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2.0 EVALUATION OF EXISTING WATER SUPPLY

2.1 Existing Water Sources

The homes, businesses and other water users in the region receive water from a variety of sources including: public water systems, private wells, stream or river intakes, and reservoirs. As required by the Regulation¹, current information on existing water sources is detailed in the following sections.

A map showing the locations of the public community water systems in the region is included as Figure 2.1A. A map showing the locations of private community water systems in the region is included as Figure 2.1B.

2.1.1 Henry County

Existing water sources in Henry County include public community water systems owned by Henry County and the Henry County Public Service Authority (HCPSA) and operated by the HCPSA, as well as privately owned community water systems. The Upper Smith River Water Treatment Facility (WTF), which utilizes a stream intake on the Upper Smith River, serves approximately half of the residences in Henry County that use public drinking water. In addition, two public community water systems owned by Henry County and operated by the HCPSA are served with water purchased from the City of Martinsville. The private community water systems rely on groundwater wells for water supply. Finally, there are homes and businesses within the County that are served by individual groundwater wells. These wells are generally limited in capacity and vary in quantity throughout the year.

2.1.2 Patrick County

At the time of the study (2006-2008), Patrick County did not own or operate a public community water system utilizing groundwater. However, the County recently formed the Patrick County Public Service Authority (PCPSA) and operates a system using two groundwater wells. The PCPSA initially served approximately 206 customers with a capacity of 0.772 MGD. The WTP is currently operating at approximately 0.285 MGD. As Phase II begins development, total

¹ 9 VAC 25-780-70 requires the following information on existing water sources.

system capacity is expected to increase to approximately 0.9 MGD. Detailed information regarding the PCPSA water system will be provided in the 5-10 year update.

In addition, there are two private community water systems in Patrick County, which utilize groundwater wells as a water source. In addition, there are homes and businesses within the County that are served by individual groundwater wells. These wells are generally limited in capacity and vary in quantity throughout the year.

Figure 2.1A: Map Showing the Locations of Public Community Water Systems in the Region.

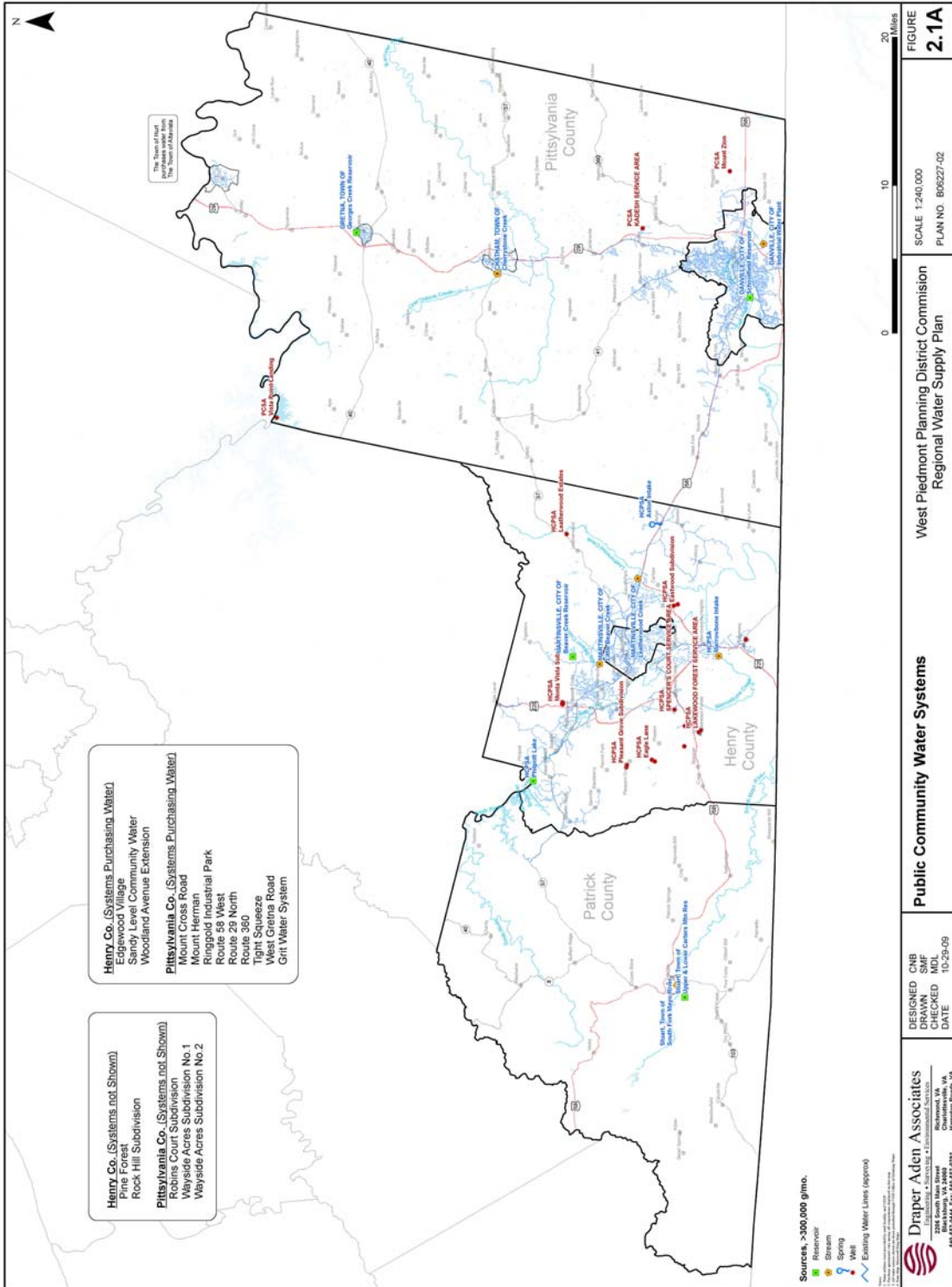
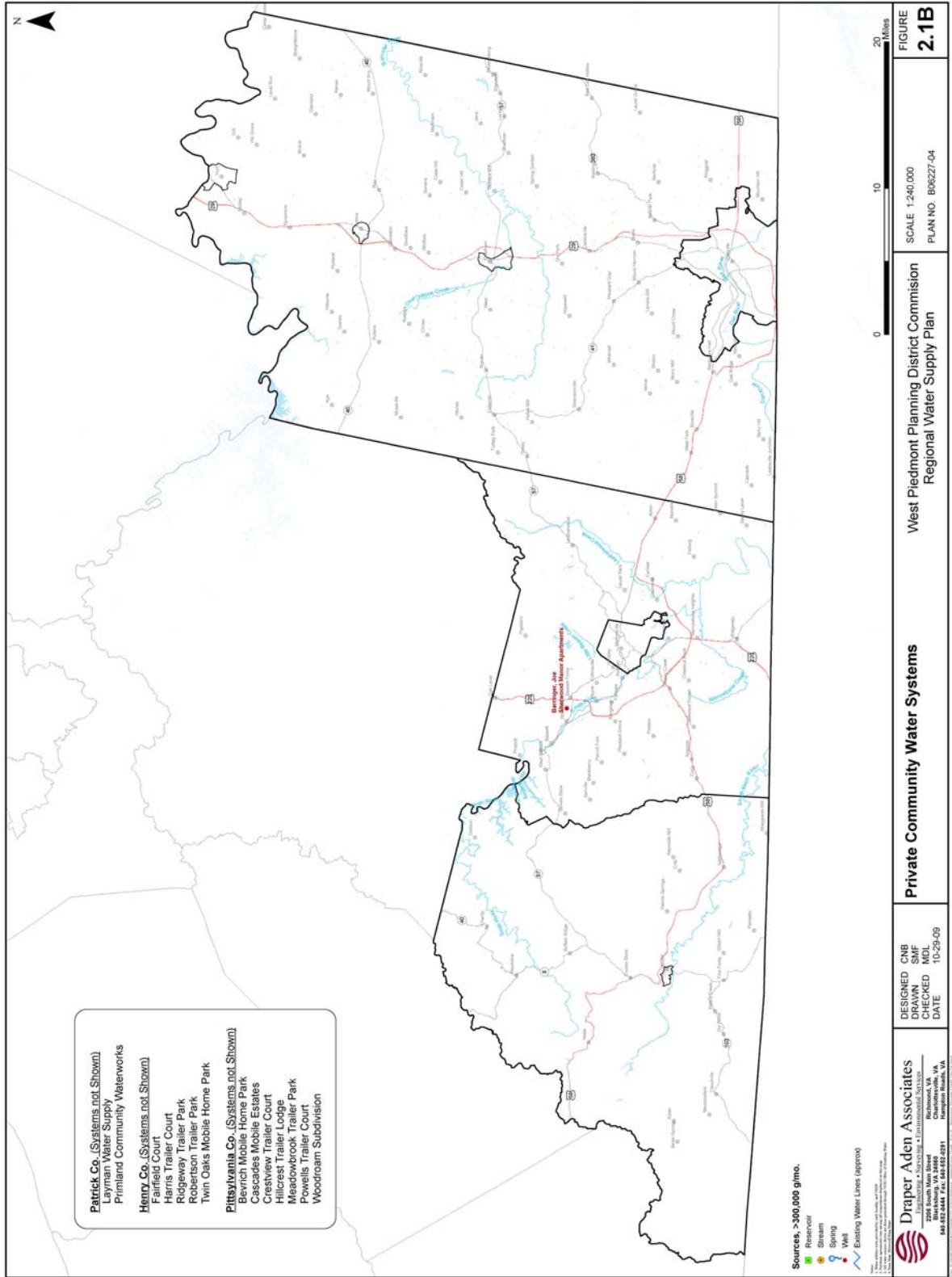


Figure 2.1B: Map Showing the Locations of Private Community Water Systems in the Region.



2.1.3 Pittsylvania County

Existing water sources in Pittsylvania County include public community water systems owned and operated by the Pittsylvania County Service Authority (PCSA), as well as privately owned community water systems. The public community water systems owned by the PCSA are served by either groundwater or with water purchased from the HCPSA, City of Danville, Town of Chatham, Town of Gretna, or Town of Hurt. In addition, six privately owned community water systems serve six mobile home parks and one subdivision. These private community water systems rely on groundwater wells for water supply. Finally, there are homes and businesses within the County that are served by individual groundwater wells. These wells are generally limited in capacity and vary in quantity throughout the year.

2.1.4 City of Danville

Existing water sources in the City of Danville include a public community water system owned and operated by the City of Danville. The City of Danville public community water system utilizes a stream intake on the Dan River. Water is supplied to the residents by the City of Danville WTP.

2.1.5 City of Martinsville

Existing water sources in the City of Martinsville include a public community water system owned and operated by the City of Martinsville. The City of Martinsville public community water system utilizes the Beaver Creek Reservoir as the primary water source and stream intakes on Leatherwood Creek and Little Beaver Creek as secondary water sources. Water is supplied to the residents by the City of Martinsville WTP.

2.1.6 Town of Chatham

Existing water sources in the Town of Chatham include a public community water system owned and operated by the Town of Chatham. The Town of Chatham public community water system utilizes a stream intake on Cherrystone Creek. Water is supplied to the residents by the Town of Chatham WTP.

2.1.7 Town of Gretna

Existing water sources in the Town of Gretna include a public community water system owned and operated by the Town of Gretna. The Town of Gretna public community water system utilizes Georges Creek Reservoir. Water is supplied to the residents by the Town of Gretna WTP.

2.1.8 Town of Hurt

Existing water sources in the Town of Hurt include a public community water system owned and operated by the Town of Hurt. The Town of Hurt public community water system purchases water from the Town of Altavista. Water is supplied to the residents by the Town of Hurt WTP.

2.1.9 Town of Ridgeway

The Town of Ridgeway does not own or operate a community water system. The Town of Ridgeway is served by water from HCPSA.

2.1.10 Town of Stuart

Existing water sources in the Town of Stuart include a public community water system owned and operated by the Town of Stuart. The Town of Stuart public community water system utilizes a stream intake on the South Mayo River. Water is supplied to the residents by the Town of Stuart WTP.

2.2 Community Water Systems Using Groundwater²

2.2.1 Henry County

Many of the community water systems in Henry County, both publicly and privately owned, rely on groundwater. The public community water systems utilizing groundwater that are owned and operated by the HCPSA include the following: Eagle Lane, Eastwood Subdivision, Leatherwood Estates, Pine Forest, Pleasant Grove Subdivision, and Rockhill Subdivision. The following community water systems that utilize groundwater that are privately owned include the following: Fairfield Court, Harris Trailer Court, Mountain Vista Village, Ridgeway Trailer Park, Robertson Trailer Park, Sherwood Apartments, and Twin Oaks Mobile Home Park.

² 9 VAC 25-780-70 B.

2.2.1.1 Eagle Lane

Eagle Lane is a public community water system owned Henry County and operated by the HCPSA. This system consists of two drilled 6 inch wells. Well No. 1 was drilled to a depth of 240 feet and cased to a depth of 51 feet. The yield is approximately 3 gpm. Well No. 2 was drilled to a depth of 300 feet and cased to a depth of 58 feet. The yield is approximately 6 gpm. Both of the wells are pumped into a 5,000 gallon hydropneumatic tank. The pH is adjusted with soda ash for corrosion control prior to entering the tank. The design capacity of the system is limited to the 13 existing residential connections.

2.2.1.2 Eastwood Subdivision

Eastwood Subdivision is a public community water system owned by Henry County and operated by the HCPSA. This system consists of two drilled 6 inch wells. Well No. 2 was drilled to a depth of 262 feet and has a yield of approximately 14 gpm. Well No. 3 was drilled to a depth of 260 feet and has an approximate yield of 75 gpm. The system also includes two booster pumps of unknown capacity as well as a 25,000 gallon horizontally mounted atmospheric type storage tank. There is also a 500 gallon hydropneumatic tank located near Well No. 2. Zinc orthophosphate is added to the water for corrosion control along with pH adjustment. A sodium hypochlorite solution is added for disinfection just before the water enters the 25,000 gallon storage tank. The design capacity of the system is 104 ERCs or 41,600 gpd.

2.2.1.3 Leatherwood Estates

Leatherwood Estates is a public community water system owned by Henry County and operated by the HCPSA. The system consists of one drilled 6 inch well. The well was drilled to a depth of 300 feet and cased to a depth of 92 feet. The yield was estimated at approximately 20 gpm. The system includes a 500 gallon hydropneumatic tank located in the well house, a 4,500 gallon atmospheric type tank, and two booster pumps. The pH is adjusted with soda ash for corrosion control and sodium hypochlorite is added to the water for disinfection. The design capacity of the system is 23 ERCs or 9,200 gpd.

2.2.1.4 Pine Forest

Pine Forest is a public community water system owned by Henry County and operated by the HCPSA. This system consists of two drilled 6 inch wells. Well No. 1 was drilled to a depth of 300 feet and cased to a depth of 61 feet. The yield is approximately 6 gpm. Well No. 9 was drilled to a depth of 300 feet and cased to a depth of 96 feet. The yield is approximately 1.5 gpm. A 1,000 gallon hydropneumatic tank is located near Well No. 1. Water is pumped to a 5,000 gallon atmospheric type storage tank. The system is also equipped with two booster pumps as well as corrosion control and disinfection systems. The pH is adjusted using soda ash for corrosion control and the water is disinfected using a hypochlorite solution. The design capacity is limited to the 18 existing residential connections.

2.2.1.5 Pleasant Grove Subdivision

The Pleasant Grove Subdivision is a public community water system owned by Henry County and operated by the HPCSA. This system consists of one 6 inch well and one 6.5-inch well. Well No. 1 was drilled to a depth of 300 feet and cased to a depth of 50 feet. The yield is approximately 13 gpm. Well No. 2 was drilled to a depth of 500 feet and cased to a depth of 89 feet. The yield is approximately 20 gpm. There is a 1,000 gallon hydropneumatic tank located near Well No. 1 and a 700 gallon hydropneumatic tank located near Well No. 2. The system also includes a 10,500 gallon atmospheric type storage tank, two booster pumps and a disinfection and pH adjustment facility (Well No. 1 only). The water from Well No. 1 is disinfected using a hypochlorite solution and the pH is adjusted using lime. The design capacity for the system is 56 ERCs or 22,400 gpd.

2.2.1.6 Rockhill Subdivision

The Rockhill Subdivision is a public community water system owned by Henry County and operated by the HCPSA. This system consists of one 6 inch drilled well. The well was drilled to a depth of 335 feet and cased to a depth of 81 feet. The yield is approximately 63 gpm. The water is pumped to a 1,500 gallon hydropneumatic tank. The pH is adjusted by addition of soda ash for corrosion control and the water is disinfected with the addition of sodium hypochlorite. The design capacity is limited to the 17 existing residential connections.

2.2.1.7 Fairfield Court

Fairfield Court is a private community water system owned by Mr. William W. Nissen, II. This system consists of one drilled 6 inch well. The well is reportedly 225 feet deep. No other well construction information was available. The water is pumped into two 80 gallon hydropneumatic tanks. The system also includes continuous disinfection with the addition of a sodium hypochlorite solution prior to entering the tanks. The design capacity is limited to the 27 existing mobile home connections.

2.2.1.8 Harris Trailer Court

Harris Trailer Court is a private community water system owned by Mr. and Mrs. Ronnie Harris. This system consists of two drilled 6 inch wells. No well construction information was available for either well. A 20 gallon hydropneumatic tank is located near Well No. 1 and a 116 gallon hydropneumatic tank is located near Well No. 2. The design capacity is limited to the 28 existing mobile home connections.

2.2.1.9 Mountain Vista Village

Mountain Vista Village is a private community water system owned by Mr. Harry S. Nolen. This system consists of two drilled wells, disinfection facilities at one well, two 15,000 gallon and one 25,000 gallon atmospheric-type storage tanks, a 1,000 gallon and a 2,000 gallon hydropneumatic tank, two booster pump stations, one transfer pump station, and approximately 3,810 linear feet of 4-inch diameter water lines and approximately 3,240 linear feet of 6-inch diameter water lines.

Well No. 1 is approximately 360 feet deep with 6-inch casing and grout to a depth of approximately 60 feet. A 48-hour yield and drawdown test was performed in June 1990. The test indicated an estimated yield of approximately 30 gpm at a drawdown of approximately 215 feet. Well No. 2 is approximately 380 feet deep with 6-inch casing and grout to a depth of approximately 50 feet. A 48-hour yield and drawdown test was performed in June 1990. The test indicated an estimated yield of approximately 58 gpm at a drawdown of 149 feet. The static water level was approximately 30 feet below the ground surface.

The design capacity is limited to 61,500 gpd, 399 persons, or 205 mobile home connections.

2.2.1.10 Ridgeway Trailer Park

Ridgeway Trailer Park is a private community water system owned by Mr. Dallas Hylton. This system consists of two 6 inch drilled wells. No well construction or yield information was available for either well. The system contains four 115 gallon hydropneumatic tanks, one booster pump and a 50,000 gallon atmospheric type storage tank. Corrosion control is accomplished with the addition of soda ash. The design capacity for the system is limited to the 57 existing mobile home connections and one existing Laundromat connection.

2.2.1.11 Robertson Trailer Park

Robertson Trailer Park is a private community water system owned by Mr. D. M. Robertson. This system consists of one 6 inch drilled well and three hydropneumatic tanks. No well construction or yield information was available. The three tanks have volumes of 32 gallons, 44 gallons and 82 gallons. The design capacity is limited to the 21 existing mobile home connections.

2.2.1.12 Sherwood Apartments

Sherwood Apartments is a private community water system owned by Eugene Lemieux. This system consists of one 6 inch drilled well. The design capacity is limited to 22 connections. No other information was available for this water system.

2.2.1.13 Twin Oaks Mobile Home Park

Twin Oaks Mobile Home Park (MHP) is a private community water system owned by Mr. William P. Davis and Mr. Keith Grindstaff. This system consists of one 6 inch drilled well. The well was drilled to an approximate depth of 240 feet and cased to a depth of 80 feet. The yield is approximately 11 gpm. The system includes a 600 gallon hydropneumatic tank, two booster pumps and a 2,162 gallon atmospheric type storage tank. The water is disinfected with the addition of a hypochlorite solution. The design capacity of the system is limited to the 29 mobile home connections or 8,800 gpd.

2.2.2 Patrick County

At the time of the study (2006-2008), Patrick County did not own a public community water system utilizing groundwater; however, the County recently formed the PCPSA. The PCPSA

operates a public community water system using two groundwater wells. Information regarding the PCPSA system will be provided in the 5-10 year update. There are two private community water systems utilizing groundwater in Patrick County: Layman Water Supply and Primland Community Waterworks. No information was available for the Primland Community Waterworks.

The Layman Water Supply is a private community water system owned by Ms. Joyce R. Layman and consists of one 6 inch drilled well. The well was drilled to a depth of 115 feet and is not grouted. No information on well yield was available. The design capacity for the system is limited to the 33 existing connections.

2.2.3 Pittsylvania County

The PCSA owns and operates five community water systems utilizing groundwater and include the following: Mount Zion, Robin Court, Vista Point Landing, Wayside Acres Subdivision No. 1, and Wayside Acres Subdivision No. 2. The following community water systems are privately owned: Bevrich MHP, Cascades Mobile Estates, Crestview Trailer Court, Hillcrest Trailer Lodge, Meadowbrook Trailer Park, Powell's Trailer Court, and Woodroam Subdivision. Each is discussed below.

2.2.3.1 Mount Zion

Mount Zion is a public community water system owned by the PCSA. This community water system consists of one drilled 6 inch well. The well was drilled to a depth of 265 feet and cased to a depth of 95 feet. No information on well yield was available. The design capacity is limited to 50 ERCs.

2.2.3.2 Robin Court Subdivision

Robin Court Subdivision is a public community water system owned by the PCSA. This community water system consists of one drilled 6 inch well. The well was drilled to a depth of 425 feet and cased to a depth of 104 feet. No information on well yield was available. The design capacity is limited to 33 ERCs.

2.2.3.3 Vista Point Landing

Vista Point Landing is a public community water system owned by the PCSA. This community water system consists of two drilled 6 inch wells. Well No. 1 was drilled to a depth of 200 feet and cased to a depth of 64 feet. Well No. 2 was drilled to a depth of 400 feet and cased to a depth of 54 feet. No information on well yield was available for either well. The design capacity is limited to 20,000 gpd.

2.2.3.4 Wayside Acres Subdivision No. 1

Wayside Acres Subdivision No.1 is a public community water system owned by the PCSA. This community water system consists of one drilled 6 inch well. The well was drilled to a depth of 270 feet. No other well construction or yield information was available. The design capacity is limited to 24 ERCs.

2.2.3.5 Wayside Acres Subdivision No. 2

Wayside Acres Subdivision No. 2 is a public community water system owned by the PCSA. This community water system consists of one drilled 6 inch well. The well was drilled to a depth of 160 feet and cased to a depth of 70 feet. No information on well yield was available. The design capacity is limited to 16 ERCs.

2.2.3.6 Bevrich MHP

Bevrich MHP is a private community water system owned by Ms. Beverley R. Richardson. This system consists of two drilled 6 inch wells. Well No. 1 was drilled to a depth of 125 feet and cased to a depth of 42 feet. The yield is approximately 25 gpm. Well No. 2 was reportedly drilled to a depth of 125 feet and cased to a depth of 45 feet. The yield is approximately 6 gpm. Water from Well No. 1 is pumped into two 85 gallon hydropneumatic tanks which have an effective storage capacity of 57 gallons. The design capacity is limited to the 43 existing mobile home connections and one existing house.

2.2.3.7 Cascades Mobile Estates

Cascades Mobile Estates is a private community water system, which serves approximately 100 people with 33 connections. No other information was available for this private community water system.

2.2.3.8 Crestview Trailer Court

Crestview Trailer Court is a private community water system owned by Mr. Paul Goodman and Mr. Gary Hall. This system consists of one drilled 6 inch well. The well was reportedly drilled to a depth of 180 feet. No other well construction information was available. The yield is approximately 14 gpm. The system contains one 21 gallon hydropneumatic storage tank with an effective storage capacity of 7 gallons. The design capacity is limited to 19 existing mobile home connections.

2.2.3.9 Hillcrest Mobile Home Community

Hillcrest Mobile Home Community is a private community water system owned by Mr. David Berry. This system consists of two drilled wells. No well construction or yield information is available for either well. The system contains one 3,000 gallon underground storage tank and one 320 gallon hydropneumatic storage tank. The design capacity is limited to the 53 existing mobile home connections.

2.2.3.10 Meadowbrook Trailer Park

Meadowbrook Trailer Park is a private community water system owned by Mr. Michael Owen. This system consists of two drilled 6 inch wells. Well No. 1 was drilled to a depth of 275 feet. No other well construction information was available for Well No. 1. The yield is approximately 30 gpm. Well No. 2 was drilled to a depth of 150 feet. No other well construction or yield information was available. The system includes two 120 gallon, one 81 gallon, and one 30 gallon hydropneumatic storage tanks. The water is disinfected with the addition of a sodium hypochlorite solution. The design capacity is limited to 50 existing mobile home connections.

2.2.3.11 Powell's Trailer Court

Powell's Trailer Court is a private community water system owned by Ms. Elsie Powell. This system consists of one drilled 6 inch well. No well construction or yield information was available. The system contains one 80 gallon hydropneumatic tank with an effective storage capacity of 27 gallons. The water is disinfected with the addition of a sodium hypochlorite solution. The design capacity is limited to 18 existing mobile home connections.

2.2.3.12 Woodroam Subdivision

Woodroam Subdivision is a private community water system owned by Petrus Environmental Services. This system consists of two drilled 6 inch wells. Well No. 1 was drilled to a depth of 320 and cased to a depth of 149 feet. The yield is approximately 12 gpm. Well No. 2 was drilled to a depth of 160 feet and cased to a depth of 60 feet. The yield is approximately 29 gpm. The system contains a 15,000 gallon atmospheric type storage tank and a 2,000 gallon hydropneumatic storage tank. A soda ash solution is added to the water for pH adjustment and an orthophosphate blend is added for corrosion control. The design capacity is limited to 73 existing residential connection.

2.2.4 City of Martinsville

The City of Martinsville does not own or operate a community water system using groundwater.

2.2.5 City of Danville

The City of Danville does not own or operate a community water system using groundwater.

2.2.6 Town of Chatham

The Town of Chatham does not own or operate a community water system using groundwater.

2.2.7 Town of Gretna

The Town of Gretna does not own or operate a community water system using groundwater.

2.2.8 Town of Hurt

The Town of Hurt does not own or operate a community water system using groundwater.

2.2.9 Town of Ridgeway

The Town of Ridgeway does not own or operate a community water system using groundwater.

2.2.10 Town of Stuart

The Town of Stuart does not own or operate a community water system using groundwater.

2.3 Community Water Systems Using Surface Water Reservoirs³

2.3.1 Henry County

Henry County and the HCPSA do not own or operate a community water system using a surface water reservoir. However, it should be noted that the Upper Smith River stream intake is approximately a mile downstream of the Philpott Reservoir; therefore, operation of the stream intake is indirectly related to maintenance and operation of Philpott Reservoir.

2.3.2 Patrick County

Patrick County does not own or operate a community water system using a surface water reservoir.

2.3.3 Pittsylvania County

Pittsylvania County and the PCSA do not own or operate a community water system using a surface water reservoir.

2.3.4 City of Martinsville

The primary source of raw water for the City of Martinsville comes from the Beaver Creek Reservoir. The reservoir provides approximately 1.3 billion gallons of total raw water storage. Based on the VDH Safe Yield of Municipal Surface Water Supply Systems in Virginia (2005), the 1985 1Q30 safe yield is 7.3 MGD without Leatherwood Creek intake and 11.0 MGD with the Leatherwood Creek intake. The City also utilizes a stream intake on Leatherwood Creek as a secondary water source, which is discussed in Section 2.4.4. In addition, the City has an intake on Little Beaver Creek, which is seldom used; however, this intake is still an option in the future if necessary.

The City of Martinsville WTP is owned by the City of Martinsville. The water system consists of conventional WTP, a clearwell, and nine atmospheric type storage tanks. Water is pumped from the reservoir through three raw water pumps driven by 100 HP motors to the City's WTP. Two of the pumps are capable of pumping 2,800 gpm and the third is capable of pumping 4,000 gpm. As raw water enters the plant, it is treated with chlorine in the form of sodium hypochlorite

³ 9 VAC 25-780-70 C.

for disinfection, alum for coagulation, lime to raise the pH and add hardness, and fluoride in the form of fluorosilicic acid. After passing through the settling basins and filters into the clearwell, the water is treated with additional chlorine, sodium hydroxide to adjust pH, and sodium hexametaphosphate to reduce pipe corrosion.

The WTP is comprised of a rapid mix chamber, four flocculators, three settling basins with detention times of 3.6 hours, and five media filters. Each of the five media filters has a surface area of 360 ft² for a total surface area of 1800 ft². The filtration rate through the filters is approximately 4gpm/ft². The water moves through the filters into the 0.45 MG clearwell. The finished water is pumped from the clearwell and into the distribution system through five high service pumps. One of these high service pumps is capable of pumping 2.0 MGD and driven by a 150 HP electric motor and four are capable of pumping 3.0 MGD and driven by 300 HP electric motors. The distribution system is comprised of eight atmospheric type storage tanks located throughout the City, booster stations, and distribution lines.

The City of Martinsville provides water to the residents and businesses within the city limits, as well as providing water to the HCPSA. The design capacity for the City of Martinsville WTP is 10 MGD.

2.3.5 City of Danville

The City of Danville does not own or operate a community water system using a surface water reservoir.

2.3.6 Town of Chatham

The Town of Chatham does not own or operate a community water system using a surface water reservoir.

2.3.7 Town of Gretna

The Town of Gretna public community water system consists of the Georges Creek Reservoir as the primary water source and the Town of Gretna WTP. The water system consists of a conventional WTP and three atmospheric type storage tanks. The raw water comes from the Georges Creek Reservoir, a 10 MG impoundment reservoir north of the WTP. The water flows by gravity through a 10 inch raw water main to the flash mix basin at the WTP. The WTP

consists of a flash mixing basin, two parallel flocculation basins, two sedimentation basins, three rapid rate filters with dual media, a circular clearwell, and three finished water pumps that deliver the finished water into the distribution system.

Polyaluminum chloride coagulant is added directly from a 55 gallon drum by chemical feed pumps into the flash mix basin. Soda ash is also added to the flash mix basin. The flash mix basin is a 314 gallon tank with a 1.2 HP mechanical mixer. The water goes from the flash mix basin into two parallel flocculation basins. Each basin is equipped with a horizontal shaft paddle style flocculator driven by a 0.75 HP motor. The detention time in the flocculation basins is approximately 49 minutes at 0.432 MGD. The water goes from the flocculation basins to two sedimentation basins.

After the water has settled in the sedimentation basins, it goes to three dual media filters. The filters contain a combination of sand and anthracite media. The total surface area of the filters is 168.5 ft². The filtration rate through the three filters is 1.8 gpm/ft². Two filter backwash pumps are provided at the plant and rated at 1000 gpm at 48 ft total dynamic head (TDH) and 750 gpm at 40 ft TDH. The water then flows into the 51,551 gallon clearwell. Lime is added to the water as it flows into the clearwell to adjust the pH. Fluoride and ortho/polyphosphate solutions are also added to the water as it flows to the clearwell. The water is chlorinated before, during, and after the water enters the WTP. A chlorine solution is added to the water as it enters the clearwell as a final disinfection of the water.

Finished water is pumped from the clearwell into the distribution system by three centrifugal finished water pumps. Two pumps are rated at 300 gpm and are driven by 40 HP electric motors. The third pump is rated at 230 gpm and is driven by a 20 HP electric motor. The water goes from the clearwell into one of three atmospheric type storage tanks. The tanks have capacities of 220,000 gallons, 250,000 gallons, and 260,000 gallons. The total effective storage of the three tanks is estimated to be 471,000 gallons.

The safe yield is 479,000 gallons and the capacity of the WTP is 432,000 gallons. With the largest pump out of service, the finished water pumps have the combined capacity of 432,000 gallons. The permit capacity of the system is 312,000 gallons until the supplemental water

source is completed. Based on the VDH Safe Yield for Municipal Surface Water Supply Systems in Virginia (2005), the 1985 1Q30 Safe Yield is 0.87 MGD.

2.3.8 Town of Hurt

The Town of Hurt does not own or operate a community water system utilizing a surface water reservoir.

2.3.9 Town of Ridgeway

The Town of Ridgeway does not own or operate a community water system utilizing a surface water reservoir.

2.3.10 Town of Stuart

The Town of Stuart does not own or operate a community water system utilizing a surface water reservoir.

2.4 Community Systems Using Stream Intakes⁴

2.4.1 Henry County

Henry County and the HCPSA owns and operates one community water system that utilizes a stream intake. The Upper Smith River WTP utilizes a stream intake on the Smith River, located approximately 3.7 miles south of the Philpott Reservoir. Henry County owns the Upper Smith River WTP, raw water pump station, and raw water intake. The HCPSA owns all other system components (e.g., water pipes, tanks, booster pump stations, etc.). The raw water flows by gravity to the pumping station, which has three 150 HP pumps. Two of these pumps can run simultaneously and have a pump capacity of up to 4.0 MGD of raw water from the river.

The WTP is comprised of a flash mixing chamber, three vertical shaft equipped flocculator basins, four rectangular settling basins operating in parallel and four dual media filters. Each of the media filters is 182 ft² with a filter at a rate of 4 gpm/ft³. As the water flows out of the filters, it goes into a 274,000 gallon clearwell. The finished water is pumped from the clearwell into nine storage tanks by three vertical turbine finished water pumps, each rated at 1,400 gpm. The nine storage tanks have a combined effective storage of 3.63 MG. There are seven booster

⁴ 9 VAC 25-780-70 D.

stations in the distribution system to move water from one storage tank to another. The entire process is monitored and can be adjusted from the main control room by a computer monitoring system.

Alum/polyaluminum chloride is added to the water as a coagulant before entering the facility. Sodium fluoride is also added to the raw water to fluoridate. During the treatment process, soda ash and lime are added to the water to adjust the pH. Finally, the filtered water is disinfected by adding chlorine, in the form of chlorine gas, from one of three chlorinators.

The design capacity for the Upper Smith River WTP is 4.0 MGD.

2.4.2 Patrick County

Patrick County does not own or operate a community water system using a stream intake.

2.4.3 Pittsylvania County

Pittsylvania County and the PCSA do not own or operate a community water system using a stream intake.

2.4.4 City of Danville

The City of Danville owns and operates a community water system which utilizes two stream intakes on the Dan River as a water source. These two stream intakes supply two WTPs that are owned and operated by the City.

One WTP is located off Gypsum Road adjacent to the Southside Wastewater Facility and produces process water for the Goodyear Tire and Rubber Company Plant and non-potable water for the Southside Wastewater Facility and Northside Wastewater Treatment Plant (WWTP). The design capacity of this industrial process WTP is 3.0 MGD; however, the City has approval to withdraw 5.0 MGD from the Dan River for this purpose.

The second WTP is the potable WTP located at the intersection of Memorial Drive and Park Avenue. The source of the raw water is the Dan River intake located just west of the Schoolfield Dam. Potassium permanganate is added to the raw water at the intake. Carbon can also be fed, if needed, at the intake. Raw water flows through two 24 inch diameter lines to raw water pumps

located in the basement of the WTP. Three raw water pumps are provided; two with variable speed controls and one with constant speed controls.

The WTP consists of a flash mixing basin, two sets of flocculators, four settling basins, two sets of declining rate filters, clearwell (used for filter backwash water only), an equalization chamber and four finished water pumps.

The following chemicals are added to the raw water as it enters the WTP: alum, lime or soda ash. Chlorine can also be added to the raw water if desired. Chlorine is typically added at the effluent end of the settling basins and after the filters to minimize the formation of disinfection byproducts. Alum is used as the coagulant. A polymer is added to the water to improve filtration. Lime, hydrofluorosilicic acid for fluoride addition, a corrosion inhibitor, and chlorine are added to the finished water as it enters the equalization chamber.

Water flows from the filters into the equalization chamber. The finished water is pumped to the two Ballou Park storage reservoirs (8.0 MG and 4.0 MG) by one or more of four finished water pumps. Pump No. 1 is a diesel driven engine to provide flow during power failures. Pump Nos. 2, 3, and 4 are used during normal operation. Two of the three pumps are variable speed pumps and one is a constant speed pump. Pump No. 2 is driven by a 450 HP electric motor and is rated at 6,100 gpm. Pump No. 3 is driven by a 500 HP electric motor and is rated at 6,250 gpm. Pump No. 4 is driven by a 700 horsepower electric motor and is rated at 9,200 gpm. The Ballou Park reservoirs can be operated independently, in series, or parallel. Both tanks have curtain baffles, each designed to provide the required disinfection for the maximum plant flow of 18.0 MGD.

The WTP can be operated as two separate plants, referred to as the North and South Plants; however, the WTP is generally operated as one plant. The North Filter Plant has a capacity of 9.6 MGD and the South Filter Plant has a capacity of 8.4 MGD for a total capacity of 18 MGD.

The distribution system has six pressures zones, one gravity and the other five pumped. The distribution system has additional storage of 4.1 MG provided in nine storage tanks, three standpipes and six elevated tanks. There are also nine booster pump stations in the system.

The City of Danville public community water system provides water to the residents and businesses within the City limits as well as providing water to the PCSA and two service connections in Caswell County, North Carolina (the Visitor Center and North Elementary School).

2.4.5 City of Martinsville

The City of Martinsville community water system's primary water source is the Beaver Creek Reservoir, which is discussed in Section 2.3.4. However, the City of Martinsville also utilizes a stream intake on Leatherwood Creek. The Leatherwood Creek intake is used as a secondary water source when Beaver Creek Reservoir is low or otherwise inoperable. In addition, the City of Martinsville has an intake on Little Beaver Creek. This intake is seldom used; however, it is still an option in the future if necessary.

2.4.6 Town of Chatham

Town of Chatham utilizes an intake on Cherrystone Creek and owns and operates one WTP. The safe yield for the Cherrystone Creek source is 4.0 MGD. In addition, there is approximately 800 acre-feet of storage upstream of intake.

Raw water flows by gravity from Cherrystone Creek to a small wet well at the raw water pump station. The pump station is equipped with two 15 HP vertical turbine pumps with the capacity of 1,000 gpm each. The WTP consists of a flash mixing basin, flocculation basin with four separate mixing compartments, three sedimentation basins, four rapid rate filters with dual media, a ground level circular clearwell adjacent to the plant, finished water pumpwell, and two finished water pumps.

Polyaluminum chloride and dry alum are added for coagulation. Soda ash and lime are added to adjust the pH, either to the raw or finished water. Sodium fluoride is added to the raw water for fluoridation. Chlorine is added to the water in the form of chlorine gas for disinfection. Finally, a blended polyphosphate is added as a corrosion inhibitor.

Water first flows into the flocculation basin where the coagulants are added and then to three sedimentation basins where the water has a retention time of up to 4 hours. The water then flows through the rapid sand filters, which contain sand and anthracite as filter media. As the water

moves through the filters, it flows into the 167,652 gallon clearwell. Water flows from the clearwell into the 13,923 gallon pumpwell. From there it is pumped into the distribution system by one of two vertical turbine pumps, each rated at 1,000 gpm.

Storage consists of three atmospheric type storage tanks located throughout the distribution system. Two of the tanks have a storage capacity of 300,000 gallons. The third tank has a storage capacity of 500,000 gallons.

The design capacity for the Town of Chatham WTP is 1.32 MGD.

2.4.7 Town of Gretna

The Town of Gretna does not own or operate a community water system utilizing a stream intake as a water source.

2.4.8 Town of Hurt

The Town of Hurt does not own or operate a community water system utilizing a stream intake as a water source.

2.4.9 Town of Ridgeway

The Town of Ridgeway does not own or operate a community water system utilizing a stream intake as a water source.

2.4.10 Town of Stuart

The Town of Stuart utilizes an intake on the South Mayo River and owns and operates one WTP. Raw water is pumped from the South Mayo River to the WTP using two 50 HP turbine pumps capable of pumping up to 522 gpm. The water is pumped through an 8 inch 4,300 ft long water main to the WTP.

Alum is added to the water as a coagulant before entering the facility. Sodium fluoride is added to the raw water to fluoridate. During the treatment process, soda ash and lime are added to the water to adjust the pH. Finally, the filtered water is disinfected by adding chlorine, in the form of chlorine gas, from one of two chlorinators.

The WTP is comprised of a flash mix basin with a vertically mounted agitator, three flocculator basins, two settling basins with a detention time of 4.2 hours, two rapid rate mixed media gravity filters containing anthracite and sand, and a 15,000 gallon clearwell. Each filter is 90 ft² and is rated at 3.0 gpm/ft². Two 30 HP vertical turbine pumps rated at 522 gpm pump water from the WTP into the distribution system. There are also two standpipes with capacities of 250,000 gallons and 305,000 gallons that provide additional finished water storage.

The design capacity for the Town of Stuart WTP is 0.78 MGD.

2.5 Amount of Ground or Surface Water Purchased from Water Supply Systems Outside the Geographic Boundaries of the Community Water System⁵

2.5.1 Henry County

2.5.1.1 Edgewood Village

Edgewood Village is a secondary water system operated by the HCPSA and is served by water purchased from the City of Martinsville. The City of Martinsville has allocated 15,000 gallons of water storage from the 1.0 MGD Pipe Street Tank for the Edgewood Village water supply. According to VDH, the estimated maximum daily allowance is 30,000 gallons purchased from the City of Martinsville.

2.5.1.2 Sandy Level Community Water System

The HCPSA purchases water from the City of Eden, North Carolina Waterworks, to serve the Sandy Level Community Water System. The water supply system consists of a water storage tank, a master meter vault and a booster station. The storage capacity is 30,120 gallons. The combined capacity of the pumps in the booster pumping station is 403 gpm. According to VDH, the HCPSA purchases up to 40,000 gpd from the City of Eden.

2.5.1.3 Woodland Avenue Extension

The Woodland Avenue Extension system is operated by the HCPSA and is served by the City of Martinsville. The system consists of 6 inch water line, 10 fire hydrants and 42 service connections. The HCPSA is allotted up to 24,000 gpd by the City of Martinsville.

⁵ 9 VAC 25-780-70 G.

2.5.2 Patrick County

Patrick County does not purchase water from water supply systems outside the geographic boundaries of the county.

2.5.3 Pittsylvania County

In 2007 the PCSA and City of Danville entered into an agreement allowing the PCSA to purchase up to 3.0 MGD to supply Mt. Cross Road, the Mount Hermon Water Supply, Ringgold Industrial Park, Route 58 West Water System, Route 29 North Water System, and Route 360 Water System. The PCSA also purchases water from the HCPSA and the towns of Chatham, Gretna, and Hurt. Each is discussed below.

2.5.3.1 Mt. Cross Road

Mt. Cross Road is owned by the PCSA and is a secondary system served by water purchased from the City of Danville. The system consists of a 6 inch water meter, 6 inch distribution pipe, and 12-inch transmission pipe. The PCSA is allotted up to 78,000 gpd by the City of Danville.

2.5.3.2 Mount Hermon Water Supply

The Mount Hermon Water Supply is owned by the PCSA and is served by water purchased from the City of Danville. The system consists of a transfer pumping station, a 408,500 gallon atmospheric type storage tank, distribution system and appurtenances. A 1.0 MG tank was added to the system in 2008. The pumping station contains two 30 HP pumps rated at 500 gpm each. The pumps have a combined capacity of approximately 726 gpm. The PCSA is allotted up to 410,000 gpd by the City of Danville.

2.5.3.3 Ringgold Industrial Park

The Ringgold Industrial Park system is owned by the PCSA and is served by water purchased from the City of Danville. The system consists of a 300,000 gallon elevated atmospheric type storage tank, one million gallon elevated atmospheric type storage tank, and a distribution system. The PCSA is allotted up to 250,000 gpd by the City of Danville.

2.5.3.4 Route 58 West Water System

The Route 58 West Water System is owned by the PCSA and is served by water purchased from the HCPSA. The PCSA is currently allotted up to 80,000 gpd by the HCPSA.

2.5.3.5 Route 29 North Water System

The Route 29 North Water System is owned by the PCSA and is served by water purchased from the City of Danville. The system consists of distribution lines, a booster pumping station, and 19,250 gallons of storage in the Piney Forest Road Radial Cone tank owned by the City of Danville. The booster pumping station has one booster pump with a capacity of 1,500 gpm. The PCSA is allotted up to 38,400 gpd by the City of Danville.

2.5.3.6 Route 360 Water System

The Route 360 Water System is owned by the PCSA and is served by water purchased from the City of Danville. No other information for this system was available.

2.5.3.7 Tightsqueeze Water System

Tightsqueeze Water System is owned by the PCSA and is served by water purchased from the Town of Chatham. No other information for this system was available.

2.5.3.8 West Gretna Road – Route 40

The West Gretna Road (Route 40) Water System is owned by the PCSA and is served by water purchased from the Town of Gretna. No other information for this system was available.

2.5.3.9 Grit Water System

The Grit Water System is owned by the PCSA and is served by water purchased from the Town of Hurt. No other information for this system was available.

2.5.4 City of Martinsville

The City of Martinsville does not purchase water from water supply systems outside the geographic boundaries of the City.

2.5.5 City of Danville

The City of Danville does not purchase water from water supply systems outside the geographic boundaries of the City.

2.5.6 Town of Chatham

The Town of Chatham does not purchase water from water supply systems outside the geographic boundaries of the Town.

2.5.7 Town of Gretna

The Town of Gretna does not purchase water from water supply systems outside the geographic boundaries of the Town.

2.5.8 Town of Hurt

The Town of Hurt is served by water purchased from the Town of Altavista in Campbell County. The system consists of a 250,000 gallon elevated storage tank, a booster pumping station, and a distribution system. The booster pumping station contains two 40 HP vertical turbine pumps, each capable of delivering 300 gpm. The Town of Hurt is allotted up to 200,000 gpd by the Town of Altavista.

2.5.9 Town of Ridgeway

The Town of Ridgeway is served by water purchased from the HCPSA. No other information was available.

2.5.10 Town of Stuart

The Town of Stuart does not purchase water from water supply systems outside the geographic boundaries of the Town.

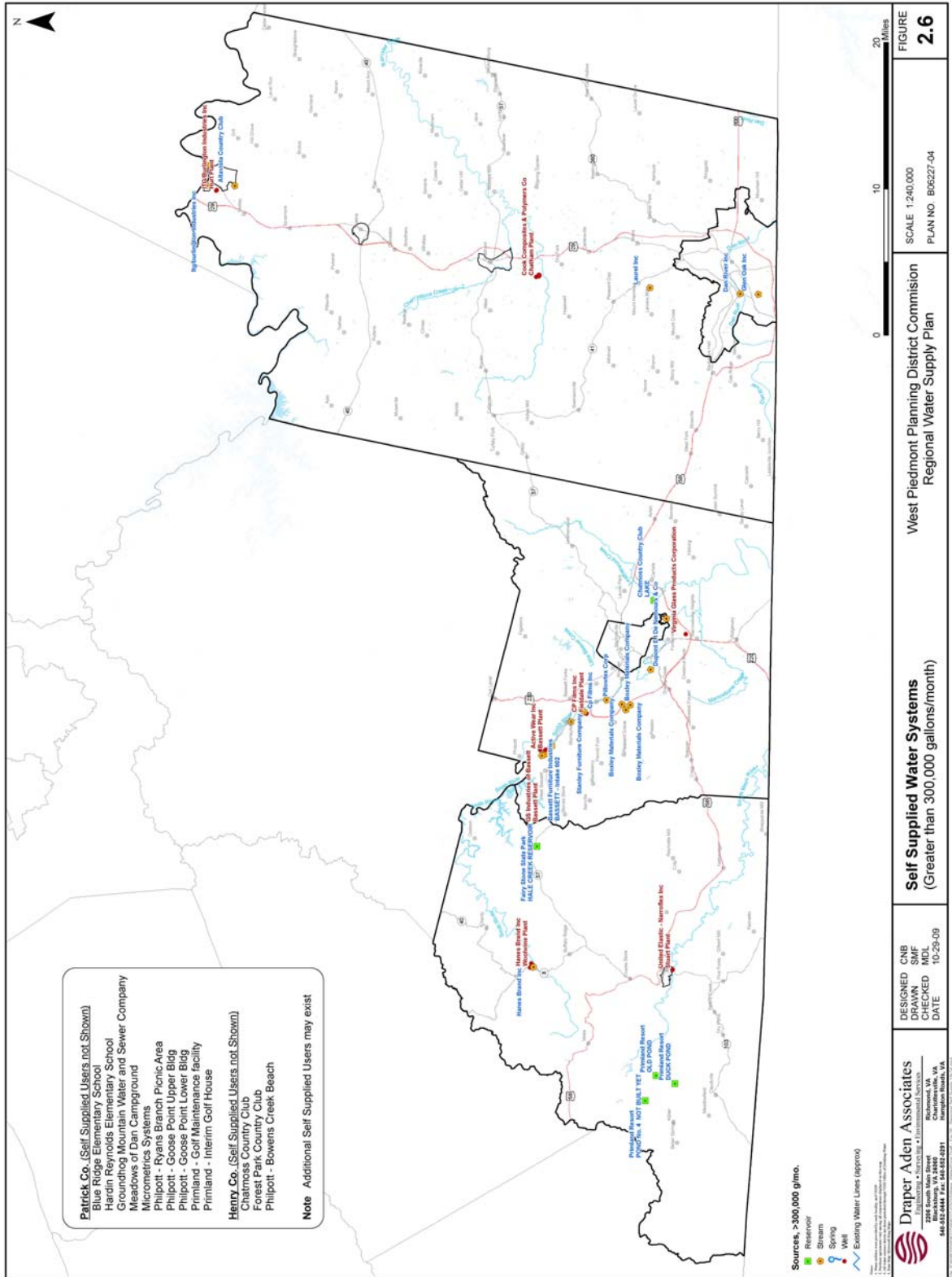
2.6 Non-Agricultural, Self-Supplied Users of More than 300,000 Gallons per Month of Surface Water⁶ and Ground Water⁷

Information on self-supplied, non-agricultural users in the region was generally very limited. Available information was provided by the Virginia Department of Environmental Quality (VDEQ) through their Water Use Database. In addition, information was collected from the Virginia Department of Health (VDH) on non-transient, non-community and transient, non-community water users and these users are considered self-supplied users. A map showing self-supplied users in the region is presented as Figure 2.6.

⁶ 9 VAC 25-780-70 E.

⁷ 9 VAC 25-780-70 F.

Figure 2.6: Map Showing Self-Supplied Users in Region.



2.5.11 Henry County

There are six known non-agricultural, self-supplied users using more than 300,000 gallons per month of surface water in Henry County. Information on self-supplied, non-agricultural users of greater than 300,000 gallons per month of surface water was collected from VDEQ's Water Use Database and is presented in Table 2.6.1A.

Table 2.6.1A: Summary of non-agricultural, self-supplied users using more than 300,000 gallons per month of surface water in Henry County.

Self-Supplied User	Source	Type Category
Bassett Furniture Industries	Smith River	Manufacturer
Boxley Materials Company	Jordan Creek	Mining
Chatmoss Country Club	Lake	Commercial
CP Films, Inc.	Smith River	Manufacturer
Forest Park Country Club	Smith River	Commercial
Stanley Furniture	Smith River	Manufacturer

There are nine known non-agricultural, self-supplied users groundwater in Henry County. Information on self-supplied, non-agricultural users using groundwater was collected from VDH and is presented in Table 2.6.1B.

Table 2.6.1B: Summary of non-agricultural, self-supplied users using groundwater in Henry County.

Self-Supplied User	Source	Design Capacity	Approximate Well Yield (gpm)	Well Pump Capacity (gpm)	Effective Storage Capacity (gallons)
Bassett Mirror Company	Drilled Well	100 Persons	Unknown	68-72	167
Virginia Glass Products Corporation	Drilled Well	28,800 gpd	20	40	476
Beaver Hills Golf Club	Drilled Well	One golf course with clubhouse	Unknown	Unknown	Negligible
Blue Ridge Airport	Drilled Well	Existing airport facilities and 60 restaurant seats	Unknown	Unknown	Negligible
Garfield's Place	Drilled Well	120 Existing restaurant seats	Unknown	15	29
Philpott Lake-Bowens Creek	Drilled Well	72,000 gpd	75	Unknown	300
Rangeley Mini Mart & Deli	Drilled Well	8 restaurant seats	Unknown	Unknown	Negligible
Ridgeway Café	Drilled Well	100 persons	Unknown	Unknown	Unknown
TSI	Drilled Well	Approximately 16,500 gpd	Unknown	Unknown	Unknown

2.5.12 Patrick County

There is one known non-agricultural, self-supplied users using more than 300,000 gallons per month of surface water in Patrick County. Information on non-agricultural, self-supplied users using more than 300,000 gallons per month of surface water was collected from VDEQ's Water Use Database and is presented in Table 2.6.2A.

Table 2.6.2A: Summary of non-agricultural, self-supplied users using more than 300,000 gallons per month of surface water in Patrick County.

Self-Supplied User	Source	Type Category
Primland Ltd.	Three Ponds	Commercial

There are 33 known non-agricultural, self-supplied users using groundwater in Patrick County. Information on non-agricultural, self-supplied users using groundwater was collected from VDH and is presented in Table 2.6.2B.

Table 2.6.2B: Summary of non-agricultural, self-supplied users using groundwater in Patrick County.

Self-Supplied User	Source	Design Capacity	Approximate Well Yield (gpm)	Well Pump Capacity (gpm)	Effective Storage Capacity (gallons)
Aerial Machine & Tool	Two Drilled Wells	70 Employees	Unknown	Unknown	105
Blue Ridge Elementary School	Two Drilled Wells	550 Persons	Well No. 1: unknown Well No. 2: 8	Well No. 1: 18 Well No. 2: 10	635
Hardin Reynolds Elementary School	Drilled Well	19,200 gpd	50 gpm	20	1,000
Hanes Brand Inc.	Drilled Well	80,000 gpd	100 gpm	190	1,055
Meadows of Dan Elementary School	Drilled Well	230 Persons	Unknown	Unknown	64
Micrometrics Systems	Drilled Well	17,600 gpd	23 gpm	22	7655
Patrick County High School	Drilled Well	1,840 Persons	120 gpm	30	29,683
Patrick Springs Elementary School	Drilled Well	500 Persons	Unknown	Unknown	667
CMI - United Elastic Division	Two Drilled Wells	0.24 MGD	Well No. 1: 100 Well No. 2: 337	Well No. 1: 67 Well No. 2: 200	18,833
Woolwine Elementary School	Two Drilled Wells	480 Persons	Well No. 1: 30 Well No. 2: 8	Unknown	1,366
103 Sure Stop	Drilled Well	16 Restaurant seats	Unknown	Unknown	6

Self-Supplied User	Source	Design Capacity	Approximate Well Yield (gpm)	Well Pump Capacity (gpm)	Effective Storage Capacity (gallons)
Bethel Campground	Two Drilled Wells	12 Buildings and 70 Dining Facility seats	Unknown	Unknown	49
Blue Ridge Motel and Restaurant	Drilled Well	16 Motel rooms and 50 Restaurant seats	Unknown	Unknown	39
Blue Ridge River, LLC	Two Drilled Wells	16,800 gpd	Well No. 1: 10 Well No. 2: 11	Well No. 1: 10 Well No. 2: 9	2,390
Boyd's Restaurant	Drilled Well	36 Restaurant seats	Unknown	Unknown	6
Café of Claudville	Drilled Well	30 Restaurant seats, 2 Apartment units and house	Unknown	Unknown	16
Deer Run Campground	Two Drilled Wells	100 Campsites and 2 Residents	Unknown	Unknown	6
Dry Pond Café	Drilled Well	20 Restaurant seats and Residence	Unknown	Unknown	13
Groundhog Mountain Water & Sewer Company	Two Drilled Wells	27,360 gpd	Buck Hollar Well: 14 Batson Cove Well: 5	65	1,238
Higher Ground Summer Camp	Drilled Well	75 Cafeteria seats	Unknown	Unknown	39
Howell's Grocery	Drilled Well	36 Restaurant seats	Unknown	Unknown	58
Lighthouse Grill	Drilled Well	28 Restaurant seats and 1 residential mobile home	Unknown	Unknown	13
Meadows of Dan Campground	Drilled Well	11,200 gpd	14	19.6	2,764
Mountain House Restaurant	Drilled Well	50 Restaurant seats	Unknown	Unknown	6
Goose Point - Lower Bldg	Drilled Well	7,680 gpd	Unknown	Unknown	283
Goose Point - Upper Bldg	Drilled Well	9,120 gpd	9.2	11 gpm	143
Ryans Branch	Drilled Well	11,520 gpd	12	Unknown	None
Primland Interim Golf House	Drilled Well	2,880 gpd	2.0	1.5	6.7
Primland Golf Maintenance Facility	Two Drilled Wells	3,600 gpd	Well No. 1: 3.0 Well No. 2: 1.5	Well No. 1: 10 Well No. 2: 10	151
Primland Resort	Drilled Well	15 Restaurant seats	4.0	Unknown	39

Self-Supplied User	Source	Design Capacity	Approximate Well Yield (gpm)	Well Pump Capacity (gpm)	Effective Storage Capacity (gallons)
Skipper's Steak and Seafood	Drilled Well	125 Restaurant seats	Unknown	Unknown	6
Spring of Life Camp	Drilled Well	4 Buildings with a 280 seat Cafeteria	Unknown	Unknown	2200
Willville Campground	Drilled Well	24 Site primitive campground	8.0	6.6	79

2.5.13 Pittsylvania County

There is one known non-agricultural, self-supplied user using more than 300,000 gallons per month of surface water in Pittsylvania County. Information on non-agricultural, self-supplied users using more than 300,000 gallons of surface water was collected from VDEQ's Water Use Database and is presented in Table 2.6.3A.

Table 2.6.3A: Summary of non-agricultural, self-supplied users using more than 300,000 gallons per month of surface water in Pittsylvania County.

Self-Supplied User	Source	Type Category
ITG/Burlington Industries	Roanoke River/Sycamore Creek	Manufacturer

There are 43 known non-agricultural, self-supplied users using groundwater in Pittsylvania County. Information on non-agricultural, self-supplied users using groundwater was collected from VDH and is presented in Table 2.6.3B.

Table 2.6.3B: Summary of non-agricultural, self-supplied users using groundwater in Pittsylvania County.

Self-Supplied User	Source	Design Capacity	Approximate Well Yield (gpm)	Well Pump Capacity (gpm)	Effective Storage Capacity (gallons)
Cook Composites & Polymer Company	Seven Drilled Wells	Unknown	Unknown	Unknown	Unknown
Dan River High School	Drilled Well	950 Persons	Unknown	Unknown	11,665 Gallons
Dan River Middle School	Drilled Well	14,400 gpd	18	17	9,643 Gallons
Kentucky Elementary School	Drilled Well	600 Persons	Unknown	Unknown	Unknown

Self-Supplied User	Source	Design Capacity	Approximate Well Yield (gpm)	Well Pump Capacity (gpm)	Effective Storage Capacity (gallons)
Little Blessings Child Care, Inc.	Drilled Well	68 Children and 6 Staff persons	Unknown	Unknown	7 Gallons
Mount Airy Elementary School	Drilled Well	17,280 gpd	13	12	2,000 Gallons
Smith Adult Care	Drilled Well	20 Residents and 13 Staff persons	Unknown	Unknown	32 Gallons
Kid Konnection Child Development	Drilled Well	42 Children and 5 Staff persons	Unknown	Unknown	8.3 Gallons
Stony Mill Elementary School	Two Drilled Wells	575 Persons	Unknown	Unknown	2,833 Gallons
Tunstall High School	Drilled Well	950 Students and staff	Unknown	32	Unknown
Tunstall Middle School	Drilled Well	17,280 gpd	18	12	9,640 Gallons
Union Hall Elementary School	Drilled Well	192 Persons	Unknown	Unknown	Unknown
Donna's Diner	Drilled Well	44 Existing restaurant seats and one resident	Unknown	Unknown	Negligible
58 Truck Stop	Drilled Well	100 Restaurant seats	Unknown	Unknown	11.6
58 West Auto Auction	Drilled Well	200 Persons, one or two times a week	Unknown	Unknown	10.6
Altavista Country Club	Drilled Well	Clubhouse with 140 restaurant seats	Unknown	Unknown	20
Arrowhead Campground #1 & #3	Two Drilled Wells	84 campsites, bathhouse, 4 mobile home connections	Unknown	Unknown	Negligible
Arrowhead Campground #2	Two Drilled Wells	46 campsites	Unknown	Unknown	Negligible
BB's Place	Drilled Well	45 Restaurant seats	Unknown	Unknown	Negligible
Beacon Ridge Retreat Center	Drilled Well	200 seat retreat center	Unknown	Unknown	26.6
C & E Restaurant	Drilled Well	230 Restaurant seats	Unknown	Unknown	11
Cedars Country Club	Drilled Well	One golf course with clubhouse	Unknown	Unknown	Unknown
Cherrystone Youth Camp	Drilled Well	Camp with 81 dormatory beds and cafeteria	Unknown	Unknown	26.6
Cool Branch Bar & Grill	Drilled Well	24 Existing restaurant seats	Unknown	Unknown	10
Corner Café	Drilled Well	75 Restaurant seats	Unknown	Unknown	3.3
Elkhorn Lake Camp #1	Drilled Well	48 Campsites	Unknown	Unknown	3.3

Self-Supplied User	Source	Design Capacity	Approximate Well Yield (gpm)	Well Pump Capacity (gpm)	Effective Storage Capacity (gallons)
Elkhorn Lake Camp #2	Drilled Well	39 Campsites	Unknown	Unknown	33.3
Elkhorn Lake Camp #3	Drilled Well	40 Campsites	Unknown	Unknown	16.6
Elkhorn Lake Camp #4	Drilled Well	35 campsites and one bathhouse	Unknown	Unknown	16.6
Harvey's Grocery	Drilled Well	20 Existing restaurant seats	Unknown	Unknown	10
Jips Diner	Drilled Well	12 Seat snack bar	Unknown	Unknown	10
Latrell's Restaurant	Drilled Well	75 Seat restaurant	Unknown	Unknown	7
Leesville Dam Picnic Area	Drilled Well	Picnic area with restrooms and water fountain	Unknown	Unknown	Negligible
Lumpkin's Marina	Two Drilled Wells	10 seat snack bar, 40 wet boat slips, two restrooms	Unknown	Unknown	Unknown
Paradise Lake & Campground	Drilled Well	250 persons	Unknown	Unknown	Unknown
Pit Stop Marina & Grill	Drilled Well	Marina with 52 restaurant seats	Unknown	Unknown	11
Pittsylvania Christian Camp	Drilled Well	140 dormitory beds, kitchen/dining hall	Unknown	Unknown	5,133
Ringgold Golf Club	Drilled Well	24 Restaurant seats	Unknown	Unknown	12
Sleepy Hollow Campground	Drilled Well	70 campsites and 50 restaurant seats	Unknown	Unknown	263
Smith Mountain Lake Dam Picnic Area	Two Drilled Wells	Picnic area with restrooms and 2 water fountain	Unknown	Unknown	30
Smith Mountain Lake Dock & Lodge	Drilled Well	Snack bar, 7 hotel rooms, 1 residence, 3 water spigots	Unknown	Unknown	11
Smith Mountain Lake RV & Campground	Drilled Well	40 persons	Unknown	Unknown	Unknown
Smith Mountain Lake Dam Visitors Center	Drilled Well	Visitor center with drinking fountains	Unknown	Unknown	1,667

2.5.14 City of Danville

There are two known non-agricultural, self supplied users within the City of Danville service area. Dan River Inc., which utilizes a stream intake on the Dan River, and Glen Oak Inc., which utilizes a stream intake on Rutledge Creek, were identified as non-agricultural, self supplied users using greater than 300,000 gallons of water per month in VDEQ's Water Use Database.

2.5.15 City of Martinsville

There are no known non-agricultural, self supplied users within the City of Martinsville service area.

2.5.16 Town of Chatham

There are no known non-agricultural, self supplied users within the Town of Chatham service area.

2.5.17 Town of Gretna

There are no known non-agricultural, self supplied users within the Town of Gretna service area.

2.5.18 Town of Hurt

There are no known non-agricultural, self supplied users within the Town of Hurt service area.

2.5.19 Town of Ridgeway

There are no known non-agricultural, self supplied users within the Town of Ridgeway service area.

2.5.20 Town of Stuart

There are no known non-agricultural, self supplied users within the Town of Stuart service area.

2.7 Amount of Water Available to be Purchased from Outside each Jurisdiction from any Source with the Capacity to Withdraw more than 300,000 Gallons per Month of Surface and Ground Water⁸

2.6.1 Henry County

Henry County and the HCPSA currently purchase water from the City of Martinsville. The City of Martinsville will continue to be a feasible source of water available to Henry County and the HCPSA during periods of drought and other emergency situations. Henry County and the HCPSA also purchase water from the City of Eden, North Carolina Waterworks. The City of Eden, North Carolina Waterworks will continue to be a feasible source of water available to

⁸ 9 VAC 25-780-70 H.

Henry County and the HCPSA, but may become cost prohibitive in the future with projected rate increases.

2.6.2 Patrick County

The Town of Stuart is a potentially feasible source of water available to be purchased for Patrick County.

2.6.3 Pittsylvania County

Pittsylvania County and the PCSA currently purchase water from the HCPSA, City of Danville, and towns of Chatham, Gretna, and Hurt, which will continue to be feasible sources of water for Pittsylvania County and the PCSA.

2.6.4 City of Danville

There are currently no known significant or feasible sources of water available to be purchased from outside the City of Danville limits in the near future.

2.6.5 City of Martinsville

The City of Martinsville currently sells water to the HCPSA; however, the HCPSA may be a feasible source of water for the City of Martinsville in the future.

2.6.6 Town of Chatham

There are currently no known significant or feasible sources of water available to be purchased from outside the Town of Chatham limits in the near future.

2.6.7 Town of Gretna

There are currently no known significant or feasible sources of water available to be purchased from outside the Town of Gretna limits in the near future.

2.6.8 Town of Hurt

The Town of Hurt currently purchases water from the Town of Altavista, which will continue to be a feasible source of water for the Town of Hurt.

2.6.9 Town of Ridgeway

The Town of Ridgeway is served by water from the HCPSA, which will continue to be a feasible source of water available for the Town of Ridgeway.

2.6.10 Town of Stuart

There are currently no known significant or feasible sources of water available to be purchased from outside the Town of Stuart limits.

2.8 Agricultural Users Who Utilize More than 300,000 Gallons per Month, Estimate of Total Agricultural Usage by Source, Irrigation vs. Non-Irrigation and Source⁹

The Virginia Cooperative Extension (VCE) representatives for each county within the region were contacted in order to collect available information on agricultural users utilizing more than 300,000 gallons of groundwater or surface water. The VCE representatives could provide no substantial information or data. In addition, water usage records from the VDEQ Water Use Database were reviewed; however, no data concerning individual agricultural users for livestock or crops was available. Therefore, agricultural information was collected from the United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS). General agricultural information for each county, including number of farms, total farm land acreage, and average size of farm, was collected from the 2002 Census of Agriculture and is discussed below. In addition, information on livestock (e.g., number of head of cattle) and crops (e.g., type of crop planted, total acres harvested) for the region was available for 2002. Please note that the USDA 2002 Census of Agriculture and NASS does not provide information for cities and towns. While this information does not provide information on specific agricultural users within the region, it provides a good starting point for providing estimates on agricultural water use in the region.

⁹ 9 VAC 25-780-70 I.

2.7.1 Henry County

According to the 2002 Census of Agriculture, there are approximately 305 farms in Henry County, which use approximately 53,064 acres of land. The average size of the farms in Henry County is approximately 174 acres.

Table 2.8.1.1: Presents the type and amount of livestock in Henry County.

Type of Livestock	# in 2002	Number of Farms
Beef Cattle & Calves	7,464	166
Milk Cows	0	2
Hogs & Pigs	0	2
Sheep & Lambs	0	3
Poultry Layers	306	15
Poultry Broilers	0	0
Horses	516	Unknown
Goats	192	Unknown

Table 2.8.1.2: Presents the type and amount of crops in Henry County.

Type of Crop	Acres in 2002	Number of Farms
Corn for Grain	51	6
Corn for Silage	62	3
Forage	9,265	181
Wheat for Grain	0	0
Oats for Grain	Unknown	1
Barley for Grain	Unknown	1
Cotton	0	0
Soybean	0	0
Tobacco	164	19
Vegetables	20	6
Potatoes	Unknown	1
Unknown	416	16

In addition, Blue Ridge Aquaculture is an enclosed tilapia farm that utilizes approximately 0.5 MGD of groundwater and is located in the Martinsville Industrial Park.

2.7.2 Patrick County

According to the 2002 Census of Agriculture, there are approximately 629 farms in Patrick County, which use approximately 90,569 acres of land. The average size of the farms in Patrick County is approximately 144 acres.

Table 2.8.2.1: Presents the type and amount of livestock in Patrick County.

Type of Livestock	# in 2002	Number of Farms
Beef Cattle & Calves	8,540	372
Milk Cows	805	15
Hogs & Pigs	63	12
Sheep & Lambs	297	6
Poultry Layers	230	14
Poultry Broilers	0	0
Horses	591	Unknown
Goats	404	Unknown

Table 2.8.2.2: Presents the type and amount of crops in Patrick County.

Type of Crop	Acres in 2002	Number of Farms
Corn for Grain	634	28
Corn for Silage	1,080	19
Forage	16,601	407
Wheat for Grain	Unknown	3
Oats for Grain	Unknown	Unknown
Barley for Grain	Unknown	Unknown
Cotton	Unknown	Unknown
Soybean	36	6
Tobacco	615	30
Vegetables	169	34
Potatoes	28	16
Unknown	325	9

2.7.3 Pittsylvania County

According to the 2002 Census of Agriculture, there are approximately 1,304 farms in Pittsylvania County, which use approximately 288,647 acres of land. The average size of the farms in Pittsylvania County is approximately 221 acres.

Table 2.8.3.1: Presents the type and amount of livestock in Pittsylvania County.

Type of Livestock	# in 2002	Number of Farms
Beef Cattle & Calves	20,542	735
Milk Cows	3,362	34
Hogs & Pigs	3,686	21
Sheep & Lambs	281	15
Poultry Layers	0	38
Poultry Broilers	0	6
Horses	1,082	Unknown
Goats	0	0

Table 2.8.3.2: Presents the type and amount of crops in Pittsylvania County.

Type of Crop	Acres in 2002	Number of Farms
Corn for Grain	2,009	86
Corn for Silage	3,933	39
Forage	43,906	813
Wheat for Grain	6,178	133
Oats for Grain	457	32
Barley for Grain	414	10
Cotton	0	0
Soybean	3,068	54
Tobacco	280	6,203
Vegetables	66	16
Potatoes	744	7
Unknown	5,606	235

2.7.4 City of Danville

Agricultural information from the USDA 2002 Census of Agriculture and NASS was not available for the City of Danville; however, there are no known self-supplied, agricultural users utilizing more than 300,000 gallons per month of groundwater or surface water in the City of Danville.

2.7.5 City of Martinsville

Agricultural information from the USDA 2002 Census of Agriculture and NASS was not available for the City of Martinsville; however, there are no known self-supplied, agricultural users utilizing more than 300,000 gallons per month of groundwater or surface water in the City of Martinsville.

2.7.6 Town of Chatham

Agricultural information from the USDA 2002 Census of Agriculture and NASS was not available for the Town of Chatham; however, there are no known self-supplied, agricultural users utilizing more than 300,000 gallons per month of groundwater or surface water in the Town of Chatham.

2.7.7 Town of Gretna

Agricultural information from the USDA 2002 Census of Agriculture and NASS was not available for the Town of Gretna; however, there are no known self-supplied, agricultural users utilizing more than 300,000 gallons per month of groundwater or surface water in the Town of Gretna.

2.7.8 Town of Hurt

Agricultural information from the USDA 2002 Census of Agriculture and NASS was not available for the Town of Hurt; however, there are no known self-supplied, agricultural users utilizing more than 300,000 gallons per month of groundwater or surface water in the Town of Hurt.

2.7.9 Town of Ridgeway

Agricultural information from the USDA 2002 Census of Agriculture and NASS was not available for the Town of Ridgeway; however, there are no known self-supplied, agricultural users utilizing more than 300,000 gallons per month of groundwater or surface water in the Town of Ridgeway.

2.7.10 Town of Stuart

Agricultural information from the USDA 2002 Census of Agriculture and NASS was not available for the Town of Stuart; however, there are no known self-supplied, agricultural users utilizing more than 300,000 gallons per month of groundwater or surface water in the Town of Stuart.

2.9 Residences and Businesses that are Self-Supplied and Individual Wells Withdrawing less than 300,000 Gallons per Month¹⁰

To determine an estimate of residences and businesses that are self-supplied and served by individual groundwater wells withdrawing less than 300,000 gallons per month, the population served by both public and private community water systems was subtracted from the total population. Population served by public community water systems was provided by each jurisdiction or VDH (Table 2.9). Population served by private community water systems was estimated based on review of VDH Engineering Description Sheets and/or community water system lists from EPA Safe Drinking Water Information System (SDWIS) and VDH database (Table 2.9). The total population for each county and city was provided by the 2000 US Census Bureau. The total population for each town was provided by the town and subtracted from the county population.

Note that the population served by public community water system is greater than the total population for the City of Martinsville, Town of Chatham, Town of Gretna, and Town of Hurt. These jurisdictions serve portions of Henry County (City of Martinsville) and Pittsylvania County (towns of Chatham, Gretna, and Hurt) and the population served by these public community water system was added to the population served by public community water system

¹⁰ 9 VAC 25-780-70 J.

for the respective county. A summary of population served by individual wells by jurisdiction is included in Table 2.9.

Table 2.9: Estimated Population Served by Individual Residential Wells by Jurisdiction.

Jurisdiction	Total Population	Population Served by Public CWS	Estimated Population Served by Private CWS	Estimated Population Served by Individual Wells
Henry County*	57,155	31,545	604	25,006
Patrick County*	18,446	0	110	18,336
Pittsylvania County*	57,874	16,136	461	41,277
City of Danville	48,411	46,988	0	1,423
City of Martinsville**	15,416	15,416	0	0
Town of Chatham***	1,338	1,338	0	0
Town of Gretna***	1,257	1,257	0	0
Town of Hurt***	1,276	1,276	0	0
Town of Ridgeway	775	775	0	0
Town of Stuart	961	921	0	40
Total	202,909	115,652	1,175	86,082

* Total county population does not include the towns within the respective county.

**The City of Martinsville serves portions of Henry County. The population served by the City of Martinsville in Henry County is included in the 'Population Served by Public CWS' for Henry County.

***The towns of Chatham, Gretna, and Hurt serve portions of Pittsylvania County. The population served by each town in Pittsylvania County is included in the 'Population Served by Public CWS' for Pittsylvania County.

2.10 Summary of Findings and Recommendations from Source Water Assessment Plans and Wellhead Protection Plans¹¹

2.9.1 Henry County

Based on correspondence from VDH dated August 28, 2006, a Source Water Assessment Plan was completed for the Upper Smith River (Philpott) Water System by VDH in 2001. The Plan indicated the Smith River is highly susceptible to contamination due to the existence of land use activities of concern and potential sources of contamination located within the Zone 1 (within 5 miles upstream of intake) area. In 2006, the HCPSA and the Virginia Rural Water Association (VRWA) lead the Source Water Protection Steering Committee in establishing a Source Water Protection Program for the Upper Smith River (Philpott) water supply. Field investigations were conducted to verify land use activities and potential sources of contamination within the entire

¹¹ 9 VAC 25-780-70 K.

drainage area upstream of the raw water intake on the Smith River. Based on findings, the Smith River is still highly susceptible to contamination due to the existence of land use activities of concern and potential sources of contamination.

The HCPSA is currently working on developing Wellhead Protection Plans for each of the HCPSA water systems utilizing groundwater wells.

In addition, a copy of the VDH Source Water Assessment Program (SWAP) waterworks susceptibility rankings based on evaluations completed on February 15, 2006 is included in Appendix C. The waterworks susceptibility rankings include VDH community and non-community systems and ranks each water sources susceptibility to potential contamination from other sources as low, moderate, or high.

2.9.2 Patrick County

A copy of the VDH SWAP waterworks susceptibility rankings based on evaluations completed on February 15, 2006 is included in Appendix C. The waterworks susceptibility rankings include VDH community and non-community systems and ranks each water sources susceptibility to potential contamination from other sources as low, moderate, or high.

2.9.3 Pittsylvania County

A copy of the VDH SWAP waterworks susceptibility rankings based on evaluations completed on February 15, 2006 is included in Appendix C. The waterworks susceptibility rankings include VDH community and non-community systems and ranks each water sources susceptibility to potential contamination from other sources as low, moderate, or high.

2.9.4 City of Danville

The City of Danville Source Water Assessment Plan noted that Dan River Intake is susceptible to impact, based on the nature of the surface water source, and factors including changing hydrologic, hydraulic and atmospheric conditions influenced by land use activities. The plan recommended the use of best management practices in this area.

In addition, a copy of the VDH SWAP waterworks susceptibility rankings based on evaluations completed on February 15, 2006 is included in Appendix C. The waterworks susceptibility

rankings include VDH community and non-community systems and ranks each water sources susceptibility to potential contamination from other sources as low, moderate, or high.

2.9.5 City of Martinsville

The City of Martinsville Source Water Assessment Plan noted that Beaver Creek Reservoir, Leatherwood Creek, and Little Beaver Creek are highly susceptible to impact, based on the nature of surface water sources, and factors including changing hydrologic, hydraulic and atmospheric conditions influenced by land use activities. The plan recommended the use of best management practices in these areas.

In addition, a copy of the VDH SWAP waterworks susceptibility rankings based on evaluations completed on February 15, 2006 is included in Appendix C. The waterworks susceptibility rankings include VDH community and non-community systems and ranks each water sources susceptibility to potential contamination from other sources as low, moderate, or high.

2.9.6 Town of Chatham

The Town of Chatham does not have a SWAP. In addition, the Town of Chatham does not own or operate a community water system utilizing groundwater; therefore, the Town does not have a Wellhead Protection Plan.

2.9.7 Town of Gretna

The Town of Gretna does not have a SWAP. In addition, the Town of Gretna does not own or operate a community water system utilizing groundwater; therefore, the Town does not have a Wellhead Protection Plan.

2.9.8 Town of Hurt

The Town of Hurt purchases water from the Town of Altavista and does not have a SWAP. In addition, the Town of Hurt does not own or operate a community water system utilizing groundwater; therefore, the Town does not have a Wellhead Protection Plan.

2.9.9 Town of Ridgeway

The Town of Ridgeway does not own or operate a community water system; therefore, the Town does not have a SWAP or Wellhead Protection Plan.

2.9.10 Town of Stuart

The Town of Stuart does not have a SWAP. In addition, the Town of Stuart does not own or operate a community water system utilizing groundwater; therefore, the Town does not have a Wellhead Protection Plan.