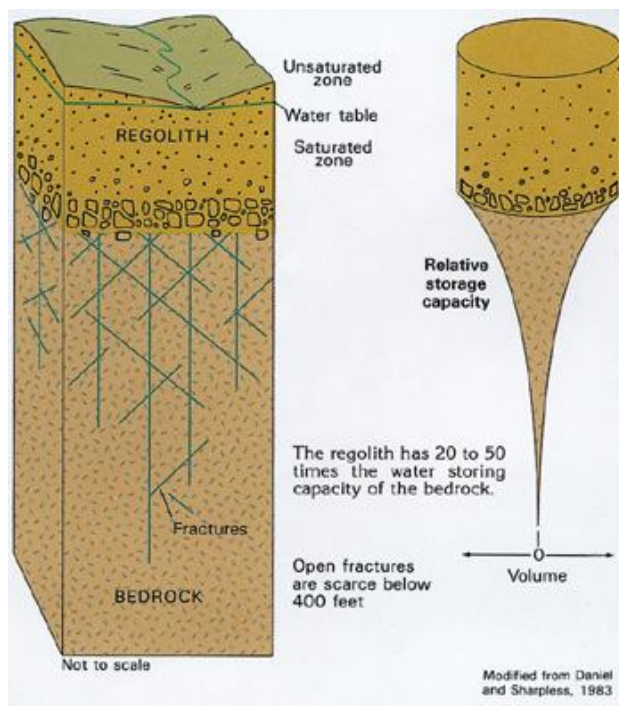


Figure 5: Available storage in fractured rock environments.

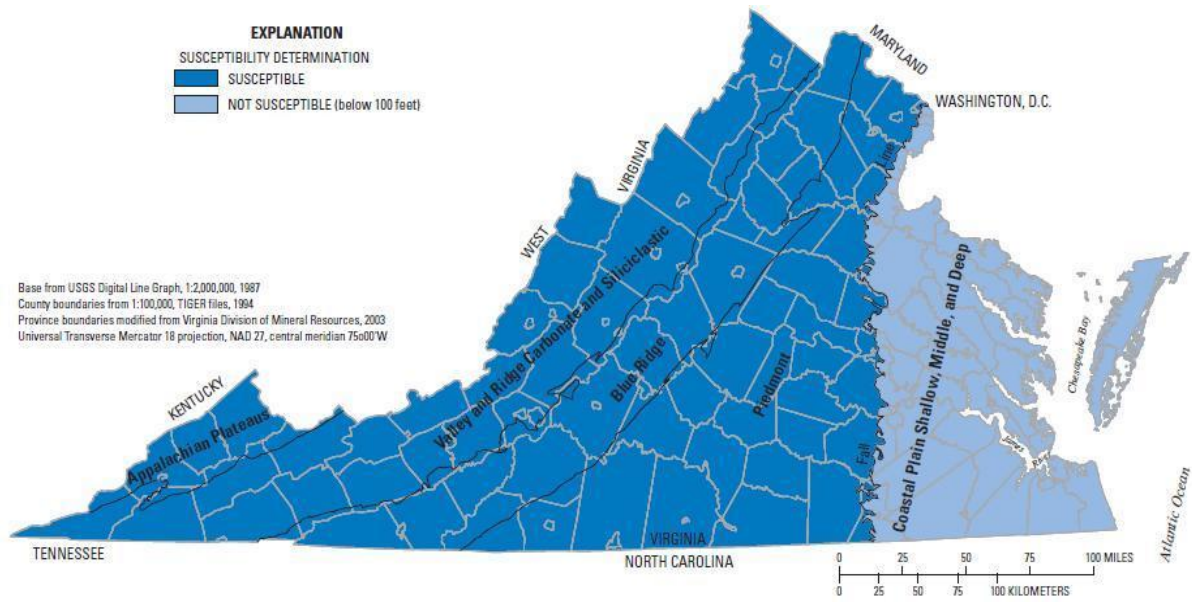


Figure 6: Groundwater contamination susceptibility in Virginia. (From Nelms, 2003)

3.0 Public Water Systems

Drakes Branch

Drakes Branch currently has five wells. Of these wells one is dormant and for emergency use only (Well 5) and one is going to be abandoned (Well 2). The other wells (7, 6, and 4) are pumped regularly for public use. Well 7 produces about 55 gallons per minute. Well 6 produces about 21 gallons per minute and is treated with Soda Ash to adjust its pH. Well 4 is also treated with Soda Ash and produces 27 gallons per minute. Each of the wells is pumped with a three-phase pump. The public water system in Drakes Branch has approximately 300 connections.

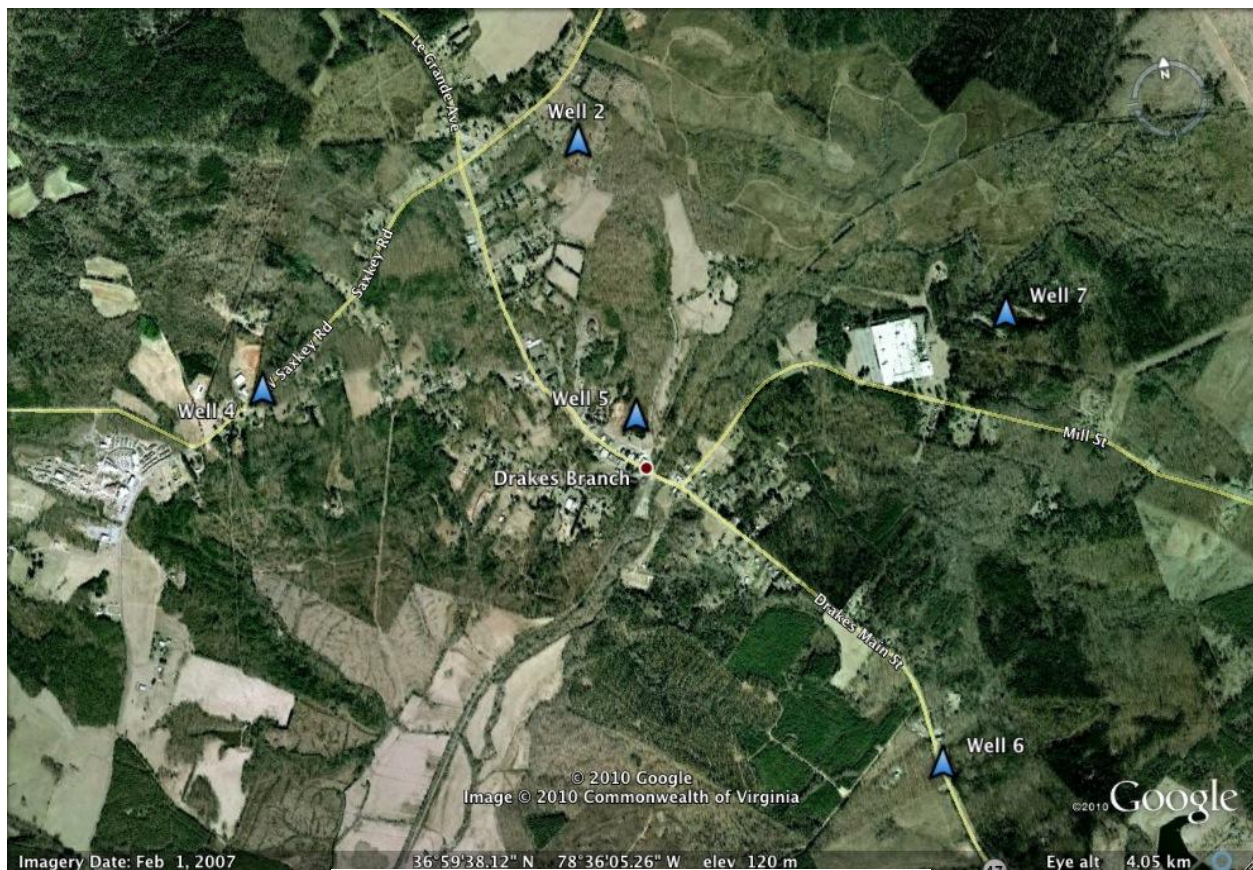


Figure 7: Drakes Branch Public Water System

Phenix

Phenix has two wells in service and another new well that will soon be connected to the system. Wells 1 and 2 are currently being used to provide the town with water. The two wells are very close to one another and from a source water protection standpoint, could be regarded as one source. Contamination in the groundwater in this area would likely effect both wells. It is therefore appropriate that a third well, located some distance away from the original two, was drilled and will be put on line. As is typical of the wells in the piedmont, the wells in Phenix are also not very high producing. Well 1 produces about 8 gallons per minute and well 2 produces about 18 gallons per minute. The wells are chlorinated with a system that automatically introduces chlorine as the wells are pumped. The wells run about 10 hours a day, pumping approximately 15,000 gallons of water per day. The system consists of about 130 connections. The new well, which will be put into service soon, produces water at 22 gallons per minute. This well was logged by the Department of Environmental Quality using geophysical tools that found it to be well constructed and due to the dip of the rocks in the area, possibly susceptible to contamination from the northwest.



Figure 8: Phenix Public Water System

Charlotte Court House

Charlotte Court House's public water system is made up of 3 wells and a spring. The spring is used as an emergency supply only. One new well is constructed but not yet in service. This well will use a green sand filter to purify the water pumped from it. Well 5 produces about 43 gallons per minute and is pumped about 28 thousand gallons per day. Wells 3 and 4 produce about 20 gallons per minute. The spring in town produces about 22 gallons per minute and has been developed with two cement tanks. Soda Ash and a corrosion inhibitor are used on all water in the system. There are two storage tanks in the system, one is 100,000 gallons and one is 36,000 gallons. This affords the town 2.5 days of water storage or 1.5 days of water storage in the summer. The system generally produces about 56,000 gallons per day and consists of approximately 250 connections.



Figure 9: Charlotte Court House Public Water System

Keysville

The Keysville water system consists of a reservoir and two wells that only exist as emergency supplies. The reservoir and water treatment plant have a capacity of about 1 million gallons per day. Currently about 18-20% of that capacity, or 311 thousand gallons per day, is being used. The reservoir is 42 acres in aerial extent and contains about 67 days worth of water. The reservoir has experienced difficulties with sedimentation in the past during high flows and is working on resolving the issue. The public water system in Keysville has approximately 400 connections.

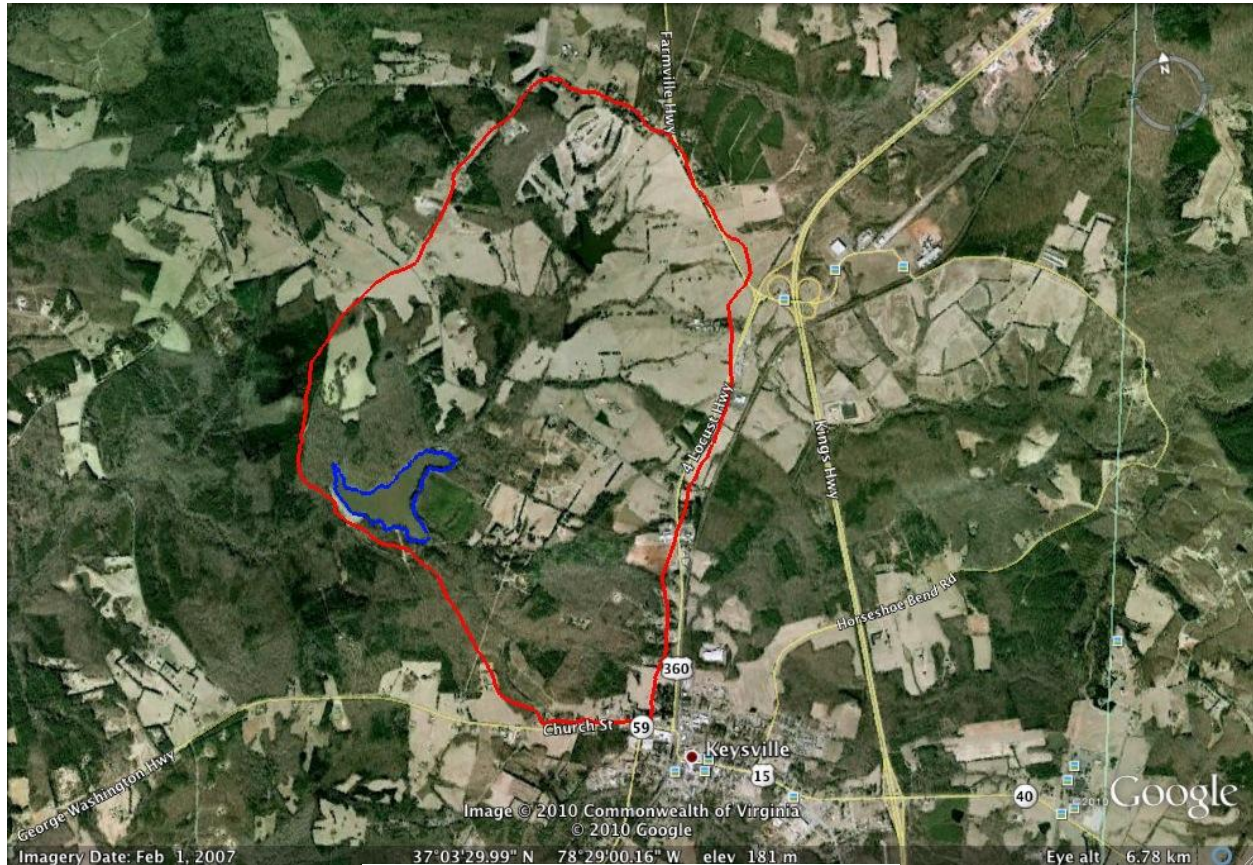


Figure 10: Keysville Public Water System

4.0 Well Head Protection Area Delineation

The nature of fractured rock environments makes it extremely difficult to determine quantitatively based well-head protection zones. Certain techniques can be applied to open boreholes to determine connectivity between wells, but due to the heterogeneity of the system it is impossible to extrapolate any findings to a two-dimensional area of connectivity. In Charlotte County's case, the type of information gathering necessary to make even generalized statements about areas of influence for wells is further complicated by the construction of the wells themselves. The steel pipe installed in each of these wells prevents one from lowering any borehole logging tools or even transducers into the wells to log or perform pumping tests

The well head protection areas created for the Department of Health are simply a 1000 foot and a 1 mile radius around each well. The smaller of the two radii is a primary protection radius, an area intended to represent the surface expression of the direct source of ground water for the well. This is an area of primary concern regarding pollutants entering the ground. The second radius is fixed at 1 mile and is a secondary radius design to cover an area that probably sources the well, but not to the extent of the primary radius. Because of Charlotte County's complex, fractured rock hydrogeology, these radii are rather meaningless. Water is being pulled from fracture zones that are linear and vary in their extent. These fracture zones can connect with others or be isolated. There is no current way of determining the details of the scenario in Charlotte County.

Often we can draw conclusions about the source area for wells by the topography surrounding them. However, the rolling, irregular topography of the piedmont does not allow for this to be done with any degree of accuracy. Groundwater can very easily continuously flow below smaller hills or could be very disconnected in areas appearing to be representative of some sort of geologic feature. Because of this, we have simply adapted the source water assessment radii for use as source water protection radii. These radii include the major population centers of the towns in Charlotte County and are therefore more than accurate as a guideline for source water protection. It should be noted, however, that simply falling outside of one of these radii does not mean an area does not source a public supply well. There could be a fracture network or several that extend beyond these boundaries. Not only this, but areas outside these boundaries are also likely sourcing private wells.

The well head protection radii is therefore only meant as a guide, and a visual aid to allow members of the source water protection committee or other readers of this plan to see the aerial extent of areas influencing the quality of their drinking water.

The one exemption in Charlotte County is of course, Keysville. As Keysville pulls water from a reservoir, the source water protection radii can be relatively confidently identified as the watershed for the reservoir, which is outlined in the source water protection area maps.

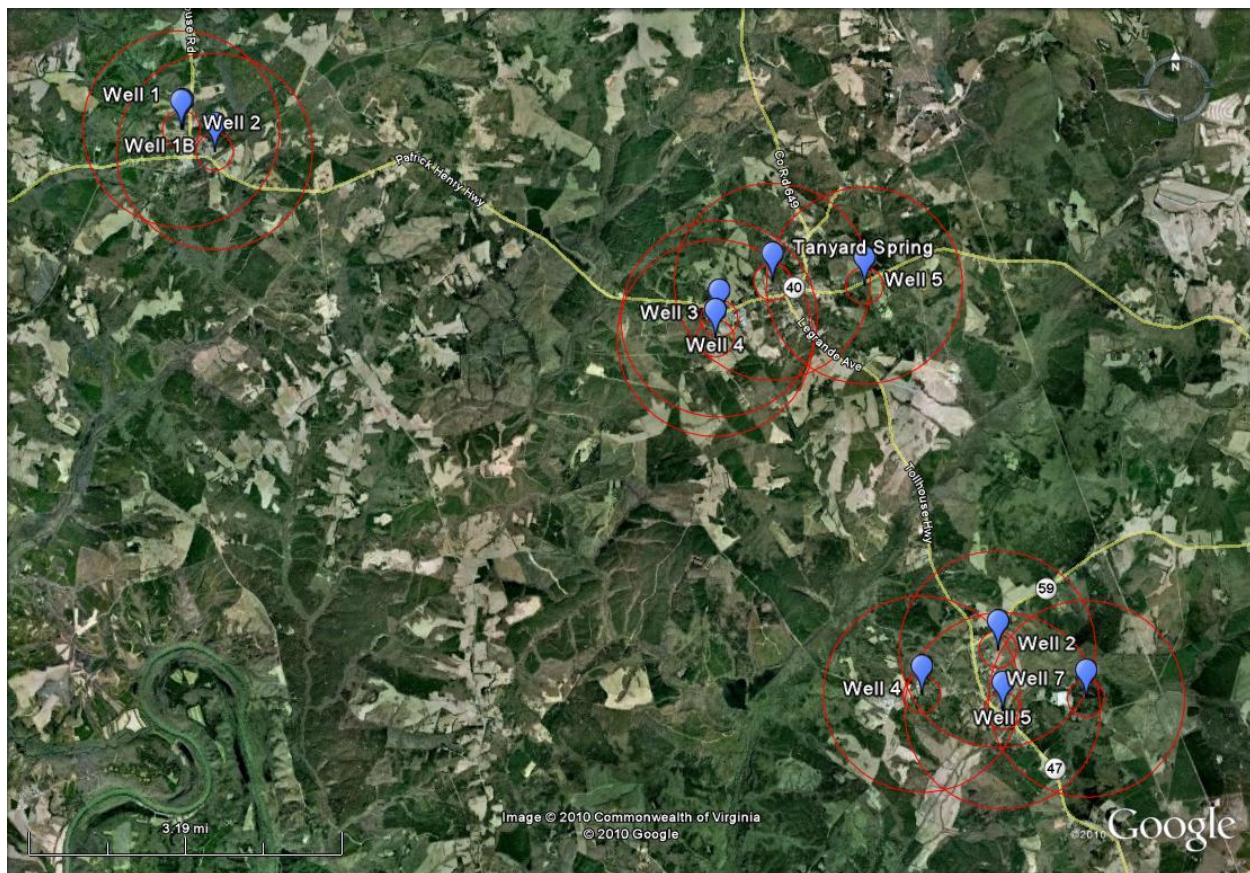


Figure 11: VDH SWAP Radii

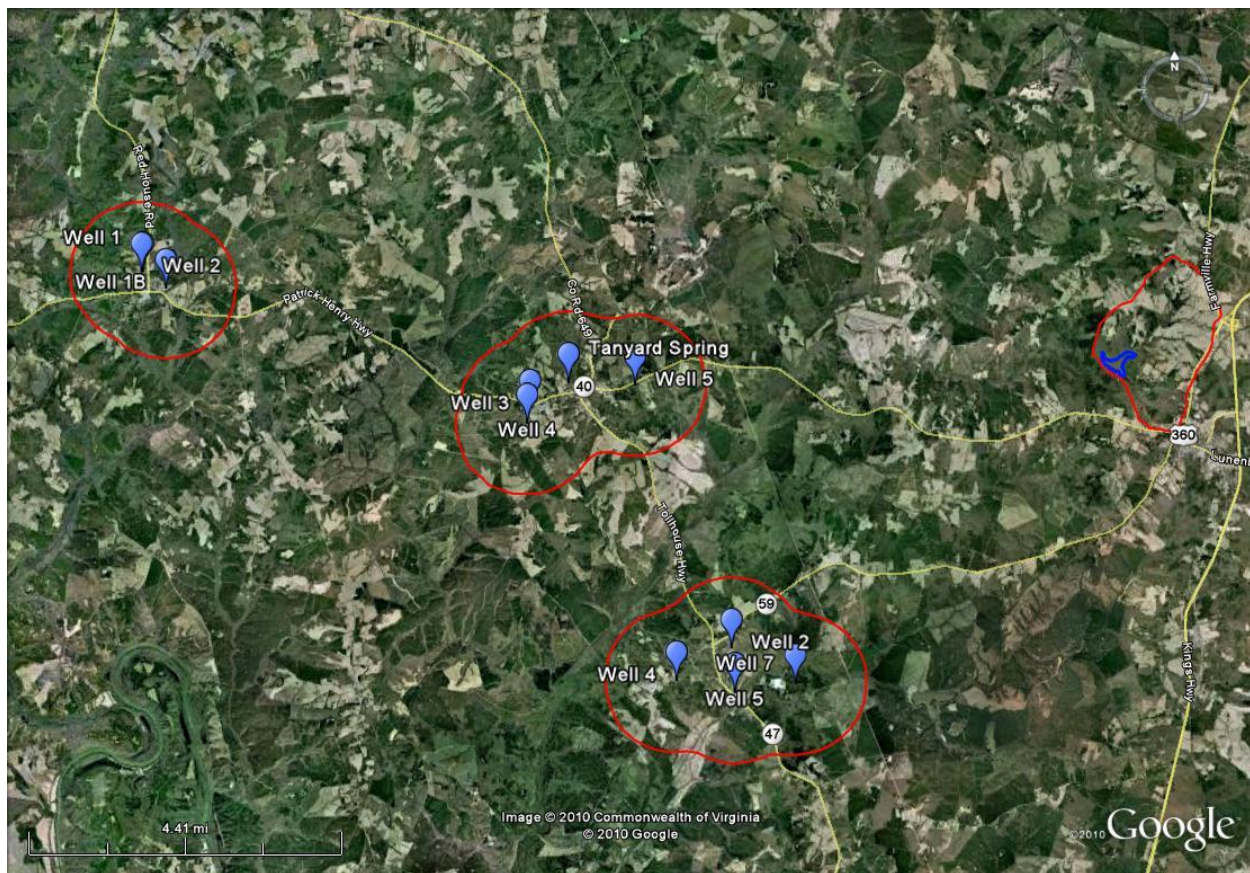


Figure 12: Map showing source water protection areas in Charlotte County, the red lines indicate source water protection areas

5.0 Contaminant Source Inventory

5.1 Types of Potential Contaminants

Residential

Residential contamination threats to surface or ground water, if taken on a case-by-case basis, are normally less than other land use contamination threats, yet they must not be overlooked. Most citizens are unaware of the effects of numerous potential contaminants stored, used, and disposed of from residences.

Potential contaminants include: household chemicals, on-site septic systems, automotive products, lawn/garden chemicals, paints/solvents, abandoned wells, and fuel storage systems. There are a number of residential contamination threats within the well-head protection zones in Charlotte County. Therefore, these threats will be heavily focused upon in the actions portion of this plan.

Agricultural

Improperly applied chemicals such as pesticides, fungicides, manure and fertilizers can leach through the soil into the ground water or runoff into streams and can present a contamination threat to drinking water supplies. When stored in containers, there is the potential for leaks from the storage area into the ground.

Industrial

Industrial operations commonly use toxic substances as part of manufacturing, warehousing, and/or distribution. Materials such as chemicals, petroleum, cleaning supplies, machinery, metals, electronic products, asphalt, and others pose a potential threat to the water supply and must be managed.

Commercial

Many commercial operations use toxic and hazardous materials in their processes.

Examples include: auto repair shops, gas stations, road maintenance depots, de-icing operations, boat yards, railroad tracks and yards, construction areas, dry cleaners, Laundromats, medical institutions, research laboratories, photography establishments, and printers.

The storage, use, and disposal of chemicals required by these operations can pose a potential threat to water since even small amounts of the hazardous materials can contaminate large amounts of surface or ground water. Storing quantities of the materials can also create a serious problem if they are not contained and stored properly. Leaks and spills from storage tanks and pipes can contaminate water, rendering the water unfit for consumption.

There are many commercial facilities in the well head protection area. A few of these facilities are in very close proximity to public supplies. These facilities will be a focus of the actions portion of the plan.

Waste Management

Disposal of wastes must be handled carefully to prevent contamination of water. Older landfills in particular can significantly threaten ground water. Leachate is produced from precipitation or other moisture seeping through waste to the base of the landfill, taking with it soluble materials. In unlined landfills, substances in the leachate can percolate through the soil and contaminate aquifers below the landfill. Hazardous waste management is an even more difficult problem since the materials to be handled pose a greater threat. In lined landfills, reliance is placed on the liner not failing after a number of years. Thought must be given to future preventative measures and contingency plans in case of failure.

Storm Water

The need to manage storm water is created by increased land development. Impervious surfaces prevent rain from soaking into the soil and allow pollutants to accumulate. Storm water management, which has only been a subject of concern for the past ten to fifteen years, focuses on controlling the volume and peak discharge rate which increase dramatically when impervious surfaces cover an area. Concern also needs to be given to potential impacts on surface and ground water.

Transportation Routes

Chemicals from accidental spills are often diluted with water which potentially washes the chemicals into the soil or nearby surface water, increasing the potential for contamination. Oil spills can create plumes that travel with ground water flow for long distances. Additionally, de-icing compounds used on transportation routes can contaminate water.

Non-Point Sources

Non-point sources are described as dispersed contamination from many sources such as soil erosion, on-lot septic systems, stormwater discharges, agricultural activities, and pollution associated with resource extraction and silviculture. The most significant contamination associated with non-point sources is nitrates associated with the use of manure, fertilizer, and pesticides which drain into streams and infiltrate into ground water. Household hazardous and commercial/industrial waste (e.g. ammonia, chlorides, paint, paint thinners, waste oil, antifreeze, solvents, etc.), which are sometimes discharged into on-lot septic systems, are also sources of non-point pollution.

5.2 Maps of Potential Sources of Contamination

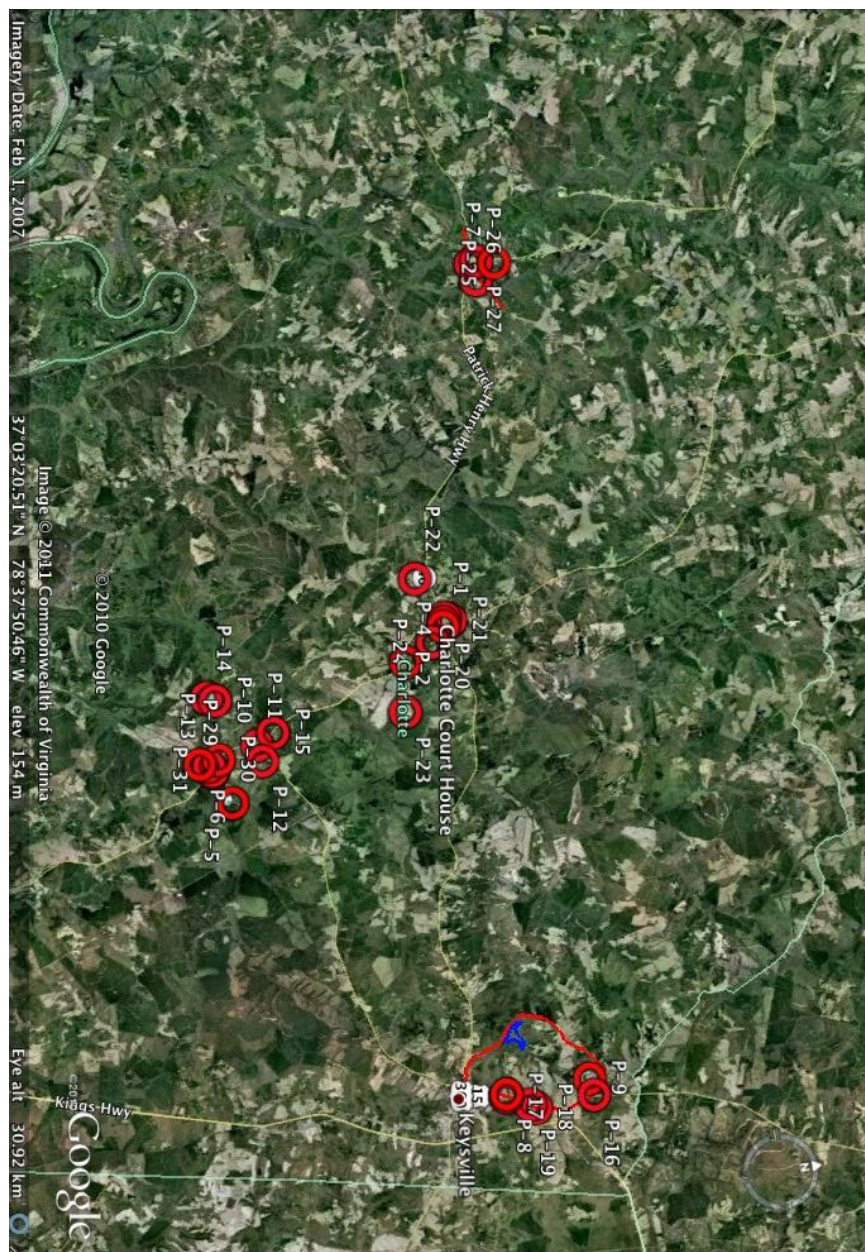


Figure 13: Potential Sources of Contamination in Charlotte County

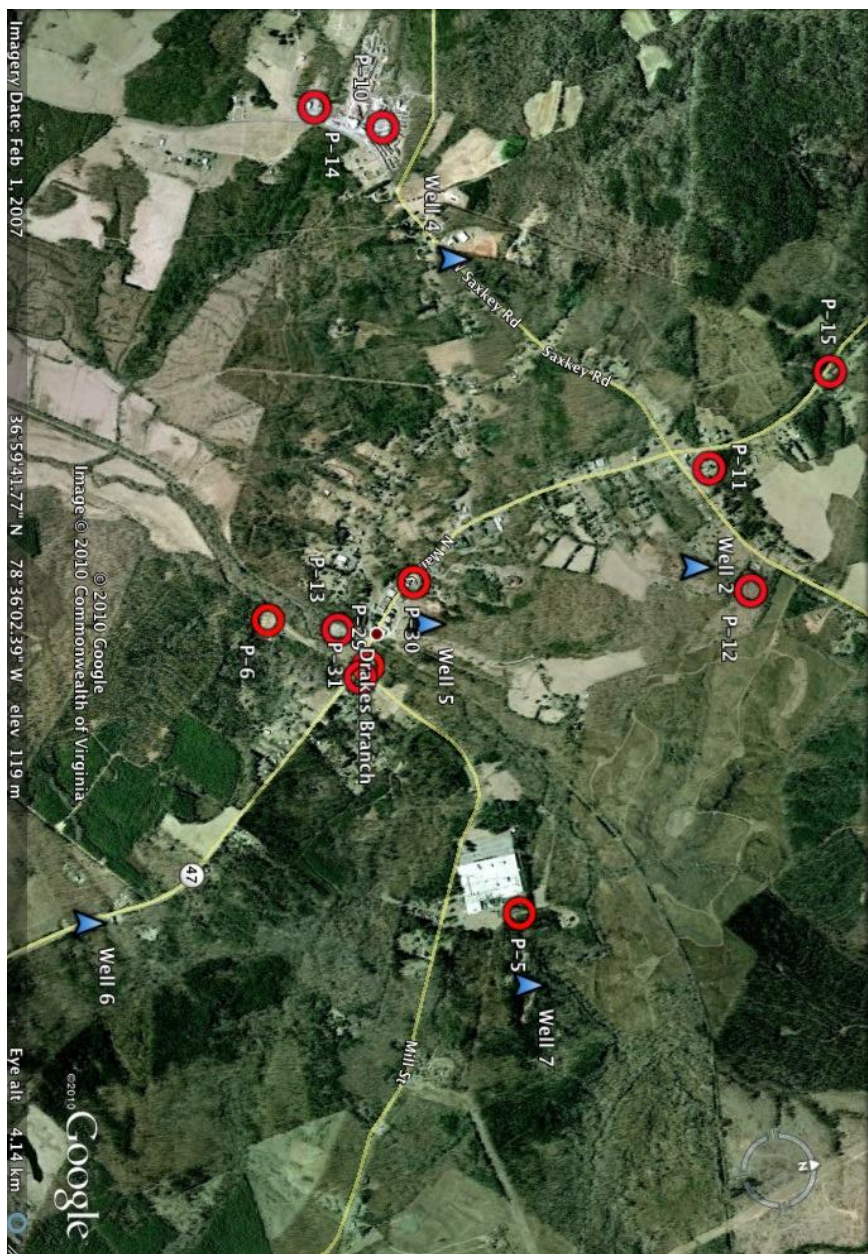


Figure 14: Potential Sources of Contamination in Drakes Branch

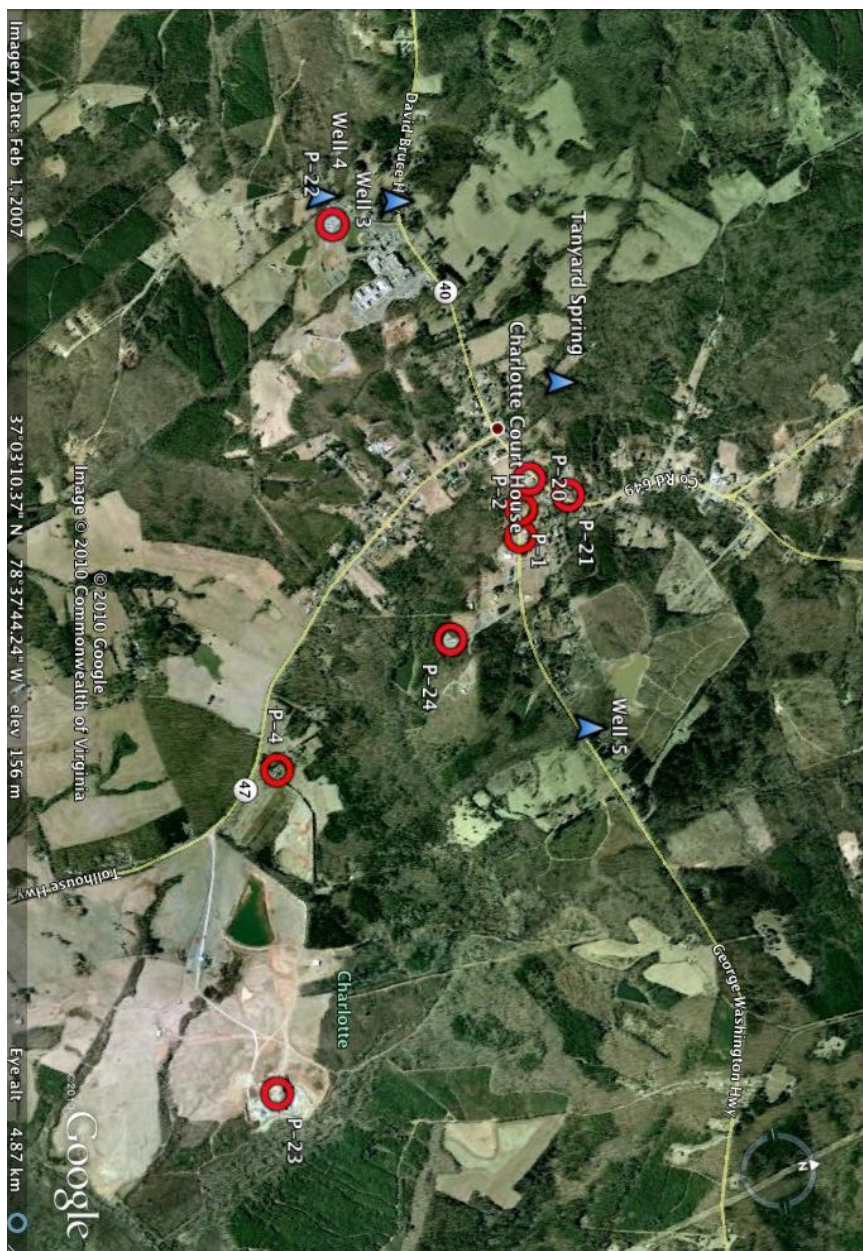


Figure 15: Potential Sources of Contamination in Charlotte Court House

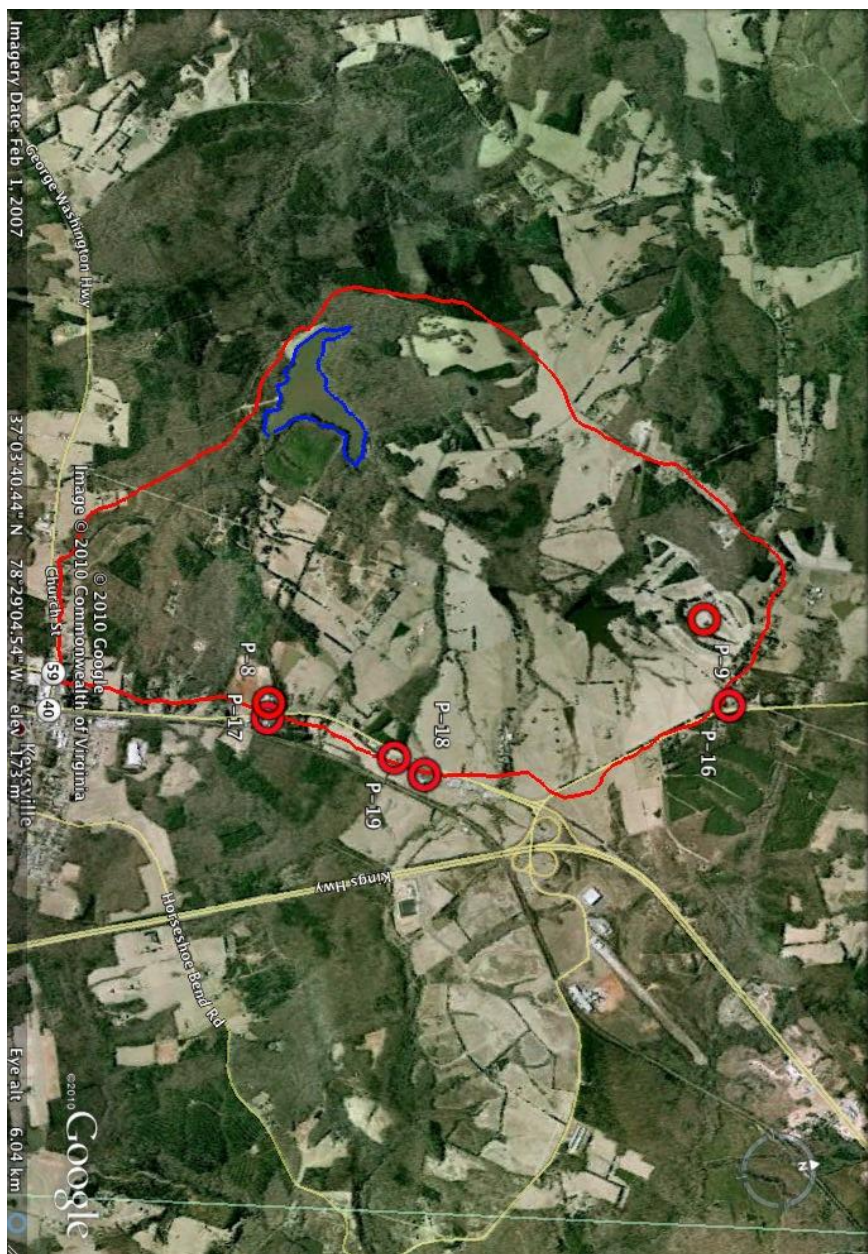


Figure 16: Potential Sources of Contamination in Keysville

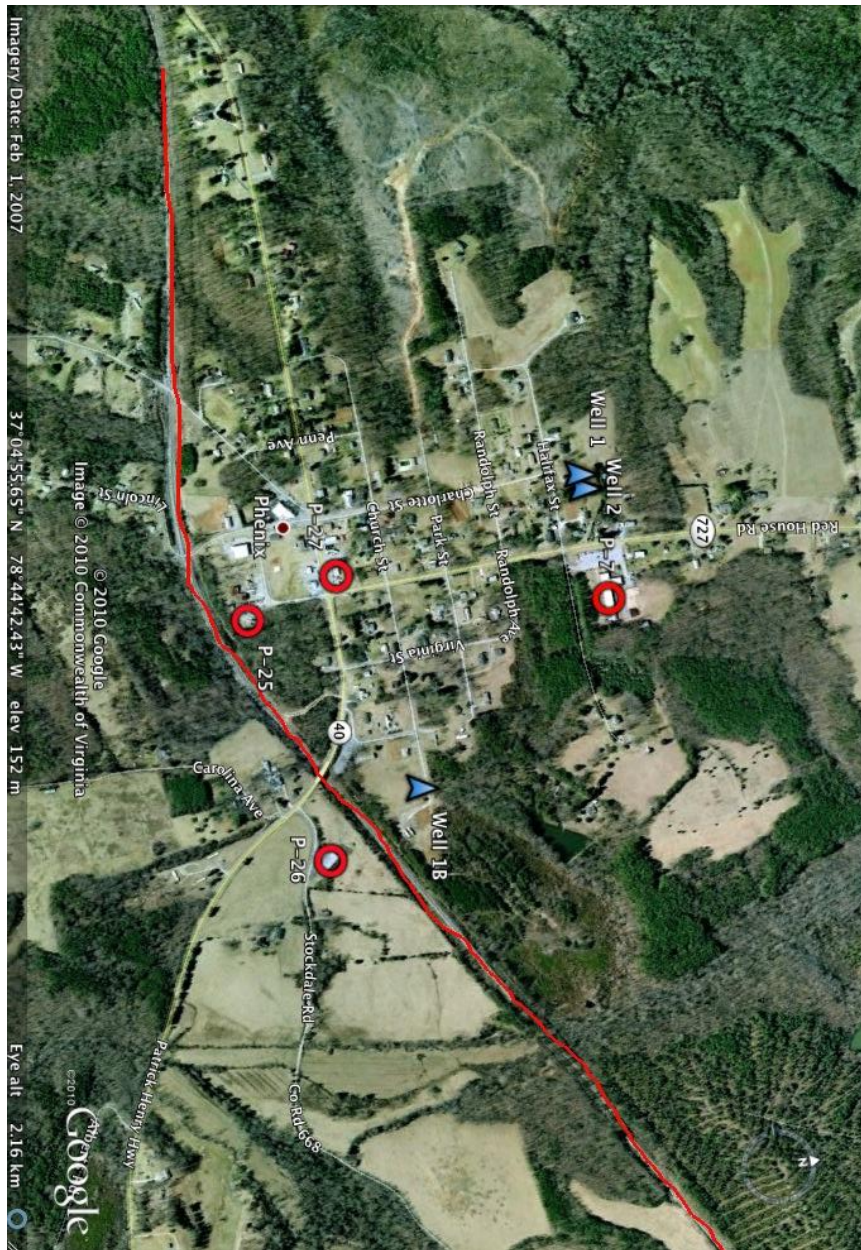


Figure 17: Potential Sources of Contamination in Phenix

5.3 Table of Potential Sources of Contamination

The following table identifies potential sources of contamination in the wellhead protection areas in Charlotte County. Only sources of primary concern are mapped and listed here, land use concerns were left out.

Map ID	Type of Potential Contaminant
1	Body Shop
2	Maintenance Department
4	Maintenance Department
5	Textile Factory
6	Sewage Treatment Facility
7	Maintenance Department
8	Car Wash
9	Golf Course
10	Mill
11	Auto Repair
12	Salvage Yard
13	Trash Collection
14	Storage Tank
15	Sewage Pump
16	Abandoned Gas Station
17	Fueling Station
18	Auto Repair
19	Old Auto Repair Shop
20	Gas Station
21	Gas Station
22	Bus Shop
23	Quarry
24	Trash Collection
25	Trash Collection
26	Manufacturing
27	Gas Station
28-Line	Railroad Tracks
29	Car Wash
30	Gas Station
31	Gas Station

Table 2: Table of Potential Source of Contamination

6.0 Source Water Protection Priority Strategy

The following priority strategy was developed with the steering committee. The many unique qualities of Charlotte County were taken into consideration to develop a strategy that would best suit the needs and desires of the county.

The first priority at the completion of this plan will be to address residential and commercial concerns. There are many private septic systems in the well head protection areas. There are also likely many abandoned wells in areas that are now served by the public service authorities. Along with proper disposal of household chemicals, these problems are also some of the easiest to remedy with adequate education and outreach.

The commercial concerns that need to be addressed quickly are related to gas stations and other potentially hazardous commercial operations that are located in very close proximity to public service wells. Again, simply educating the owners of such establishments about what they can do to help insure they do not contaminate their water supplies could help prevent a very costly spill in the future.

Industrial, agricultural, and road contaminants were deemed to be lesser concerns in Charlotte County. Industrial activity in the area is limited and therefore, is not a major contributor to ground water contamination. While outreach will be conducted to farmers in order to educate them about ways their operations can produce a lower impact, it is not of primary concern to the committee at this time. Contamination coming from road spills is also a low priority at this time. There are no major transportation routes going through the county and therefore spills are not a problem faced on a regular basis. Proper procedure regarding spills will also be covered in the contingency plan.

7.0 Source Water Protection Measures

7.1 Strategy Overview

The steering committee has determined that the majority of the threats to Charlotte County source water can be addressed most effectively through public outreach and education. The generally low amount of industrialization means that a great deal of the control over ground water quality rests in the hands of its citizens. Through innovative and exhaustive methods the steering committee plans to attempt to motivate citizens to do what they can to help protect their groundwater.

The strategy to be implemented is one of a multifaceted public outreach campaign. The committee believes the best way to get this message heard is to use as many methods as possible, utilizing technology as well as Charlotte County's unique attributes. It is critical to make the message of this plan available by as many means as possible. The message of ground water stewardship and conservation must be easy to access.

A message that will be present in every effort made to reach the public will be that their actions will affect not only the quality of their groundwater, but the quality of their neighbors' groundwater as well. Environmental responsibility and stewardship will also be key aspects of public outreach. The steering committee believes that if the outreach activities are aimed towards citizens' love of their community, the beauty of their surroundings, and their feelings of responsibility, that they will be successful.

Newspapers

Newspapers are still an effective means of communication and education, especially in small towns like those in Charlotte County. Therefore, this resource will be utilized as much as possible. The paper will be used to keep the public abreast of the activities: classes, meetings, etc., associated with the plan. Announcements will always be posted in the local newspaper. In addition, the newspaper is to be used as a primary tool for education. A series of articles will be published in the paper with a frequency to be determined, that will describe groundwater issues and what the public can do to help. Each of these articles will focus on a different issue, such as septic system management or proper management of household chemicals. The series of articles will culminate in a newspaper feature and participation in the local county festival. This will be an excellent opportunity for source water outreach.

Internet

The internet is a powerful educational tool that cannot be left out of a public outreach campaign in today's world. It is essential that this resource be used to its utmost potential in this plan. In order to utilize the internet, a source water protection webpage will be created on Charlotte County's website. This webpage will be host to information specific to Charlotte County's source water protection plan, such as maps, potential contamination sources, and descriptions of problems unique to Charlotte County. It will also feature guidelines for proper

stewardship and conservation of ground water in Charlotte County. Finally, it will link to outside sources of information such as the Environmental Protection Agency and the Department of Health. These links will direct people not only to further information, but also to documents that can be printed out and distributed wherever they see fit.

Mailings

Another effective means of distributing information is direct mailings to residents. While the availability of funds will determine the size of such a mailing, it could be an effective way of getting information to people who would not otherwise receive it. This mailing will include a summary of the source water protection plan in order to convey the importance of protecting groundwater, as well as instructions detailing simple ways to help protect drinking water. For example, such a mailing would contain information about properly managing a septic system, household chemicals, and abandoned wells. This mailing will also act as a way to advertise the existence of the source water protection website.



Example of educational media to be distributed to the public

Classes

While printed or posted information is a useful tool for education, there is no substitute for time spent in a classroom. In addition to the event that will follow the newspaper article series, classes will be offered periodically in order to educate citizens as well as business people and farmers about the ways they can protect their groundwater. Examples are classes on alternative fertilizers or proper storage and disposal of hazardous chemicals.

Cooperation

Cooperation is something that will be emphasized in all aspects of education regarding source water. When one person takes action to protect their source water they are taking actions to protect the source water of their neighbors. This is also true of organizations. Therefore, efforts will be made whenever possible to tie the efforts of this plan in with the efforts of other organizations with similar goals. For example, if an organization schedules a hazardous waste disposal day this information would be posted on the source water website as well as advertised in any meetings or classes put on by the steering committee.

Public Displays

Finally, educational materials will be made available in public places to increase awareness of source water issues. Businesses and public offices throughout town will be encouraged to reserve space for source water educational materials in order to help protect their public water supplies.

There are a number of important issues that this strategy intends to address. In the next section is a list with each issue of concern and how the measures above will address it.

7.2 Actions to Target Issues of Concern

Septic Systems

- Newspaper article about correct maintenance, location
- Pamphlet mailing
- Hands-on demonstration and pamphlet distribution at the annual county festival
- Guidelines posted on website
- Pamphlets available for local businesses

Abandoned Wells

- Newspaper article about hazards and how to abandon wells properly
- Information in mailings and distributed at the annual county festival
- Guidelines posted on website

Household Chemicals/Fertilizers

- Newspaper article about hazards, alternatives, and correct disposal
- Information in mailing and distributed at the annual county festival
- Guidelines posted on county website
- Coordination with bulk pick up day
- Pamphlets available for local businesses

Underground Storage Tanks

- Newspaper article about hazards, proper maintenance, and funds available for removal
- Information in mailing and distributed at the annual county festival
- Information posted on website about hazards and sources of funds for tank removal
- Known remaining tanks plotted on potential contaminant map

Above Ground Storage Tanks

- Information posted on website
- Mentioned in article about underground storage tanks in newspaper

Land Use

- Newspaper article about repercussions of irresponsible land use decisions
- Information available on website
- Steering Committee will keep abreast of new land acquisitions

Conservation

- Newspaper article about importance of conservation & steps to take
- Information available on website
- Information included in mailing
- Literature available for display in local businesses

Water Quality Monitoring

- Information included in newspaper article about importance of monitoring private wells
- Steering committee will keep abreast of PSA quality results
- Information about sampling available on website

Storm Water

- Newspaper article about storm water management

Livestock Grazing

- Newspaper article about farming issues
- Information located in appropriate businesses in Charlotte County
- Information available on website

Farming

- Newspaper article about farming issues, including alternative fertilizers
- Organize a class for farmers on the benefits of alternative farming with either Virginia Tech or the Soil and Water Conservation District
- Information available in appropriate businesses in Charlotte County
- Information available on website

Transportation

- Ensure proper training of emergency responders for spill response

8.0 Contingency Plan

Contingency Plan

Source Water/Wellhead Protection Contingency Plan for Providing Alternative Drinking Water Supplies

CONTENTS

Section 1	PURPOSE AND AUTHORITY FOR THE CONTINGENCY PLAN
Section 2	SPILL RESPONSE
Section 3	ALTERNATIVE WATER SUPPLY OPTIONS
Section 4	PRIORITY WATER USERS AND CONSERVATION MEASURES
Section 5	NOTIFICATION ROSTER, PHONE NUMBERS, AND PLAN DISTRIBUTION
Section 6	PUBLIC EDUCATION/MEDIA RELATIONS
Section 7	EVENT AND ACTION LOG
Appendices	A. TYPICAL BOIL WATER NOTICE B. WATER CONSERVATION FLIER FOR COPYING C. REFERENCES

Section 1 PURPOSE AND AUTHORITY FOR THE CONTINGENCY PLAN

The purpose of this contingency plan is to establish and to keep up to date the procedures necessary to utilize alternative water supply sources in the event of the contamination or loss of the existing sources.

The plan was produced as part of the five step planning process as developed by the U.S. Environmental Protection Agency and the National Rural Water Association under the Wellhead Protection Program of the Safe Drinking Water Act.

A Comprehensive Source Water Protection plan includes the following 5 steps:

- | | |
|--------|--|
| Step 1 | Select a planning team |
| Step 2 | Define the wellhead protection area |
| Step 3 | Identify sources of contamination |
| Step 4 | Manage sources of contamination |
| Step 5 | Plan for the future and develop a contingency plan |

This plan is designed to meet the requirements as specified in Step 5. It is not designed to fulfill the requirements of a more comprehensive public water supply emergency operating plan that would be designed to deal with a wide array of emergencies beyond the contamination of existing sources.

Section 2 SPILL RESPONSE

In the case of a spill near one of the PSA wells, the PSA will first take the well off line. After this they will call emergency response units in Charlotte County (Charlotte Court House, Drakes Branch, Keysville, Phenix etc.) to help clean up the spill. The water from the well will be tested rigorously before putting it back on line.

Section 3 ALTERNATIVE WATER SUPPLY OPTIONS

- A. Procedure for Evaluating Alternative Water Supply Options:
Water levels are monitored on all wells and reservoirs. If those levels drop to a critical level the state primacy agency will be contacted.
- B. Alternative Water Supply Options:
- Existing System Sources
If an alternate water supply is needed, all towns with the exception of Phenix, have an emergency backup supply that could be brought on line. Drakes Branch has two emergency wells as well as a reservoir that could be tapped into, Charlotte Court House has a spring, and Keysville has two emergency wells.

Source Management

The water from all on line wells and reservoirs are blended in each of the current systems. In the event of an emergency this water can also be blended with water from a contract hauler.

Conservation

The public will be notified and encouraged to conserve water if needed.

Connections to Other Public Water Systems

Each town could consider connecting to other towns in the county in emergencies. However, due to the distance between towns and the expense of connecting multiple systems, this option would require an extensive feasibility study and implementation would involve a significant amount of time and funding.

Emergency Treatment

(chlorination of contaminated wells)

Point of Use Treatment

(i.e. faucet filters)

Boiled Water

Boiled water notices will be issued in the event of an emergency.

Point of Entry Treatment

(i.e. whole house water treatment units)

Bottled Water

Use of bottled water will be encouraged if needed.

Tank Trucks

Tank trucks will be utilized if needed.

Section 4

PRIORITY WATER USERS AND CONSERVATION MEASURES

A. List of major water users and sensitive water users*

Hospitals/EMS: Charlotte County Rescue Squad

Nursing Homes: Wayland Nursing & Rehabilitation

Schools: Phenix Elementary School, Early Learning Center, Thomas Jefferson Center, Central Middle School, Randolph-Henry High School

Fire Department: Phenix Volunteer Fire Dept., Keysville Volunteer Fire Dept., Drakes Branch Volunteer Fire Dept., Charlotte Court House Volunteer Fire Dept.

Other: Charlotte County Jail

*Commercial and industrial water customers that are considered major users are not identified in this contingency plan. Towns will address specific needs of these customers as circumstances require.

B. Select conservation measures to be implemented in the event of the need to reduce demand.

Curtail use by larger users

Large users will be contacted directly in the event they will need to curtail use.

Mandatory water conservation measures

The media contacts in this plan will be used to notify the public of mandatory water conservation measures.

Public education

The media contacts in this plan will be used to notify the public of mandatory water conservation measures they can take.

Section 5
NOTIFICATION ROSTER, PHONE NUMBERS, AND PLAN DISTRIBUTION

Organization	Contact Person	Received Copy of Plan Y/N*	Work Phone	24 Hour Emergency Phone
Water System Management and <u>Employees</u>				
Charlotte Court House	Chris McCarty, Water Operator		434-542-5781	In the case of an afterhours emergency, contact the town office's emergency number listed below.
Drakes Branch	Larry Sherrill, Water Operator		434-568-3091	
Keysville	Robbie Jones, Water Operator		434-736-9551	
Phenix	Larry Sherrill, Water Operator		434-542-4123	
Community Offices and Officials				
Charlotte Court House	Holly Skelton, Clerk Stephen Walker, Mayor		434-542-5781	434-542-5781
Drakes Branch	Mary Sands, Clerk Denise Pridgen, Mayor		434-568-3091	434-568-6701
Keysville	Sharon Layne, Clerk Jimmy Ramsey, Mayor		434-736-9551	434-736-8200
Phenix	Barbara Copal, Clerk Franklin Dodd, Mayor		434-542-4123	434-542-5239
Sheriff's Dept.	Thomas Jones, Sheriff		434-542-5141	911

<u>Fire</u> Charlotte Court House Drakes Branch Keysville Phenix	Ed Stanley, Chief Butch Hamlett, Chief Lynn Duffey, Chief Walt Bailey, Chief		434-542-5781 434-568-2109 434-736-9727 434-542-5523	911
State Primacy Agency	Department of Health(ODW) Wendy Roden		276-676-5650	
State Official	Bob McDonnell, Governor		804-786-2211	
County Official	Russell B. Clark, County Administrator		434-542-5117	
Schools	Melody Hackney, School Superintendent		434-542-5151	
Power Companies	Dominion Virginia Southside Electric Mecklenburg Electric			
Telephone Company				
Key Vendors				
Hospitals	Southside Community (Farmville) Halifax Regional (South Boston)		434-392-8811 434-517-3100	911
Rescue Squad	Ray Mason, Captain		434-736-0087	911
State Rural Water Association	Virginia Rural Water Association		540-261-7178	
Nearby Water Systems				
Others				

Section 6

PUBLIC EDUCATION / MEDIA RELATIONS

- A. Each town will appoint a primary spokesperson for the media and public comment in the event of a contamination incident. Russell B. Clark, County Administrator and Emergency Services Coordinator, serves as the spokesman for Charlotte County.

- B. Information checklist to be conveyed to the public and media

Name of water system _____

Contaminant of concern and date _____

Source of contamination _____

Public health hazard _____

Steps the public can take _____

Steps the water system is taking _____

Other information _____

- C. Media Contacts

- Newspaper Name: Charlotte Gazette
 Address: PO Box 214, Drakes Branch, VA, 23937
 Phone: 434- 568-3341

- Newspaper Name: Southside Messenger
 Address: 490 Railroad Avenue, Keysville, VA 23947
 Phone: 434-736-0152

- Television Name: WSET 13
 Address: 2320 Langhorne Road, Lynchburg, VA 24501
 Phone: 434-528-1313

- Radio Name: WFLO
 Address: PO Box 367, Farmville, VA 23901
 Phone: 434-392-4195

- Other (list) Name: Charlotte County Website
 Address: www.charlotteva.com
 Phone: 434-542-5117

Section 7

EVENT AND ACTION LOG

Type of Event to be Logged _____

Date _____

Time _____

Action Taken _____

Evaluation _____

Costs (*system's own forces*)

- Labor _____
- Equipment _____
- Materials _____

Contract Services _____

APPENDICES

A. REFERENCES

1. GUIDE TO GROUND WATER SUPPLY CONTINGENCY PLANNING FOR LOCAL AND STATE GOVERNMENTS, USEPA WASHINGTON, D.C. (MAY, 1990). AVAILABLE FROM ERIC CLEARINGHOUSE, COLUMBUS, OH. 1-800-276-0462 (PUB #G-647).
2. WELLHEAD PROTECTION: A GUIDE FOR SMALL COMMUNITIES. USEPA WASHINGTON, D.C. (FEB., 1993) (PUB #EPA/625/R-93/002).
3. EMERGENCY MANAGEMENT MANUAL FOR RURAL WATER ASSOCIATIONS AND UTILITIES, NATIONAL RURAL WATER ASSOCIATION, DUNCAN, OK. (1996).
4. EMERGENCY OPERATIONS PLANNING MANUAL, MISSOURI RURAL WATER ASSOCIATION, COLUMBIA, MO.
5. CONTINGENCY PLAN GUIDE WATER DELIVERY, OKLAHOMA RURAL WATER ASSOCIATION, OKLAHOMA CITY, OK. (1992).
6. AQUIFER SUSCEPTIBILITY IN VIRGINIA, 1998-2000: WATER-RESOURCES INVESTIGATIONS REPORT 03-4278. NELMS, D.L, HARLOW, G.E., PLUMMER, L.N., BUSENBERG, E., 2000.

B. TYPICAL BOIL WATER NOTICE

NOTICE TO CUSTOMERS OF (INSERT TOWN NAME) WATER SYSTEM

FOR IMMEDIATE RELEASE – (INSERT DATE)

BOIL YOUR TAP WATER

Failure to follow this advisory could result in stomach or intestinal illness.

The Virginia Department of Health in conjunction with the Charlotte County Health Department, are advising customers of the (INSERT NAME) water system to use boiled tap water or bottled water for drinking and cooking purposes as a safety precaution. This precaution is necessary due to (INSERT REASON).

DO NOT DRINK TAP WATER WITHOUT BOILING IT FIRST

Boiled or bottled water should be used for drinking, beverage and food preparation, and making ice **until further notice**. Boiling kills bacteria and other organisms in the water. Boiling is the preferred method to assure that the tap water is safe to drink. Bring all tap water to a rolling boil, **let it boil for one minute**, and let it cool before using, or use bottled water.

If you cannot boil your tap water:

- An alternative method of purification for residents that do not have gas or electricity available is to use liquid household bleach to disinfect water. The bleach product should be recently purchased, free of additives and scents, and should contain a hypochlorite solution of at least 5.25%. Public health officials recommend adding 8 drops of bleach (about ¼ teaspoon) to each gallon of water. The water should be stirred and allowed to stand for at least 30 minutes before use.
- Water purification tablets may also be used by following the manufacturer's instructions.

We will inform you when you no longer need to boil your water. We anticipate resolving the problem within (INSERT TIME PERIOD.) However, the Virginia Department of Health requires that two consecutive days of successful bacteriological testing be completed prior to lifting the boil water notice. Therefore, we anticipate that the boil water notice will not be lifted for at least (INSERT TIME PERIOD.)

There is no need to boil water for bathing or showering. Adults, teens, and older children, can shower or bathe, though they should avoid getting water in the mouth or swallowing the water. Infants and toddlers should be sponge bathed. No special soaps are necessary.

Care should be taken to prevent water from getting into deep, open or post-surgical wounds. Consult your physician or health care provider for wound care instructions.

More information on boiling water, using water for bathing, washing dishes and other household purposes can be obtained from the Virginia Department of Health website: www.vdh.virginia.gov/weather/DrinkingWaterSafety.htm.