

In Association with



**Phase II Development**  
**of the**  
**LENOWISCO**  
**Water Supply Plan**

*T&L Project No.: 9471-00*

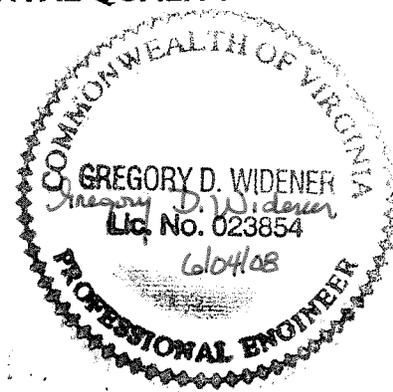
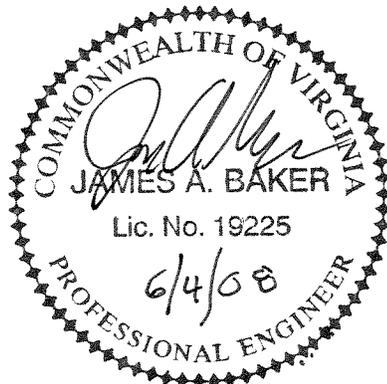
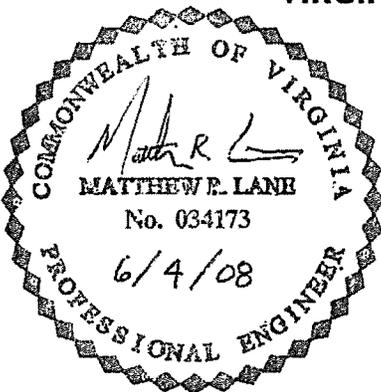
*June 2008*

PHASE II DEVELOPMENT  
OF THE  
LENOWISCO WATER SUPPLY PLAN

PREPARED FOR  
LENOWISCO PLANNING DISTRICT COMMISSION

WITH FINANCIAL ASSISTANCE FROM

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY



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**THOMPSON & LITTON**  
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## INTRODUCTION

“The Commonwealth of Virginia is rich in water resources, both in terms of number and diversity. However, as the impacts of the recent drought have demonstrated this resource cannot be taken for granted. The Commonwealth and its localities must work together to manage and protect our water resources to meet long term human and environmental needs. Improved coordination of drought response and water resources management activities at the local, regional and state levels are essential to guaranteeing the adequacy of Virginia’s water supplies to meet the current and future needs of Virginia’s citizens in an environmentally sound manner.”<sup>A</sup>

“The Code of Virginia, as amended by Senate Bill 1221 in 2003 (Section 62.1-44.38:1), requires the development of a comprehensive statewide water supply planning process to (1) ensure that adequate and safe drinking water is available to all citizens of the Commonwealth; (2) encourage, promote, and protect all other beneficial uses of the Commonwealth's water resources; and (3) encourage, promote, and develop incentives for alternative water sources, including, but not limited to, desalinization. In addition, the amended Code Section provides that local or regional water supply plans shall be prepared and submitted to the Department of Environmental Quality in accordance with criteria and guidelines developed by the Board. Such criteria and guidelines shall take into account existing local and regional water supply planning efforts and requirements imposed under other state or federal laws. The Local and Regional Water Supply Planning Regulation (9 VAC 25-780) was developed to implement the mandates of this section of the Code.”<sup>A</sup>

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<sup>A</sup> Virginia Department of Environmental Quality, Water Supply Planning Program, <http://www.deq.state.va.us/watersupplyplanning/>, April 2007

In order to address long-term water supply planning in the LENOWISCO planning area and in order to continue compliance with the aforementioned regulation, the LENOWISCO Planning District Commission commissioned Thompson & Litton, in association with Lane Engineering to prepare the Phase II Development of the LENOWISCO Water Supply Plan. Phase II Development of the plan includes: (1) description of existing resource information; (2) projections of future water demand; and (3) description of water demand management information. The planning area includes the Counties of Lee, Wise and Scott, the City of Norton and the Towns of Jonesville, Pennington Gap, St. Charles, Appalachia, Big Stone Gap, Coeburn, Pound, St. Paul, Wise, Clinchport, Duffield, Dungannon, Gate City, Nickelsville and Weber City. The planning area lies within the Tennessee River Basin.

## PURPOSE AND SCOPE

The purpose of the Phase II Development of the LENOWISCO Water Supply Plan is to (1) describe existing resource information; (2) project future water demand through 2040; and (3) describe water demand management information within the planning area pursuant to the requirements of the Department of Environmental Quality (DEQ) Local and Regional Water Supply Planning Regulations 9 VAC 25-780-90, -100, & -110.

## EXISTING RESOURCE INFORMATION

Existing resource information in the planning area is identified in this section by the criteria established in the water supply planning regulations. Each resource is listed below. Detailed information regarding each existing resource is provided in Appendix B.

### Geology Summary

Regionally, the northern part of the planning district is located in the Appalachian Plateau geomorphic province. This area is locally referred to as the coalfields and consists of a dissected plateau of generally flat-lying sedimentary rock. Surface rocks primarily belong to the Norton and Wise Formations of lower and middle Pennsylvanian age. Bedrock in the coalfields consists of sandstone, siltstone, shale and coal. The coalfields encompass Norton, nearly all of Wise County, and the northern portions of Lee and Scott Counties.

South of the St. Paul Fault in Scott County and the Pine Mountain thrust block in Lee County, the southern part of the planning district is located in the Valley and Ridge geomorphic province. This province, as the name suggests, consists of well-defined trend northeast – southwest. The rock ages typically range from middle Cambrian through early Mississippian. Limestones, dolomites, and shale predominate in the area. Local areas of Karst topography are found within the planning district. Karst topography is associated with the dissolution of carbonate rocks, and typically is characterized by sinkholes, caves, and underground drainage.

### Hydrology Summary

The Groundwater and Surface Water uses in the Planning District are as follows:

- Scott County contains several wells and surface water intakes. The Town of Nickelsville currently owns and operates six (6) wells located throughout the Town. Dungannon currently owns and operates two (2) wells and with Clinchport owning two (2) wells. There are also two (2) private wells located in Scott County considered a public water source in the Lyn Mar Well and Red Hill Subdivision Well. The Scott County PSA owns the Duffield Water Treatment Plant which receives water from the North Fork Clinch River and Spurlock Branch and the Moccasin Gap Water Treatment Plant which receives water from Big Moccasin Creek. Big Moccasin Creek is also the source for the Town of Gate City Water Treatment Plant. Outside sources of water are provided by the Bloomingdale Utility District and Washington County Service Authority.
- The City of Norton is provided water from Benges Branch and Robinette Branch. Benges Branch is the source of water provided from the City of Norton Upper and Lower Reservoirs.

- Lee County contains several springs, wells, and surface water sources. The Town of Jonesville is provided water from the Wynn Spring. The Lee County PSA currently owns two (2) water treatment plants which are provided water from the Blue Spring and KVS Quarry Reservoirs that is considered a groundwater source. Pennington Gap is provided water from the Powell River. A private well owned by the Harvest Baptist Child Ministries is considered a public source of water. Outside water is also provided from the Arthur-Shawnee Utility District.
- Wise County contains several wells and surface water sources. The Wise County PSA and the Town of St. Paul are currently provided water from the Clinch River. They also own and operate a public well source located in the Dunbar section in the Dunbar Well. The Town of Wise currently has two (2) water sources in the Whiteoak Mine and the Wise Reservoir. Coeburn currently has two (2) sources of water in the Jenny Mine and Tom's Creek which fills the Tom's Creek Reservoir. The Town of Appalachia is provided water from the Big Cherry Reservoir which is the head waters of the Powell River. The Town of Pound is provided water from the Pound Reservoir. There are two (2) wells that are owned and operated by the US Forest Service in the High Knob well and the Hanging Rock well.

### Meteorological Summary

The Planning District has the following weather conditions:

Average Temperature is 55.9 °F with an average temperature of 42.0 °F in January and 74.9 °F in July. Average rainfall in the Planning District is 41.24"/year.

### Existing Environmental Conditions

I. *"State or federal listed threatened or endangered species or habitats of concern."*

### **Wise County**

#### Town of Appalachia

According to the Virginia Department of Conservation and Recreation (DCR), the Spiny Riversnail is existing in the Town's water system. Also, downstream of the Town's waterworks, various mussel, fish, and snails exists that may be affected by water withdrawal. DCR recommends strict adherence to water withdrawal amounts.

#### Town of Big Stone Gap

According to DCR, the following species have been historically documented in the project area: spiny riversnail, Tennessee heelsplitter and northern map turtle.

The current activity will not affect any documented state-listed plants or insects.

According to DGIF, the federal endangered/state endangered Indiana bat has been documented in this project area. The Powell River is designated a Threatened and Endangered Species'

Water. This designation is due to the documented occurrences of the following species: rough rabbitsfoot, Cumberland monkeyface, dromedary pearlymussel, and Appalachian monkeyface.

#### Town of St. Paul

According to DCR, the Clinch River-Copper Creek System Conservation Unit (SCU) is located within the area. Within these water system several natural resources are present and include the following: Elktoe, Western Sand Darter, Spiny Softshell, Cumberland Combshell, Oyster Mussel, Snuffbox, Bluebreast Darter, Ashy Darter, Golden Darter, Bluespar Darter, Duskytail Darter, Freshwater Mussel, Tennessee Pigtoe, Shiny Pigtoe, Fine-rayed Pigtoe, Cherokee Clubtail, Northern Map Turtle, Cracking Pearlymussel, Spiny Riversnail, Brook Silverside, Birdwing Pearlymussel, Fragile Papershell, Slabside Pearlymussel, Black Sandshell, River Redhorse, Mudpuppy, Popeye Shiner, Emeral Shiner, Yellowfin Madtom, Stonecat, Tangerine Darter, Blotchside Logperch, Channel Darter, Sheepnose, Tennessee Clubshell, Pyramid Pigtoe, Fluted Monkeyface, Virginia Spiraea, Loggerhead Musk Turtle, Deerote, and Purple Bean. Also the Clinch River has been designated by the Virginia Department of Game and Inland Fisheries (VDGIF) as being "Threatened and Endangered Species Waters." Also according to VDGIF, the gray myotis is within the area.

#### Wise County PSA

According to DCR, the Clinch River-Copper Creek System Conservation Unit (SCU) is located within the area. Within these water system several natural resources are present and include the following: Elktoe, Western Sand Darter, Spiny Softshell, Hellbender, Spectacle Case, Fanshell, Dromedary Pearlymussel, Elephant Ear, Cumberland Combshell, Oyster Mussel, Snuffbox, Bluebreast Darter, Ashy Darter, Golden Darter, Bluespar Darter, Duskytail Darter, Freshwater Mussel, Tennessee Pigtoe, Shiny Pigtoe, Fine-rayed Pigtoe, Cherokee Clubtail, Northern Map Turtle, Cracking Pearlymussel, Spiny Riversnail, Brook Silverside, Birdwing Pearlymussel, Fragile Papershell, Slabside Pearlymussel, Black Sandshell, River Redhorse, Mudpuppy, Popeye Shiner, Emeral Shiner, Yellowfin Madtom, Stonecat, Tangerine Darter, Blotchside Logperch, Channel Darter, Sheepnose, Tennessee Clubshell, Pyramid Pigtoe, Fluted Monkeyface, Virginia Spiraea, Loggerhead Musk Turtle, Deerote, and Purple Bean. Also the Clinch River has been designated by the Virginia Department of Game and Inland Fisheries (VDGIF) as being "Threatened and Endangered Species Waters." Also according to VDGIF, the gray myotis is within the area. Refer to the further comments from US Fish and Wildlife Service.

#### City of Norton

According to DGIF, the federal endangered/state endangered Indiana bat has been documented within the vicinity of the project area. Also, the federal species of concern small footed myotis bat has been documented in the project vicinity.

## Lee County

### Town of Jonesville

The waterworks is located with the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. Within the area, the Lee County Isopod may be impacted with any increase in withdrawal. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources.

### Lee County PSA - Blue Spring WTP

The waterworks is located with the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. Within the area, the Lee County Isopod may be impacted with any increase in withdrawal. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources.

### Harvest Baptist Ministries

The Wallens Creek - Stickleysville Stream Conservation Unit is located downstream of the well site. There is only one (1) natural heritage resource of concern located within the area and is the Tennessee Pigtoe.

According to VDGIF (Virginia Department of Game and Inland Fisheries), the federal endangered/state endangered Indiana bat has been documented within the project area.

### Town of Pennington Gap

The Powell River - North Fork Powell River Stream Conservation Unit is within the intake area. There are several natural heritage resources located within the area and include Spiny Riversnail, Popeye Shiner, Tennessee Clubshell, Rough Rabbits Foot, and Sauger. Also, the Powell River has been designated by VDGIF as a "Threatened and Endangered Species Water".

According to VDGIF, the following federally endangered species have been documented within the area: gray bat and rough rabbits foot mussel. VDGIF also has noted the documentation of the federal species of concern/state threatened spiny riversnail within the area. The following species of concern have also been documented in the area: the small-footed myotis and the Tennessee clubshell mussel. The following state special concern species have been documented within the area: the bluebreast darter, the channel darter, the river redhorse, the sauger, the mirror shiner, the popeye shiner, the brook silverside, and the Tennessee pigtoe mussel.

### Scott County - Duffield WTP

The North Fork Clinch River - Fraley Branch SCU is located within the area. There are several natural heritage resources located within the area and include: Tennessee Pigtoe, Tennessee Clubshell, and Tennessee Heelsplitter. Also, the North Fork Clinch River has been designated

by VDGIF as a “Threatened and Endangered Species Water”. These resources include the following: Finne-rayes Pigtoe, Littlewind Pearlymussell, Oyster Mussell, Tan Riffleshell, and the Slippershell Mussel. Also according to VDGIF, the gray myotis is within the area.

### Scott County - Moccasin WTP

The North Fork - Big Moccasin Creek SCU is located within the area. There are several natural heritage resources located within the area and include: Turquoise Shiner, Bluebreast Darter, Tennessee Pigtoe, Fine-rayed Pigtoe, Northern Map Turtle, Popeye Shiner, Stonecat, Tangerine Darter, Gilt Darter, Bullhead Minnow, Rough Rabbits Foot, Loggerhead Musk Turtle, and Cumberland Slider. Also, Big Moccasin Creek, Copper Creek, and the North Holston Fork River have been designated by VDGIF as a “Threatened and Endangered Species Water.”

### Town of Gate City

The North Fork - Big Moccasin Creek SCU is located within the area. There are several natural heritage resources located within the area and include: Turquoise Shiner, Bluebreast Darter, Tennessee Pigtoe, Fine-rayed Pigtoe, Northern Map Turtle, Popeye Shiner, Stonecat, Tangerine Darter, Gilt Darter, Bullhead Minnow, Rough Rabbits Foot, Loggerhead Musk Turtle, and Cumberland Slider. Also, Big Moccasin Creek, Copper Creek, and the North Holston Fork River have been designated by VDGIF as a “Threatened and Endangered Species Water.”

2. *“Anadromous, trout and and other significant fisheries.”*

No Known

3. *“River segments that have recreational significance including state scenic rivers status.”*

According to the response from the Virginia Department of Conservation and Recreation, there are no river segments of recreational significance that will be impacted.

4. *“Sites of historic or archeological significance.”*

Refer to the Virginia Department of Historic Resources responses attached with maps depicting the archeological and historic architectural resources within the planning district.

5. *“Unusual geologic formations or special soil types.”*

## **Wise County**

### Town of Big Stone Gap

The waterworks is located within the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. The Powell River sinks directly into the Powell River Cave. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources.

## Town of St. Paul

The waterworks is located within the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. The Powell River sinks directly into the Powell River Cave. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources.

## **Lee County**

### Town of Jonesville

The waterworks is located within the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. Within the area, the Lee County Isopod may be impacted with any increase in withdrawal. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. According to the NRCS, there are no prime, unique, statewide, or local important farmland within the area.

### Lee County PSA - Blue Spring WTP

The waterworks is located within the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. Within the area, the Lee County Isopod may be impacted with any increase in withdrawal. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. According to the NRCS, there are no prime, unique, statewide, or local important farmland within the area.

### Lee County PSA - KVS Quarry WTP

The waterworks is located within the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. Within the area, the Lee County Isopod may be impacted with any increase in withdrawal. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. According to the NRCS, there are no prime, unique, statewide, or local important farmland within the area.

### Town of Pennington Gap

The waterworks is located within the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources.

### Scott County - Duffield WTP

The waterworks is located within the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources.

### Scott County - Moccasin WTP

The waterworks is located within the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources.

### Town of Gate City

The waterworks is located within the karst landscape areas characterized by sinkholes, caves, disappearing streams, and large springs. DCR recommends strict coordination with any changes in withdrawal amounts due to the potential of surface collapse, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources.

6. *“Wetlands.”*

No known.

7. *“Riparian buffers and conservation easements.”*

No known.

8. *“Land use and land coverage including items such as percentage of impervious within a watershed and areas where new development may impact water quality of the source.”*

### **Lee County**

Area land uses within the project area are primarily residential with limited agricultural and commercial activity.

### **Wise County**

Area land uses within the project area are primarily residential with limited agricultural and commercial activity.

9. *“The presence of impaired streams and the type of impairment.”*

## **Wise County**

### Town of Appalachia

According to the DEQ 2006 Water Quality Assessment, there are no water quality impairments in the immediate vicinity.

### Town of Big Stone Gap

According to DEQ, the South Fork Powell River is a 303 (d) listed Total Maximum Daily Load (TMDL) water segment for bacteria impairment.

### Town of Wise

According to the DEQ 2006 Water Quality Assessment, there are no water quality impairments in the immediate vicinity.

### Town of Coeburn

According to DEQ, Tom's Creek is a 303 (d) listed Total Maximum Daily Load (TMDL) water segment for bacteria impairment.

### Town of Pound

According to DEQ, the North Fork Pound River is a 303 (d) listed Total Maximum Daily Load (TMDL) water segment for bacteria impairment.

### Town of St. Paul & Wise County PSA Carfax

According to the DEQ 2006 Water Quality Assessment, there are no water quality impairments in the immediate vicinity.

### City of Norton

According to the DEQ 2006 Water Quality Assessment, there are no water quality impairments in the immediate vicinity.

## **Lee County**

### Town of Jonesville

According to the DEQ 2006 Water Quality Assessment, there are no water quality impairments in the immediate vicinity.

Lee County PSA Blue Spring WTP & Harvest Baptist Childcare Ministries Well

According to the DEQ 2006 Water Quality Assessment, there are no water quality impairments in the immediate vicinity.

Lee County PSA KVS Quarry WTP

According to the DEQ 2006 Water Quality Assessment, there are no water quality impairments in the immediate vicinity.

Town of Pennington Gap

According to the DEQ 2006 Water Quality Assessment, there are no water quality impairments in the immediate vicinity.

**Scott County**

Scott County PSA Duffield WTP

According to the DEQ 2006 Water Quality Assessment, there are no water quality impairments in the immediate vicinity.

Town of Gate City & Moccasin Gap WTP

According to DEQ, the Big Moccasin Creek is a 303 (d) listed Total Maximum Daily Load (TMDL) water segment for bacteria impairment in the vicinity of the Moccasin Gap WTP.

10. *"The location of point source discharges."*

No known.

11. *"Potential threats to the existing water quantity and quality, other than those above."*

DEQ does not foresee any long-term adverse impacts to water quality.

## PROJECTED WATER DEMAND INFORMATION

Estimated water use within the planning area is identified in this section by the criteria established in the water supply planning regulations. The population projection for each city or county is determined from information obtained from the Virginia Employment Commission and the U. S. Census Bureau to estimate water use for the years 2010, 2020, 2030, and 2040. Detailed information regarding the population projections for each specified year is provided in Appendix C, and estimated water use for each of the specified years is provided in Appendix D.

Projected water demand reflects the impact of four parameters: population changes, extension of existing water service to new areas, change in water use due to economic activities, and improvement in water system delivery efficiency. The contribution of each parameter to projected water demand is described in this narrative.

The projected population through the year 2040, the termination of the planning period, was reviewed for the City of Norton and each of the three Counties in the planning area, Lee, Scott, and Wise. Between 2010 and 2040, the population changes in these areas were one percent (1%) increase, six percent (6%) decrease, five percent (5%) increase, and six percent (6%) decrease, respectively. In the aggregate, the population in the entire planning area is projected to decrease by three percent (3%) between 2010 and 2040. Because these population changes were slight (0.1 % per year), the population for each locality in the planning area was considered to be constant over the planning period.

Several extensions of existing water systems have been included in approved planning documents and capital improvement plans (CIP), and are anticipated to be in service by 2010 or 2020. The projected demands for these systems were included in the development of water demand projections. The amount of consumption by self-supplied users located outside of the service areas of community water systems was held constant over the period.

No known economic activity in the planning area that will utilize additional water has been documented for the planning period ending in 2040. Therefore, this parameter did not impact the calculations of projected water demand.

The fourth parameter evaluated for potential impact to water demand projections was water system delivery efficiency. This parameter is commonly referred to as “water accountability” or “lost water” and addressed in the section on water demand management information below. “Unaccounted-for-water” is generally understood as the difference between the volume of potable water that enters a water distribution system and the volume that is metered “leaving” the system. The Virginia Department of Health’s Office of Drinking Water has established that any system with “unaccounted-for-water” values in excess of thirty percent (30%) is in significant noncompliance. The current value of “unaccounted-for-water” for each community system was evaluated. Those systems in significant noncompliance were projected to attain thirty percent (30%) unaccounted-for-water by 2020, and improve to twenty five percent (25%) by 2030, maintaining that value through 2040. In cases for which proposed projects are expected to reduce the unaccounted-for-water value to twenty percent (20%), that value was used. For water systems in compliance, no additional system improvement in unaccounted-for-water was projected due to not having documentation regarding the sustainability of improvement efforts.

No in-stream uses of water are known that are projected to impact the water demand in the planning area. Based on the impact of these parameters, the total water demand in the planning area is projected to decrease approximately four percent (4%) between 2010 and 2040.

## **WATER DEMAND MANAGEMENT INFORMATION**

Water demand management information within the planning area is identified in this section by the criteria established in the water supply planning regulations, 9 VAC 25-780-110. To align this report with the regulations, water demand management information is further separated into three areas: water use efficiency, water conservation, and water loss reduction. Each of these three areas is addressed in turn.

Information on water demand management was obtained in large measure through a written survey of the communities and water suppliers in the LENOWISCO Planning District. The survey was reviewed with representatives of water suppliers during a meeting with water suppliers and local officials. Most surveys were completed during the meeting and the remainder were returned within a week. A follow-up survey was distributed to address additional aspects of water demand management.

The survey responses reflect the water suppliers' interpretations of the survey questions. Where possible, responses were reviewed and validated with existing data or known practices.

### **Water Use Efficiency**

Water use efficiency information describes practices for more efficient use of water that are used within the planning area. Eight specific aspects of water use efficiency are addressed in this section.

- I. Adoption of Virginia Uniform Statewide Building Code sections that limit maximum flow of water closets, urinals, and appliances.

Two Towns in the planning area reported having approved an ordinance that adopted the Virginia Uniform Statewide Building code sections that limit maximum flow

of water closets, urinals, and appliances. Both localities implement these building codes through the County Building Official.

Adoption of building code sections may not lead to more efficient use of water. For example, a recent article on plumbing codes and water efficiency noted that showerheads are limited to 2.5 gpm under the federal Energy Policy Act; however, the regulation does not limit the number of showerheads installed in any one shower, and multiple showerhead systems are reported as the fastest-growing trend in the home building industry.<sup>1</sup>

2. Adoption of ordinances for water efficient landscaping.

No known.

3. Policies by Homeowner's Associations regarding use of low-water use landscaping.

No known.

4. Adoption of ordinances that declare wasteful water use to be unlawful.

One locality reported adoption of an ordinance that declares wasteful water use to be unlawful. The ordinance stipulates that water service may be discontinued after five days notice if the wasteful water use is not corrected.

5. Implementation of practices to increase irrigation efficiency.

Nearly all water suppliers in the region indicated that they require customers to be metered. Water from public water suppliers in the planning area used for irrigation is metered. Most water suppliers do not offer sewer credits during irrigation months.

6. Implementation by water suppliers of water use efficiency measures.

No known. This is not meant to imply that water suppliers are inefficient in the use of water. Their water use is focused on core competencies of water purification and distribution, for which most operations are primarily guided by public health concerns.

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<sup>1</sup> Pape, Thomas E., "Plumbing codes and water efficiency: What's a water utility to do?" *Journal American Water Works Association*, 100 (5), pages 101-103, 2008.

7. Partnership by water suppliers in the WaterSense program.

No known.

8. Partnership by landscape irrigation professionals in the WaterSense program.

No known.

## **Water Conservation**

Water conservation information describes measures to reduce water use within the planning area over the long-term. These measures do not include short-term water supply emergency practices or shortage practices. Twelve aspects of water conservation are addressed in this section.

1. Ordinances in place that address water conservation practices through reduction of use.

No known. All water conservation ordinances currently in place address water conservation measures for short-term water supply emergency or shortage practices.

2. Alteration of water suppliers' standard operating procedures to improve conservation.

No known. Many standard operating procedures used by water suppliers have been implemented with a primary goal of protection of public health. This includes regulatory guidelines for backwashing filters, recycle of flow, and maintenance of disinfectant residual within the distribution system.

3. Installation of low-flow or no-flow faucets, showers, or urinals in water suppliers' facilities that result in water savings through reduction of use.

No known.

4. Installation of low-flow or no-flow faucets, showers, or urinals in local government facilities that result in water savings through reduction of use.

No known. One school renovation project in process has included infrared-sensor activated flush valves on urinals and water closets. These appliances do not explicitly

reduce water use per flush; however, their use reduces damage to valves that result in leaking or “stuck” valves (with associated unnecessary water wastage). Approximately ten school buildings and government facilities in the planning region will be renovated or replaced in the next decade.

5. Use of Clean Water State Revolving Funds (CWSRF) or Drinking Water State Revolving Funds (DWSRF) to upgrade or retrofit new or existing public facilities irrigation equipment, with a result of water savings through reduction of use.

No known.

6. Existence of dual pipe distribution system to distribute reclaimed water for non-potable water use.

No known. Most wastewater treatment facilities in the planning region utilize non-potable water for process operations at the facility.

7. Availability of “yard taps” to customers to monitor outdoor water use.

Nearly all service connections throughout the planning region are required to be metered by the water suppliers. The cost of water to the customer has resulted in customer-directed monitoring of water consumption for outdoor use.

In localities where sewer service is available, sewer billing is based on metered water consumption. This has led to customer requests for separate meters for outdoor water use, to avoid sewer charges for usage that is not directed to the wastewater treatment facilities. In turn, outdoor water use is then monitored directly by the customer.

8. Development and implementation of public education programs that address water conservation through water use reduction.

Much of the educational effort in the planning region on water conservation has resulted from recent drought conditions that impacted local suppliers and residents.

Ten water suppliers offer tours of water production facilities to the public. Eight localities/water suppliers include mailings sent with bills, and eleven issue special mailings. The special mailings have addressed the impact of drought on water supplies, and the value of customer conservation efforts. Six localities include website information, addressing water conservation as warranted. Three water suppliers provide seminars for students, such as in-school or 4-H, during which water use is addressed. Three water suppliers offer water conservation information upon request. Five water suppliers reported existence of informal educational efforts.

9. Use of Clean Water State Revolving Funds (CWSRF) or Drinking Water State Revolving Funds (DWSRF) to promote water conservation education programs, public education programs, or water conservation regulations.

No known.

10. Offering incentive programs to replace or retrofit water fixtures and appliances to reduce water use.

No known.

11. Provision of rebates or tax breaks to encourage reduced water use by customers.

No known.

12. Implementation of conservation rate structure (increasing water rate with increasing water use).

No known. All water suppliers in the planning region reported using a rate structure that had a uniform rate per volume consumed. The average residential water bill is significantly higher in the planning region than the state average. The average water bill within the planning region is \$30.69 for 4,200 gallons usage per month (source: LENOWISCO Planning District Commission Utility Rate Survey 2008, averaging the mean charges for in-town and out-of-town rates). By contrast, the

average water bill within Virginia was \$29.06 for 5,000 gallons usage per month (source: 19<sup>th</sup> Annual Water and Wastewater Rate Report, 2007, averaging the mean charges for inside and outside municipal rates).

Additional practices in the planning area that address water conservation include rigorous termination of water services for non-payment, reported by sixteen of seventeen water suppliers. Twelve of the suppliers terminate service after a delinquency period of thirty days or shorter.

### **Water Loss Reduction**

Water loss reduction information describes practices to address water loss in the maintenance of water systems to reduce unaccounted for water loss within the planning area. Eight specified topics are addressed in this section.

Water loss may be real (such as from a leak) or apparent (due to meter under registration, unauthorized consumption). Due to ambiguity in application of the term “unaccounted for water loss,” the American Water Works Association Water Loss Committee defines water loss as the difference between volume of water input to the distribution system and the volume of authorized consumption (this is reviewed in the publication AWWA M36 Water Audits and Leak Detection). Water utilization may also be described as revenue water (the authorized consumption that is billed) and non-revenue water (unbilled authorized consumption, apparent losses, and real losses). All water is accounted for in either description.

#### **I. Use of source and service connection meters.**

Nearly all water suppliers surveyed reported that meters are required on residential services. Source meters are required for regulatory reporting purposes. One water supplier reported meter reading on a quarterly basis, but all other water suppliers read meters monthly. Seven water suppliers periodically test and calibrate meters. Nine water suppliers use system meters that indicate flow to specific zones of the water

distributions system and allow comparison between water supplied and water consumed within specific portions of the system. Seven water suppliers meter the volume of water taken from hydrants for purposes other than emergency fire suppression.

2. Ordinances in place that requires water users to repair leaking fixtures, appliances, or plumbing.

One locality reported adoption of an ordinance that requires water users to repair leaking fixtures, appliances, or plumbing. The enforcement activity is that water service may be discontinued after five days notice.

3. Leak detection strategies and water audits performed by water suppliers to reduce water loss.

As an operational parameter, all water suppliers reported using real time information about the system. Abnormal changes in tank levels result in review for lost water due to leaks. Several water suppliers track pump runs with tank levels to indicate the probability that increased demand is due to a leak in the distribution system, and whether a leak detection and repair crew should be dispatched.

Nearly all water suppliers with treatment facilities reported having conducted a usage review at their water treatment plant(s) during the past year. The majority of water suppliers inspects and tests fire hydrants regularly, and responds to requests from fire companies to repair hydrants.

4. Use of Clean Water State Revolving Funds (CWSRF) or Drinking Water State Revolving Funds (DWSRF) to install water meters in distribution systems or develop and implement water audit and leak detection practices.

Funding from the DWSRF has been used to develop and implement water audit and leak detection practices in several localities. Expressly titled "Leak Detection" studies and projects have been funded in Nickelsville (2003), Gate City (2004), Dungannon (2007), and Pound (2007). Additional funded projects for Big Stone Gap (2006) and the Scott County Public Service Authority (2006) studies addressed water use and analysis.

5. Existence of practices or policies to track unauthorized connections.

Unauthorized connections may be permanent or temporary. They may also result from inappropriate modification of an authorized connection or an unauthorized connection made on an authorized connection.

Temporary connections are often made to fire hydrants. Twelve of the localities limit hydrant use to water system personnel and fire department personnel. Four localities have a written hydrant use policy and seven water suppliers allow temporary use from hydrants if metered.

A common inappropriate modification of an authorized connection is a straight pipe that has been inserted in the place of the meter. This may occur after the meter has been removed due to non-payment for service, or may result from an attempt to bypass the meter. Water suppliers' efforts to track this type of modification are informal, and include periodic inspections of meter connections.

An example of an unauthorized connection made on an authorized connection is a domestic use connection on a fire-service line in a commercial, industrial, or institutional facility. This type of unauthorized connection is very difficult to track.

6. Operating strategies by water suppliers for repair of water mains, service connections, fire hydrants, and valves, in order to reduce water loss.

Five water suppliers dedicated funds in their annual budgets toward water loss activities. The majority of water suppliers budgeted for corrective maintenance activities.

Water suppliers address water leaks with specific responses. Twelve water suppliers report having emergency call out procedures for water outages, breaks, and leaks. Eight water suppliers reported removing old lines from service upon installation of a replacement line, and eleven suppliers relocate taps when a new line is installed. Eleven water suppliers in the planning area replace a joint of water line after a specified number of repairs on that joint (most commonly between three and ten leak repairs).

Several water suppliers have instituted valve maintenance and exercising programs. In addition to reducing water loss due to valve leaks, these programs reduced water loss during leak detection and repair activities by enabling rapid isolation of the leak and stopping water flow.

7. Dedication of funding in capital improvement plans (CIP) for upgrading existing water infrastructure, in order to reduce water loss.

Seven water suppliers include dedicated funding for replacement of existing water infrastructure over time in formal plans.

8. Development and implementation of educational programs to reduce customer-side water loss.

No known. Three water suppliers provide water conservation information upon request. As noted above, water rates are believed to be a sufficiently high portion of the median household income to encourage water customers to reduce non-beneficial use on the customer side of the meter.

### Additional water loss reduction practices

Pressure regulation. Only two water suppliers reported that their distribution pressure is less than 100 psi, and less than one-third of the water suppliers operate with pressure less than 150 psi. This is due to the topography of the service areas.

Because water loss is positively correlated with system pressure, most suppliers operate pressure reducing valves/stations (PRVs) to reduce pressure appropriately.

Nearly all water suppliers reported access to distribution system mapping, many of the water systems have been modeled hydraulically, and two water suppliers reported using AWWA's water loss analysis computer program. Several water suppliers map the location and estimated volume of leaks and breaks in their distribution systems.

**APPENDIX A**  
**GENERAL INFORMATION WORKSHEET**

Virginia Department of Environmental Quality  
 Division of Water Resources

Office of Water Supply Planning

## LENOWISCO WATER SUPPLY PLAN

Calendar Year 2008

Completed By:

Signature:

Lead Agency:

Date:

Local Plan

Regional Plan

### SECTION 1: GENERAL INFORMATION

1	Political Locality(s):	LENOWISCO Planning District (Lee County, City of Norton, Wise County, Scott County)
2	River Basin(s)	Tennessee
3	River Sub-Basin(s):	Powell, Clinch, Holston
4	Population (Plan Total):	92,322 (U.S. Census Bureau 2005 estimate)
5	Contact Name:	Kalena Porter, LENOWISCO Planning District Commission
6	Title:	Regional Planner II
7	Mailing Address:	P. O. Box 366, 6913 Duff-Pat Road
8	City:	Duffield
9	State:	Virginia
10	Phone:	(276) 431-2206
11	Fax:	(276) 431-2206
12	E-mail:	kporter@lenowisco.org
13	Locality FIPS Code(s):	LENOWISCO - 017, Lee County - 105, City of Norton - 720, Wise County - 195, Scott County - 169

**APPENDIX B**  
**EXISTING RESOURCE INFORMATION**

L. Preston Bryant, Jr.  
Secretary of Natural Resources



Joseph H. Maroon  
Director

**COMMONWEALTH of VIRGINIA**  
**DEPARTMENT OF CONSERVATION AND RECREATION**

217 Governor Street  
Richmond, Virginia 23219-2010  
(804) 786-7951 FAX (804) 371-2674

January 17, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
Big Stone Gap, VA 24219

Re: Lenowisco Regional Water Supply Study

Dear Mr. McElroy:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the areas outlined on the submitted maps. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

**Appalachia, PL. 1**

According to information currently in our files, the Spiny riversnail (*Io fluviatilis*, G2/S2/SOC/LT) has been historically document in the project vicinity. There is potential for this species to occur within the project footprint and to be impacted by the proposed activity due to water withdrawal causing changes in water quality and/or quantity.

Due to the legal status of the Spiny riversnail, DCR recommends coordination with VDGIF to ensure compliance with protected species legislation. To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR also recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws/regulations and avoiding instream work if possible.

There may also be impacts on aquatic species including the mussel, fish, and snails much further downstream in the Powell River than under normal flow conditions due to continuing drought in the river. Therefore DCR recommends closely monitoring any withdrawal from the river and only allowing the Town of Appalachia to withdrawal the actual amount of water needed and that the withdrawal amount be dependent on recent rain fall events and other relevant factors.

**Big Stone Gap, PL. 2**

This project either overlies or is adjacent to a karst landscape characterized by sinkholes, caves, disappearing streams, and large springs. The project discharges into Powell River which sinks directly into Powell River Cave. DCR recommends coordination with Wil Orndorff (540-831-4056,

[Wil.Orndorff@dcr.virginia.gov](mailto:Wil.Orndorff@dcr.virginia.gov)), head of DCR's Karst Program, to document and minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or "improvement" of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for stormwater discharge, copies of VDOT Form EQ-120 will suffice.

### Wise, PL. 3

Biotics historically documents the presence of natural heritage resources in the project area. However, due to the scope of the activity and the distance to the resources, we do not anticipate that this project will adversely impact these natural heritage resources.

### Coeburn, PL. 4

According to the information currently in our files, natural heritage resources have not been documented in the project area. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources

### Pound PL. 5 & City of Norton PL. 13 (both sites)

Biotics documents the presence of natural heritage resources in the project areas. However, due to the scope of the activity and the distance to the resources, we do not anticipate that this project will adversely impact these natural heritage resources.

### St. Paul PL. 6 & Wise County PSA PL. 7

According to the information currently in our files, the Clinch River-Cooper Creek Stream Conservation Unit (SCU) is within to the project site. SCUs are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. They are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. SCUs are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Clinch River-Cooper Creek SCU has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources associated with this SCU are:

<u>Scientific Name</u>	<u>Common Name</u>	<u>Global Rank</u>	<u>State Rank</u>	<u>Federal Status</u>	<u>State Status</u>
<i>Alasmidonta marginata</i>	Elktoe	G4	S1S2		SC
<i>Ammocrypta clara</i>	Western Sand Darter	G3	S1		LT
<i>Apalone spinifera</i>	Spiny Softshell	G5	S2		
<i>Cryptobranchus alleganiensis</i>	Hellbender	G3G4	S2S3		SC
<i>Cumberlandia monodonta</i>	Spectacle Case	G2G3	S1	C	LE
<i>Cyprogenia stegaria</i>	Fanshell	G1	S1	LE	LE
<i>Dromus dromas</i>	Dromedary Pearlymussel	G1	S1	LE	LE
<i>Elliptio crassidens</i>	Elephant Ear	G5	S1		LE
<i>Epioblasma brevidens</i>	Cumberland Combshell	G1	S1	LE	LE
<i>Epioblasma capsaeformis</i>	Oyster Mussel	G1	S1	LE	LE
<i>Epioblasma triquetra</i>	Snuffbox	G3	S1		LE
<i>Etheostoma camurum</i>	Bluebreast Darter	G4	S2		SC

<i>Etheostoma cinereum</i>	Ashy Darter	G2G3	S1	SOC	
<i>Etheostoma denoncourti</i>	Golden Darter	G2	S1	SOC	LT
<i>Etheostoma meadiae</i>	Bluespar Darter	G4	S2		
<i>Etheostoma percnurum</i>	Duskytail Darter	G1	S1	LE	LE
<i>Freshwater Mussel</i>	Freshwater Mussel	G3	SNR		
<i>Concentration Sites</i>	Concentration Sites				
<i>Fusconaia barnesiana</i>	Tennessee Pigtoe	G2G3	S2	SOC	SC
<i>Fusconaia cor</i>	Shiny Pigtoe	G1	S1	LE	LE
<i>Fusconaia cuneolus</i>	Fine-rayed Pigtoe	G1	S1	LE	LE
<i>Gomphus consanguis</i>	Cherokee Clubtail	G2G3	S2	SOC	
<i>Graptemys geographica</i>	Northern Map Turtle	G5	S2S3		
<i>Hemistena lata</i>	Cracking Pearlymussel	G1	S1	LE	LE
<i>Io fluvialis</i>	Spiny Riversnail	G2	S2	SOC	LT
<i>Labidesthes sicculus</i>	Brook Silverside	G5	S2		SC
<i>Lemiox rimosus</i>	Birdwing Pearlymussel	G1	S1	LE	LE
<i>Leptodea fragilis</i>	Fragile Papershell	G5	S1		LT
<i>Lexingtonia dolabelloides</i>	Slabside Pearlymussel	G2	S2	C	LT
<i>Ligumia recta</i>	Black Sandshell	G5	S2		LT
<i>Moxostoma carinatum</i>	River Redhorse	G4	S2S3		SC
<i>Necturus maculosus</i>	Mudpuppy	G5	S2		
<i>Notropis ariommus</i>	Popeye Shiner	G3	S2S3		SC
<i>Notropis atherinoides</i>	Emerald Shiner	G5	S1S2		LT
<i>Noturus flavipinnis</i>	Yellowfin Madtom	G1	S1	LT	LT
<i>Noturus flavus</i>	Stonecat	G5	S2		SC
<i>Percina aurantiaca</i>	Tangerine Darter	G4	S2S3		
<i>Percina burtoni</i>	Blotchside Logperch	G2	S1	SOC	SC
<i>Percina copelandi</i>	Channel Darter	G4	S2		SC
<i>Plethobasus cyphus</i>	Sheepnose	G3	S1	C	LT
<i>Pleurobema oviforme</i>	Tennessee Clubshell	G2G3	S2S3	SOC	
<i>Pleurobema rubrum</i>	Pyramid Pigtoe	G2	S1	SOC	LE
<i>Ptychobranchus subtentum</i>	Fluted Kidneyshell	G2	S2	C	
<i>Quadrula cylindrica strigillata</i>	Rough Rabbits Foot	G3T2	S2	LE	LE
<i>Quadrula intermedia</i>	Cumberland Monkeyface	G1	S1	LE	LE
<i>Quadrula pustulosa</i>	Pimple Back	G5	S2		LT
<i>Quadrula sparsa</i>	Appalachian Monkeyface	G1	S1	LE	LE
<i>Spiraea virginiana</i>	Virginia Spiraea	G2	S1	LT	LE
<i>Sternotherus minor</i>	Loggerhead Musk Turtle	G5	S2		
<i>Truncilla truncata</i>	Deertoe	G5	S1		LE
<i>Villosa perpurpurea</i>	Purple Bean	G1	S1	LE	LE

In addition, the Clinch River has been designated by the Virginia Department of Game and Inland Fisheries (VDGIF) as being "Threatened and Endangered Species Waters". There are 34 species associated with this T & E waters.

These project areas are within in a karst landscape characterized by sinkholes, caves, disappearing streams, and large springs. If such features are encountered during the project, please coordinate with Wil Orndorff (540-831-4056, [Wil.Orndorff@dcr.virginia.gov](mailto:Wil.Orndorff@dcr.virginia.gov)) to document and minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or "improvement" of sinkholes or cave openings, DCR would like detailed location information and copies

of the design specifications. In cases where sinkhole improvement is for stormwater discharge, copies of VDOT Form EQ-120 will suffice.

Due to the legal status of many of these natural heritage resources, DCR recommends coordination with the United States Fish and Wildlife Service (USFWS) and the VDGIF to ensure compliance with protected species legislation. To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations.

#### **Jonesville, PL. 8 & Lee County PSA – Blue Springs WTP, PL. 9**

These project areas are in a karst landscape characterized by sinkholes, caves, disappearing streams, and large springs. For Jonesville intake (PL. 8), discharges to sinkhole will impact karst and potentially the Lee County Isopod (*Lirceus usdagalun*, G2G3/S1/LE/LE) associated with this karst feature. DCR recommends coordination with Wil Orndorff (540-831-4056, [Wil.Orndorff@dcr.virginia.gov](mailto:Wil.Orndorff@dcr.virginia.gov)) to minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or “improvement” of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for stormwater discharge, copies of VDOT Form EQ-120 will suffice.

#### **Harvest Baptist – Ministries Home, PL. 10**

According to the information currently in our files, the Wallen Creek – Sticklelyville Stream Conservation Unit (SCU) is downstream of the project site. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Wallen Creek – Sticklelyville SCU has been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resource of concern associated with this SCU is:

*Fusconaia barnesiana*

Tennessee pigtoe

G2G3/S2/SOC/SC

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species. Please note that the Tennessee pigtoe is classified as a species of concern by USFWS and as a special concern species by VDGIF; however, these designations have no official legal status.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations.

#### **Lee County PSA – KVS Quarry WTP, PL. 11**

This project either overlies or is adjacent to a karst landscape characterized by sinkholes, caves, disappearing streams, and large springs. DCR recommends coordination with Wil Orndorff (540-831-4056, [Wil.Orndorff@dcr.virginia.gov](mailto:Wil.Orndorff@dcr.virginia.gov)) to document and minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface

collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or “improvement” of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for stormwater discharge, copies of VDOT Form EQ-120 will suffice.

**Pennington Gap, PL. 12**

According to the information currently in our files, the Powell River – North Fork Powell River Stream Conservation Unit (SCU) is within and downstream of the project site. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Powell River – North Fork Powell River SCU has been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resources of concern associated with this SCU are:

<i>Io fluvialis</i>	Spiny riversnail	G2/S2/SOC/LT
<i>Notropis ariommus</i>	Popeye shiner	G3/S2S3/NL/SC
<i>Pleurobema oviforme</i>	Tennessee clubshell	G2G3/S2S3/SOC/NL
<i>Quadrula cylindrica strigillata</i>	Rough rabbits foot	G3T2/S2/LE/LE
<i>Sander canadensis</i>	Sauger	G5/S2S3/NL/SC

In addition, the Powell River has been designated by VDGIF as a “Threatened and Endangered Species Water” and is downstream of the project site. There are 20 listed species associated with this T & E Water.

This project either overlies or is adjacent to a karst landscape characterized by sinkholes, caves, disappearing streams, and large springs. DCR recommends coordination with Wil Orndorff (540-831-4056, [Wil.Orndorff@dcr.virginia.gov](mailto:Wil.Orndorff@dcr.virginia.gov)) to document and minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or “improvement” of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for stormwater discharge, copies of VDOT Form EQ-120 will suffice.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Due to the legal status of many of these species, DCR also recommends coordination with USFWS and the VDGIF to ensure compliance with protected species legislation.

**Scott County PSA – Duffield WTP, PL. 14**

According to the information currently in our files, the North Fork Clinch River – Fraley Branch SCU is within the project area. This SCU been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resources of concern associated with this SCU are:

<i>Fusconaia barnesiana</i>	Tennessee Pigtoe	G2G3/S2/SOC/SC
<i>Pleurobema oviforme</i>	Tennessee Clubshell	G2G3/S2S3/SOC/NL
<i>Lasmigona holstonia</i>	Tennessee Heelsplitter	G3/S1/NL/LE

The Tennessee clubshell is typically found in small, very shallow streams and rivers with good current and a substrate of coarse gravel and sand (Parmalee and Bogan, 1998). Please note that this species is currently classified as a species of concern by USFWS.

The Tennessee heelsplitter, a rare mussel species, has also been documented in the project vicinity. Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species. Please note that the Tennessee heelsplitter is currently listed as endangered by VDGIF.

In addition, the North Fork Clinch River has been designated by VDGIF as a "Threatened and Endangered Species Water" and is downstream of the project site. The natural heritage resources associated with this T & E water are the Fine-rayed pigtoe (*Fusconaia cunelus*), Littlewing Pearlymussel (*Pegias fabula*), Oyster mussel (*Epioblasma capsaeformis*), Tan riffleshell (*Epioblasma florentina walkeri*), and the Slippershell mussel (*Alasmidonta viridis*).

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

This project either overlies or is adjacent to a karst landscape characterized by sinkholes, caves, disappearing streams, and large springs. DCR recommends coordination with Wil Orndorff (540-831-4056, [Wil.Orndorff@dcr.virginia.gov](mailto:Wil.Orndorff@dcr.virginia.gov)) to document and minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or "improvement" of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for stormwater discharge, copies of VDOT Form EQ-120 will suffice.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Due to the legal status of many of these species, DCR also recommends coordination with USFWS and the VDGIF to ensure compliance with protected species legislation.

**Scott County PSA – Moccasin Gap, PL. 16 (both sites)**

According to the information currently in our files, the North Fork Holston River – Big Moccasin Creek SCU is downstream of the project site. This SCU been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern associated with this SCU are:

<u>Scientific Name</u>	<u>Common Name</u>	<u>Global Rank</u>	<u>State Rank</u>	<u>Federal Status</u>	<u>State Status</u>	<u>Federal Species of Concern</u>
<i>Erimonax monachus</i>	Turquoise Shiner	G2	S1	LT	LT	
<i>Etheostoma camurum</i>	Bluebreast Darter	G4	S2		SC	
<i>Fusconaia barnesiana</i>	Tennessee Pigtoe	G2G3	S2		SC	SOC
<i>Fusconaia cuneolus</i>	Fine-rayed Pigtoe	G1	S1	LE	LE	
<i>Graptemys geographica</i>	Northern Map Turtle	G5	S2S3			
<i>Notropis ariommus</i>	Popeye Shiner	G3	S2S3		SC	
<i>Noturus flavus</i>	Stonecat	G5	S2		SC	
<i>Percina aurantiaca</i>	Tangerine Darter	G4	S2S3			
<i>Percina evides</i>	Gilt Darter	G4	S2			
<i>Pimephales vigilax</i>	Bullhead Minnow	G5	S1			
<i>Quadrula cylindrica strigillata</i>	Rough Rabbits Foot	G3T2	S2	LE	LE	
<i>Sternotherus minor</i>	Loggerhead Musk Turtle	G5	S2			
<i>Trachemys scripta troostii</i>	Cumberland Slider	G5T4	S1			

In addition, Big Moccasin Creek, Copper Creek, and the North Fork Holston River have been designated by VDGIF as a “Threatened and Endangered Species Water” and is downstream of the project site. There are 17 listed species associated with these T & E Waters.

This project either overlies or is adjacent to a karst landscape characterized by sinkholes, caves, disappearing streams, and large springs. DCR recommends coordination with Wil Orndorff to document and minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or “improvement” of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for stormwater discharge, copies of VDOT Form EQ-120 will suffice.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Due to the legal status of many of these species, DCR also recommends coordination with USFWS and the VDGIF to ensure compliance with protected species legislation.

Our files do not indicate the presence of any State Natural Area Preserves under DCR’s jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

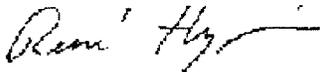
New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

A fee of \$1020.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, Department of Conservation and Recreation, 203 Governor Street, Suite 423D, Richmond, VA 23219, ATTN: Cashier. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, that may contain information not documented in this letter. Their database may be accessed from [www.dgif.virginia.gov/wildlife/info\\_map/index.html](http://www.dgif.virginia.gov/wildlife/info_map/index.html), or contact Shirl Dressler at (804) 367-6913.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,



S. René Hypes  
Project Review Coordinator

CC: Amy Ewing, VDGIF  
Kim Smith, USFWS  
Wil Orndorff, DCR-Karst

#### Literature Cited

Williams, J.D., M.L. Warren, Jr., K.S. Cummings, J.L. Harris, and R.J. Neves. 1993. Conservation status of freshwater mussels of the United States and Canada. *Fisheries* 18: 6-9.

Parmalee, P. W. and A. E. Bogan. 1998. *The Freshwater Mussels of Tennessee*. The University of Tennessee Press, Knoxville, TN. p. 187-188.



# COMMONWEALTH of VIRGINIA

## Department of Historic Resources

L. Preston Bryant, Jr.  
*Secretary of Natural Resources*

2801 Kensington Avenue, Richmond, Virginia 23221

Kathleen S. Kilpatrick  
*Director*

Tel: (804) 367-2323  
Fax: (804) 367-2391  
TDD: (804) 367-2386  
[www.dhr.virginia.gov](http://www.dhr.virginia.gov)

January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Duffield Quad

Dear Mr. McElroy:

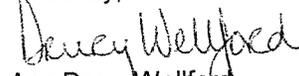
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Ann Drury Wellford  
Archives - DHR

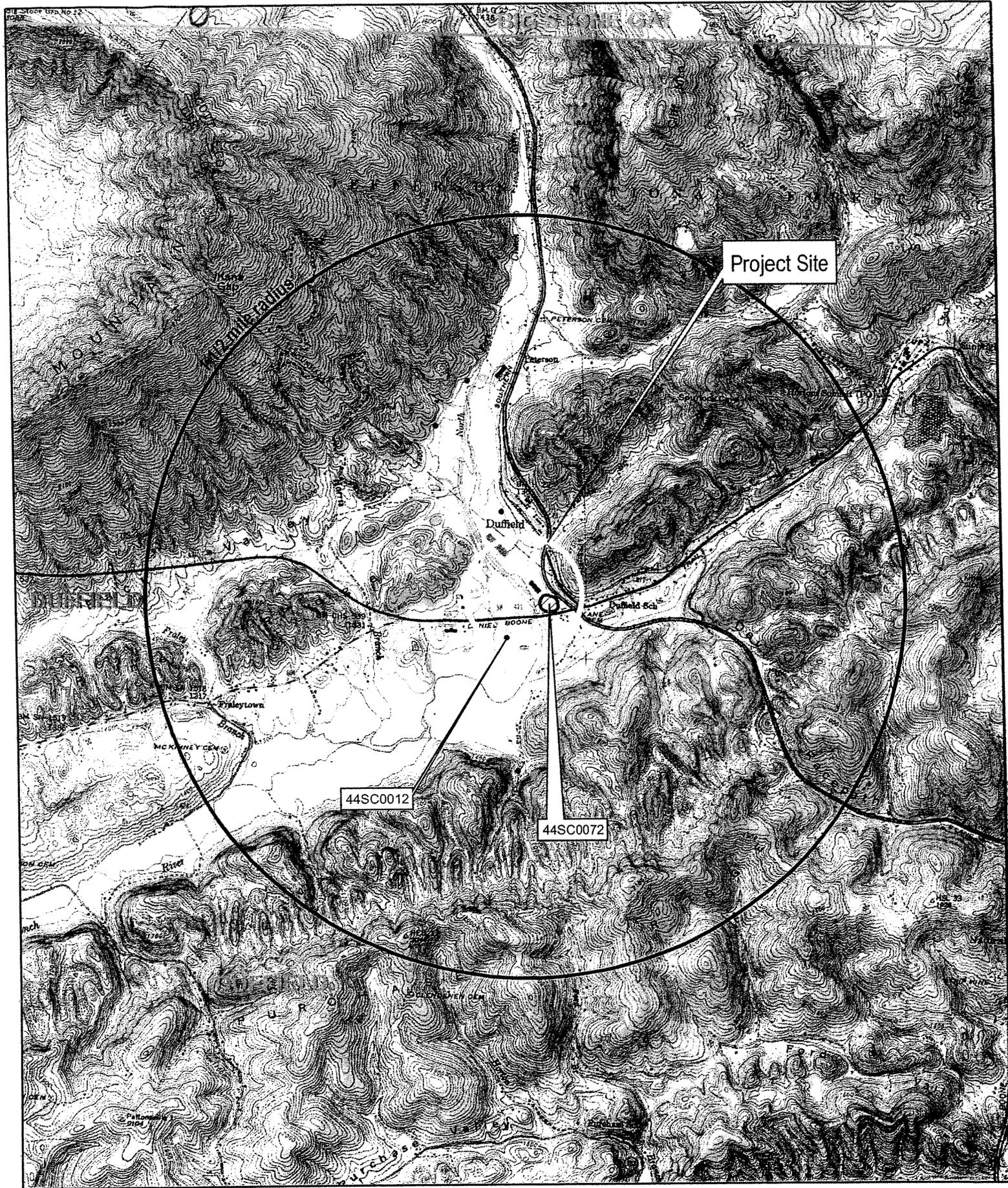
Administrative Services  
10 Courthouse Ave.  
Petersburg, VA 23803  
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Fax: (804) 862-6196

Capital Region Office  
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Richmond, VA 23221  
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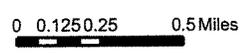
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Winchester Region Office  
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Lenowisco Planning District Water Supply Study  
 The LANE Group  
 Duffield Quad/Scott County  
 01/09/2008  
 Drury Wellford/VDHR



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle



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January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Appalachia & Norton Quads

Dear Mr. McElroy:

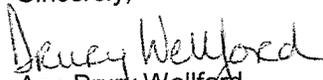
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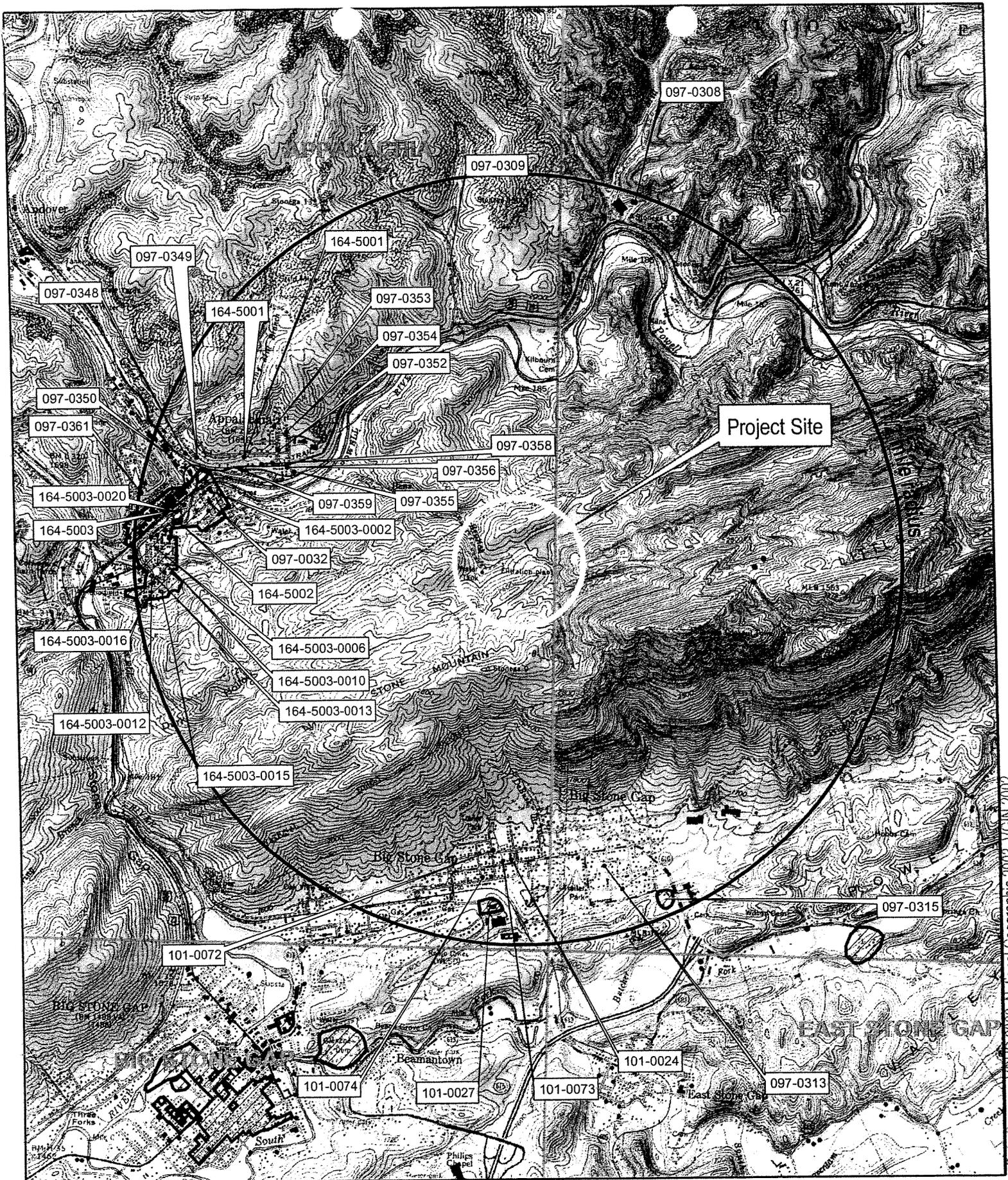
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Lenowisco Planning District Water Supply Study  
 The LANE Group, Inc.  
 Appalachia and Norton Quads/Wise County  
 01/09/2008  
 Drury Wellford/VDHR

0 0.125 0.25 0.5 Miles



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle



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Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
Bvig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Gate City and Kingsport Quads

Dear Mr. McElroy:

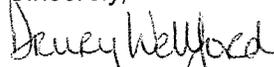
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Winchester Region Office  
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Project Site

1/2-mile radius

084-5030

084-5173

084-5178

084-5181

084-5170

084-5174

084-5180

084-5179

084-5176

084-5175

44SC0162

084-5031

221-5008

221-0001

084-5032

324-0002

084-5156

324-0001

084-5155

221-5006

084-5036

324-0007

084-0027

324-0004

084-0026

084-0025

324-0003

324-0008

084-0022

Lenowisco Planning District Water Supply Study  
 The LANE Group, Inc.  
 Gate City and Kingsport Quads/Gate City  
 01/09/2008  
 Drury Wellford/VDHR

0 0.125 0.25 0.5 Miles



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle

Data Sources: VDHR 2006, National Geographic 2003, VGIN 2002



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January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Norton and Wise Quads

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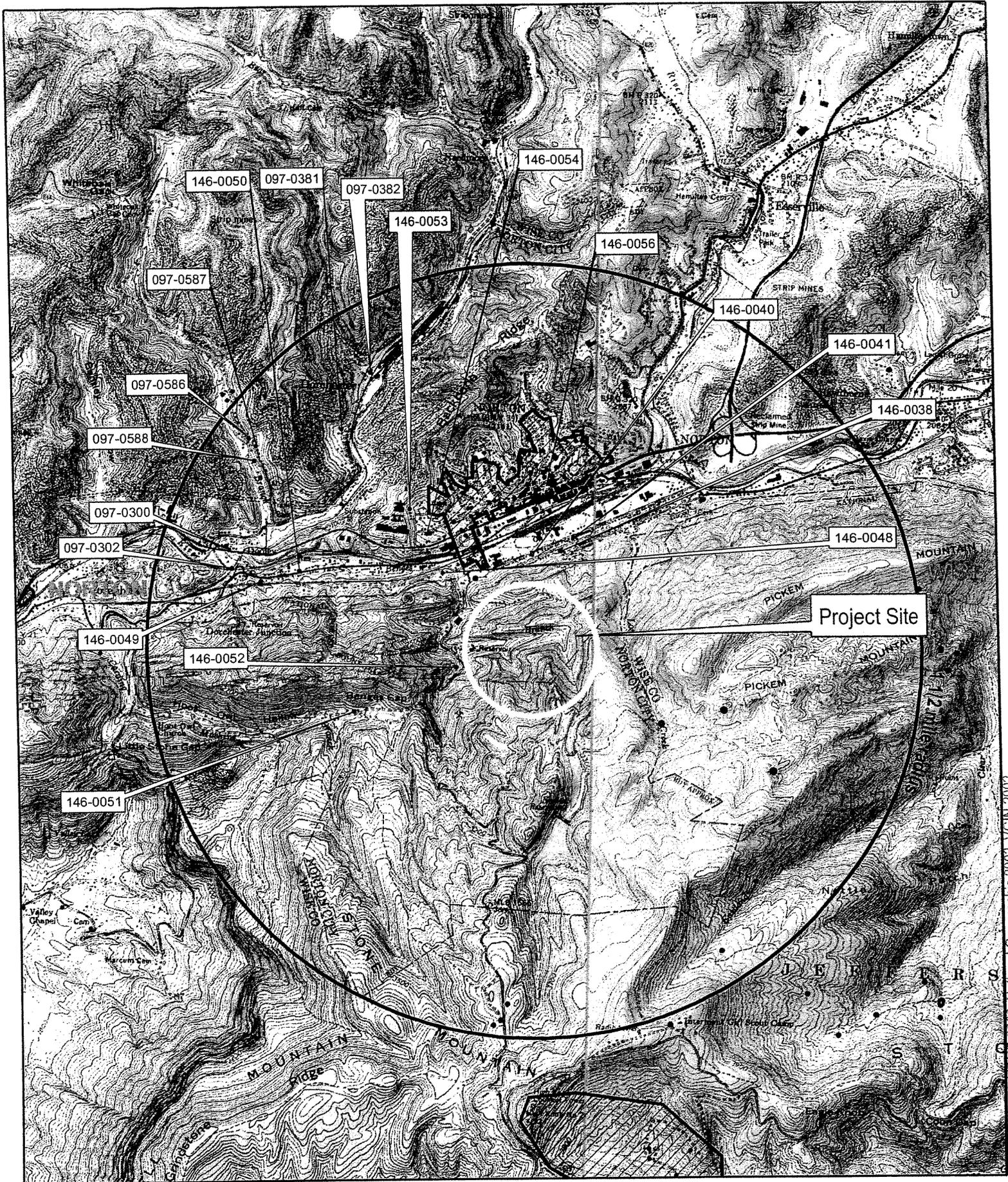
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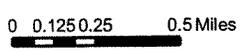
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Lenowisco Planning District Water Supply Study  
 The LANE Group  
 Norton and Wise Quads/Wise County 2  
 01/09/2008  
 Drury Wellford/VDHR



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle

Data Sources: VDHHR 2/06; National Geographic 2003; VGIN 2002



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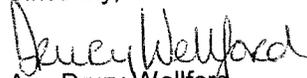
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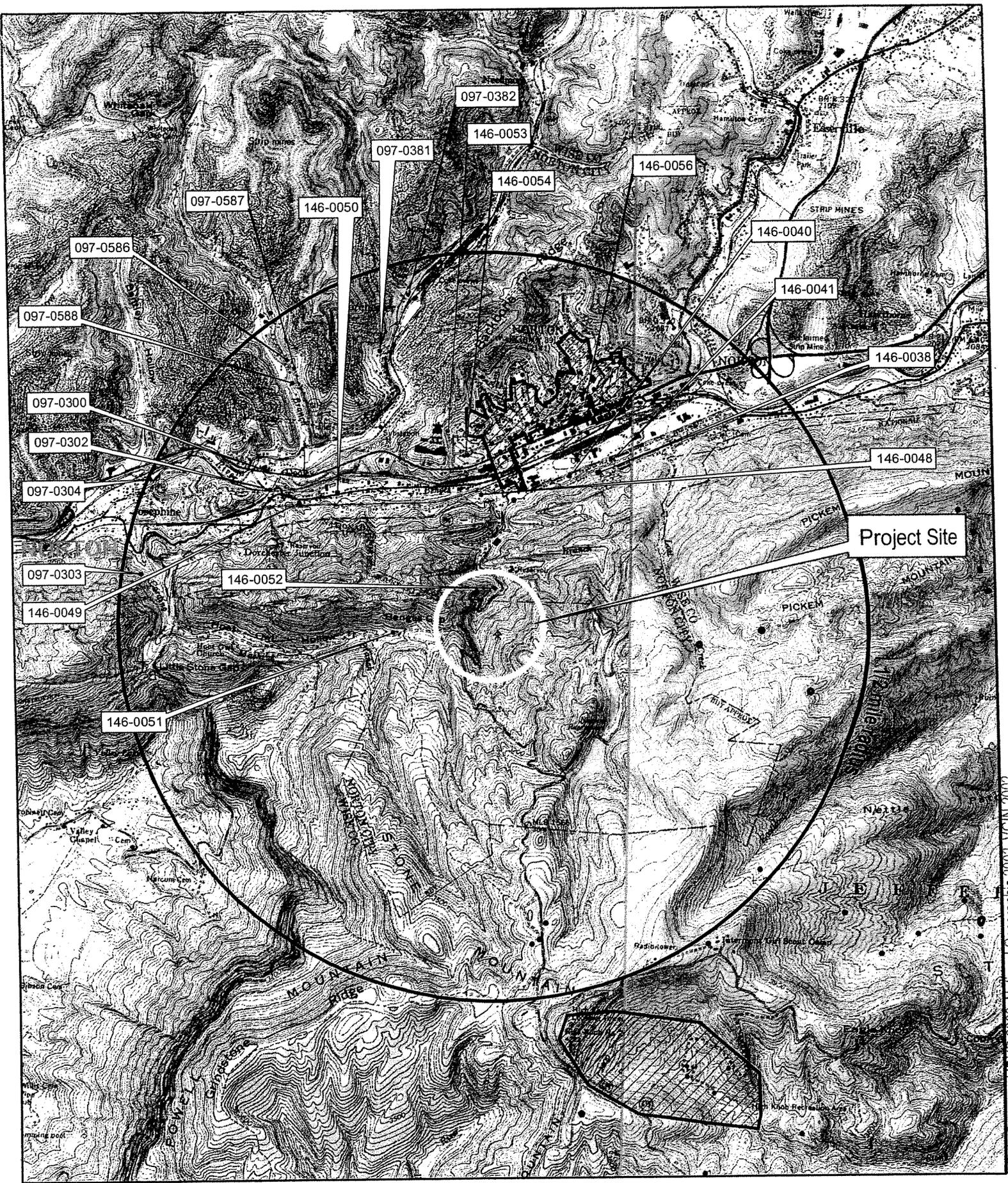
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Lenowisco Planning District Water Supply Study  
 The LANE Group  
 Norton an Wise Quads/Norton City 1  
 01/09/2008  
 Drury Wellford/VDHR

0 0.125 0.25 0.5 Miles



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle



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January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Ben Hur Quad, etc.

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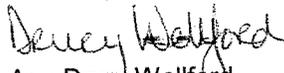
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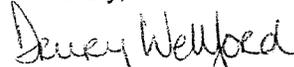
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Sincerely,

  
Ann Drury Wellford  
Archives - DHR

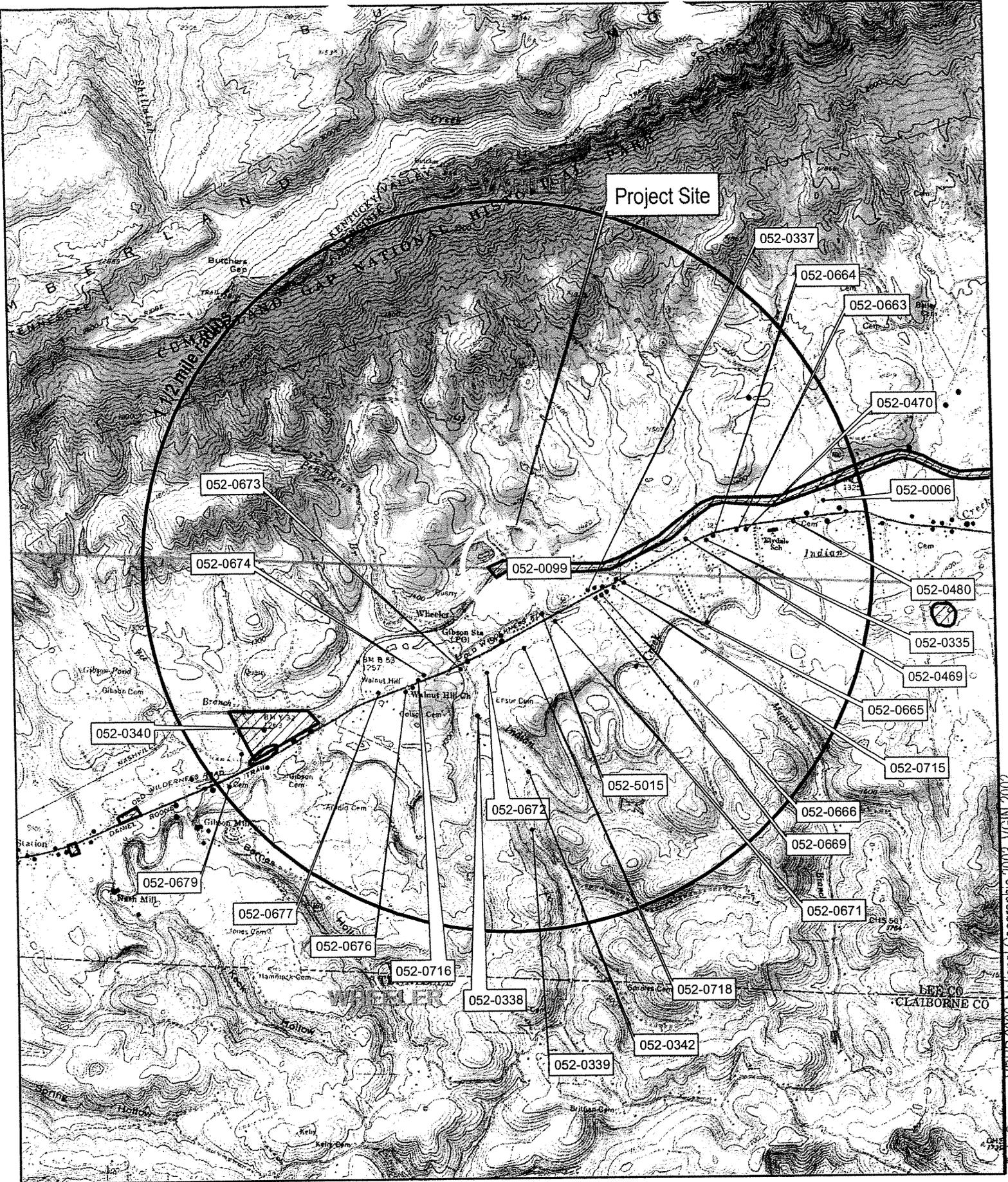
Administrative Services  
10 Courthouse Ave.  
Petersburg, VA 23803  
Tel: (804) 863-1624  
Fax: (804) 862-6196

Capital Region Office  
2801 Kensington Office  
Richmond, VA 23221  
Tel: (804) 367-2323  
Fax: (804) 367-2391

Tidewater Region Office  
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2<sup>nd</sup> Floor  
Newport News, VA 23608  
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Roanoke Region Office  
1030 Penmar Avenue, SE  
Roanoke, VA 24013  
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Winchester Region Office  
107 N. Kent Street, Suite 203  
Winchester, VA 22601  
Tel: (540) 722-3427  
Fax: (540) 722-7535



Data Source: VMAP 2006 National Geographic 2003 VGIN 2002

Lenowisco Planning District Water Supply Study  
 The LANE Group  
 Varilla and Wheeler Quads/Lee County  
 01/09/2008  
 Drury Wellford/VDHR

0 0.125 0.25 0.5 Miles



- Archaeological Sites
- Architectural Resources
- USGS Quadrangle



# COMMONWEALTH of VIRGINIA

## Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

L. Preston Bryant, Jr.  
*Secretary of Natural Resources*

Kathleen S. Kilpatrick  
*Director*

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Fax: (804) 367-2391  
TDD: (804) 367-2386  
[www.dhr.virginia.gov](http://www.dhr.virginia.gov)

January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Stickleyleville Quad

Dear Mr. McElroy:

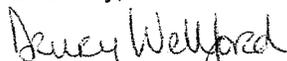
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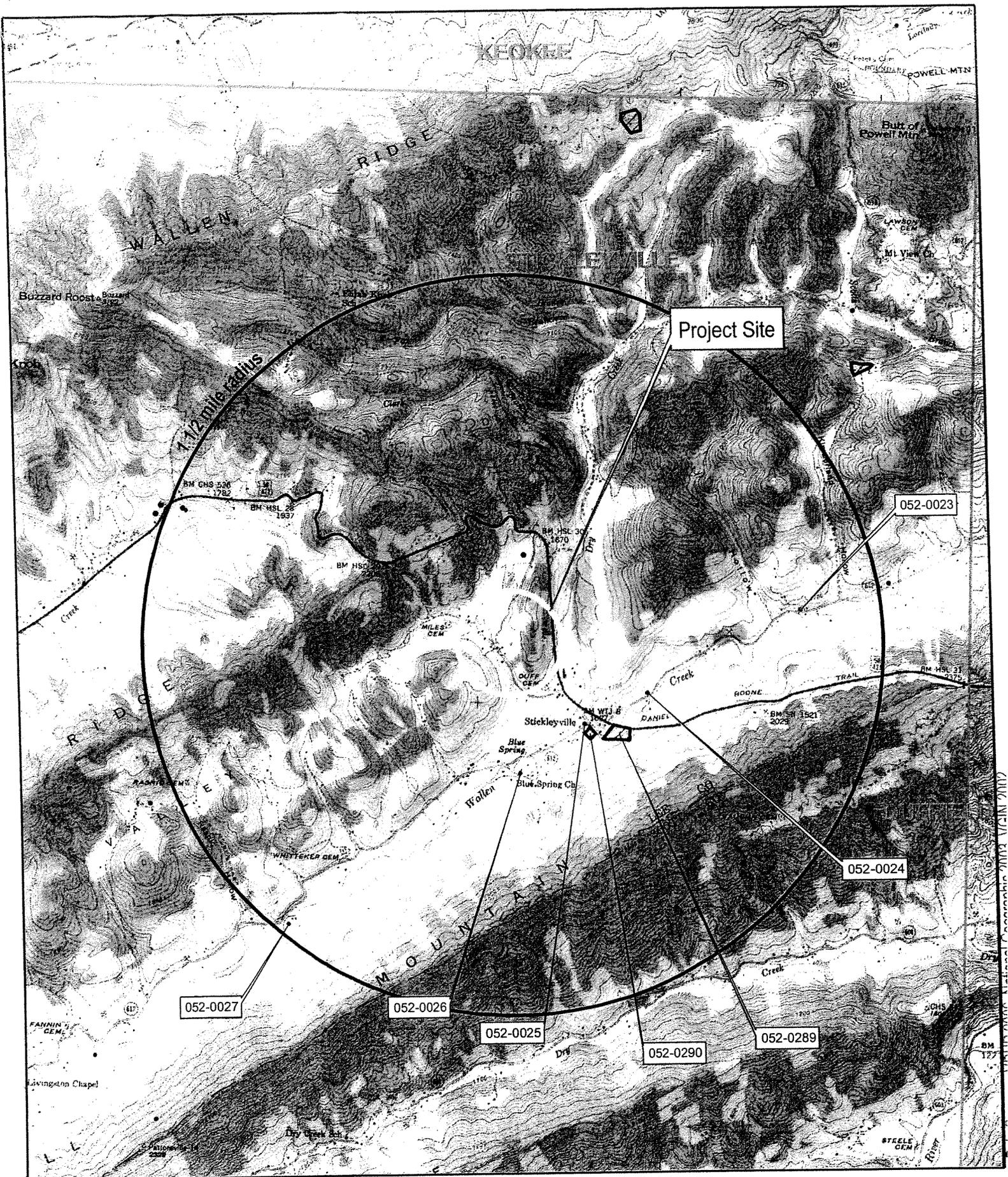
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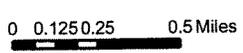
Tidewater Region Office  
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Lenowisco Planning District Water Supply Study  
 The LANE Group  
 Stickleyville Quad/Lee County  
 01/09/2008  
 Drury Wellford/VDHR



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle



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January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Rose Hill and Ewing Quads

Dear Mr. McElroy:

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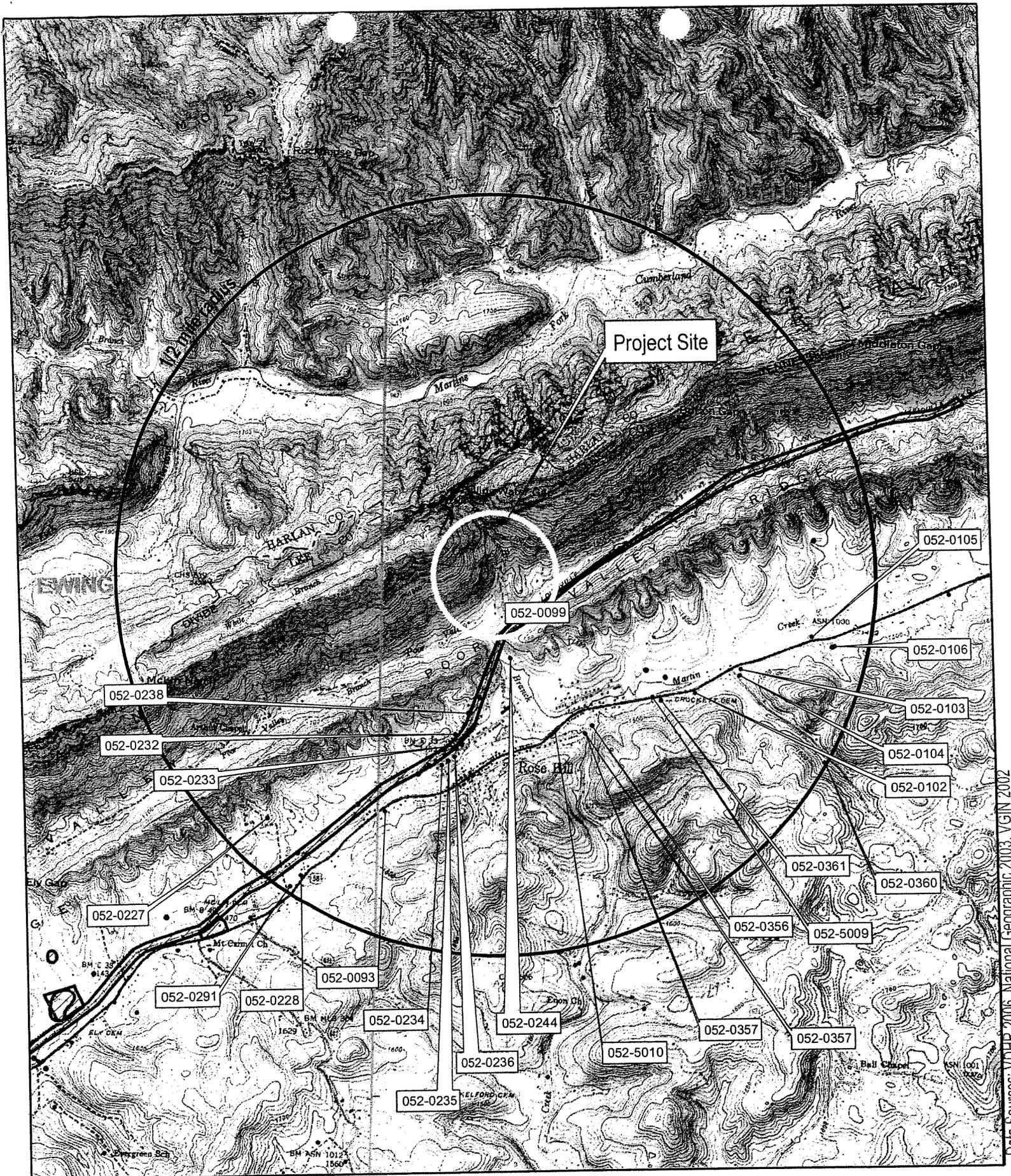
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Winchester Region Office  
107 N. Kent Street, Suite 203  
Winchester, VA 22601  
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Lewistown Planning District Water Supply Study  
 The LANE Group, Inc.  
 Rose Hill and Ewing Quads/Lee County  
 01/09/2008  
 Drury Wellford/VDHR

0 0.1250.25 0.5 Miles



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle

Data Sources: VDHR 2006, National Geographic 2003, VGIN 2002



# COMMONWEALTH of VIRGINIA

## Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

L. Preston Bryant, Jr.  
*Secretary of Natural Resources*

Kathleen S. Kilpatrick  
*Director*

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[www.dhr.virginia.gov](http://www.dhr.virginia.gov)

January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Hubbard Springs and Ben Hur Quads

Dear Mr. McElroy:

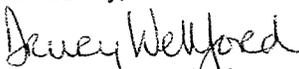
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# COMMONWEALTH of VIRGINIA

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January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Moll Creek Quad, etc.

Dear Mr. McElroy:

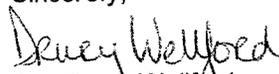
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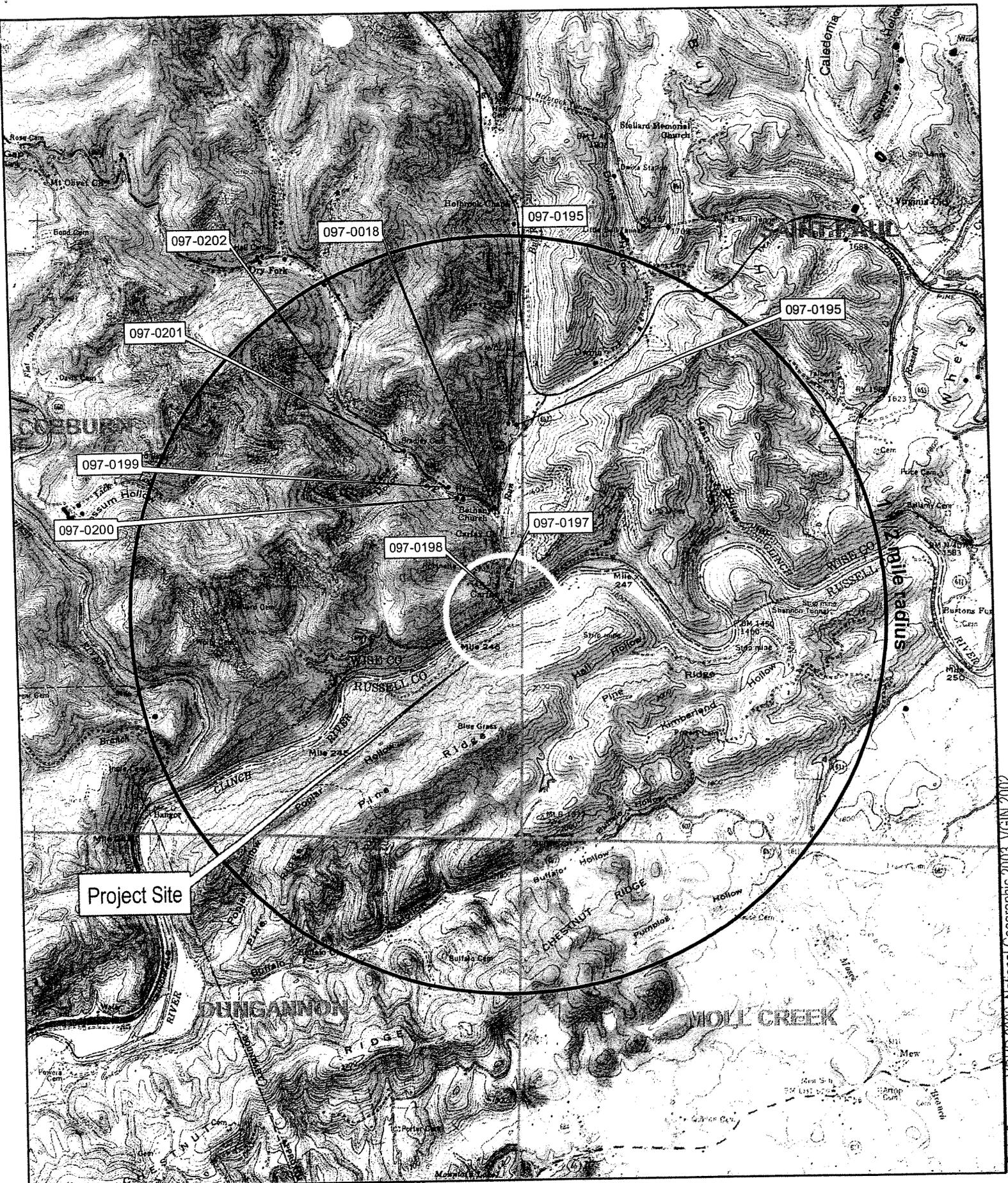
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Winchester Region Office  
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Winchester, VA 22601  
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Fax: (540) 722-7535



Lenowisco Planning District Water Supply Study  
 The LANE Group, Inc.  
 Moll Creek, Dungannon, Coeburn and Saint Paul Quads/  
 Russell and Wise Counties  
 01/09/2008  
 Drury Wellford/VDHR

0 0.125 0.25 0.5 Miles



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle

Map prepared by VDH/VMS National Geographic 2003, VGIN 2002



# COMMONWEALTH of VIRGINIA

## Department of Historic Resources

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January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVirg Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/St. Paul Quad

Dear Mr. McElroy:

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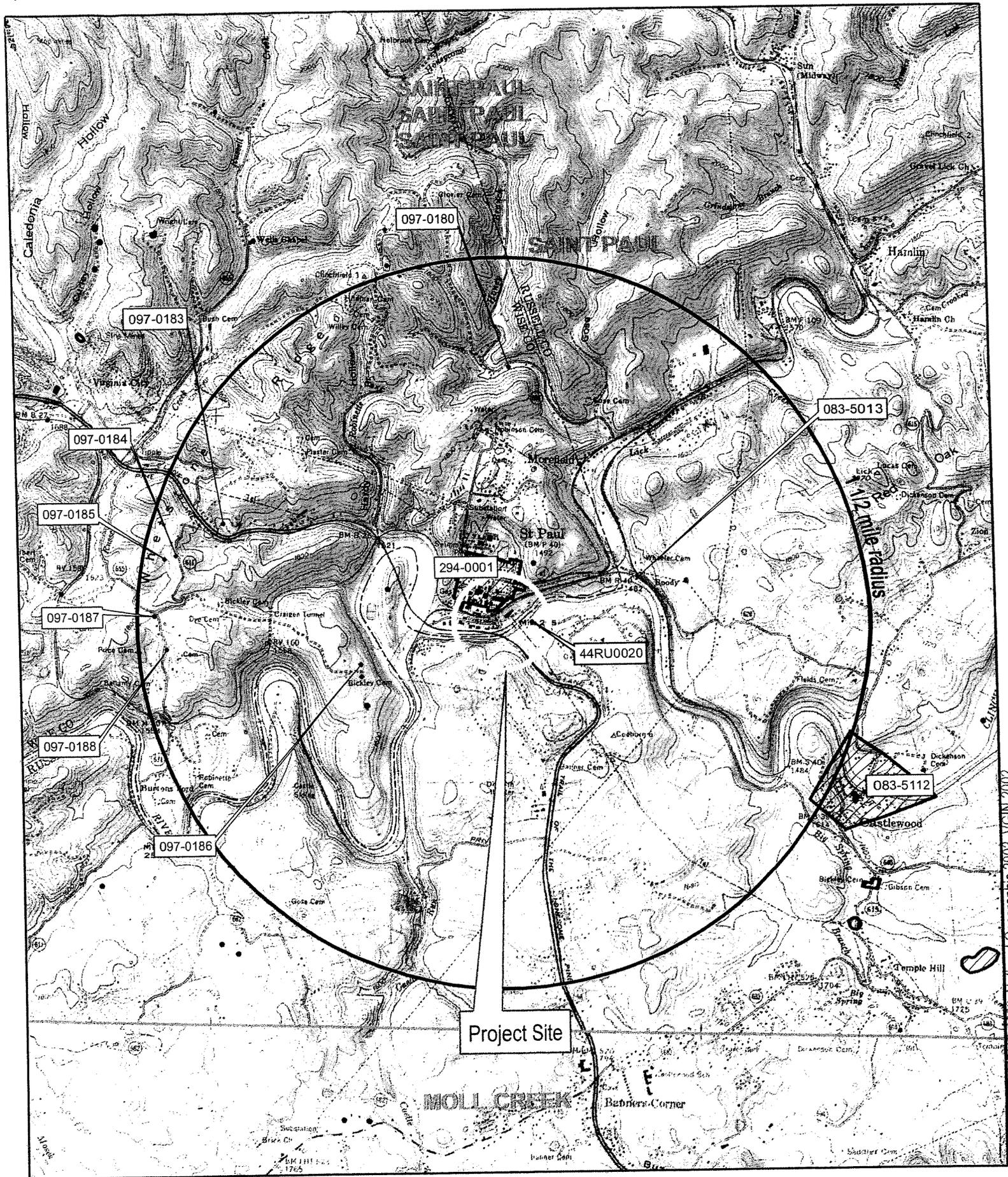
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Lenowisco Planning District Water Supply Study  
 The LANE Group, Inc.  
 Saint Paul Quad/Wise County  
 01/09/2008  
 Drury Wellford/VDHR

0 0.125 0.25 0.5 Miles



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadangle

Data Courtesy: VAHP 2003, National Geographic 2003, VGIN 2002



# COMMONWEALTH of VIRGINIA

## Department of Historic Resources

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*Secretary of Natural Resources*

2801 Kensington Avenue, Richmond, Virginia 23221

Kathleen S. Kilpatrick  
*Director*

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[www.dhr.virginia.gov](http://www.dhr.virginia.gov)

January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Jenkins East Quad, etc.

Dear Mr. McElroy:

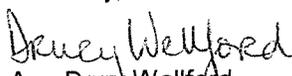
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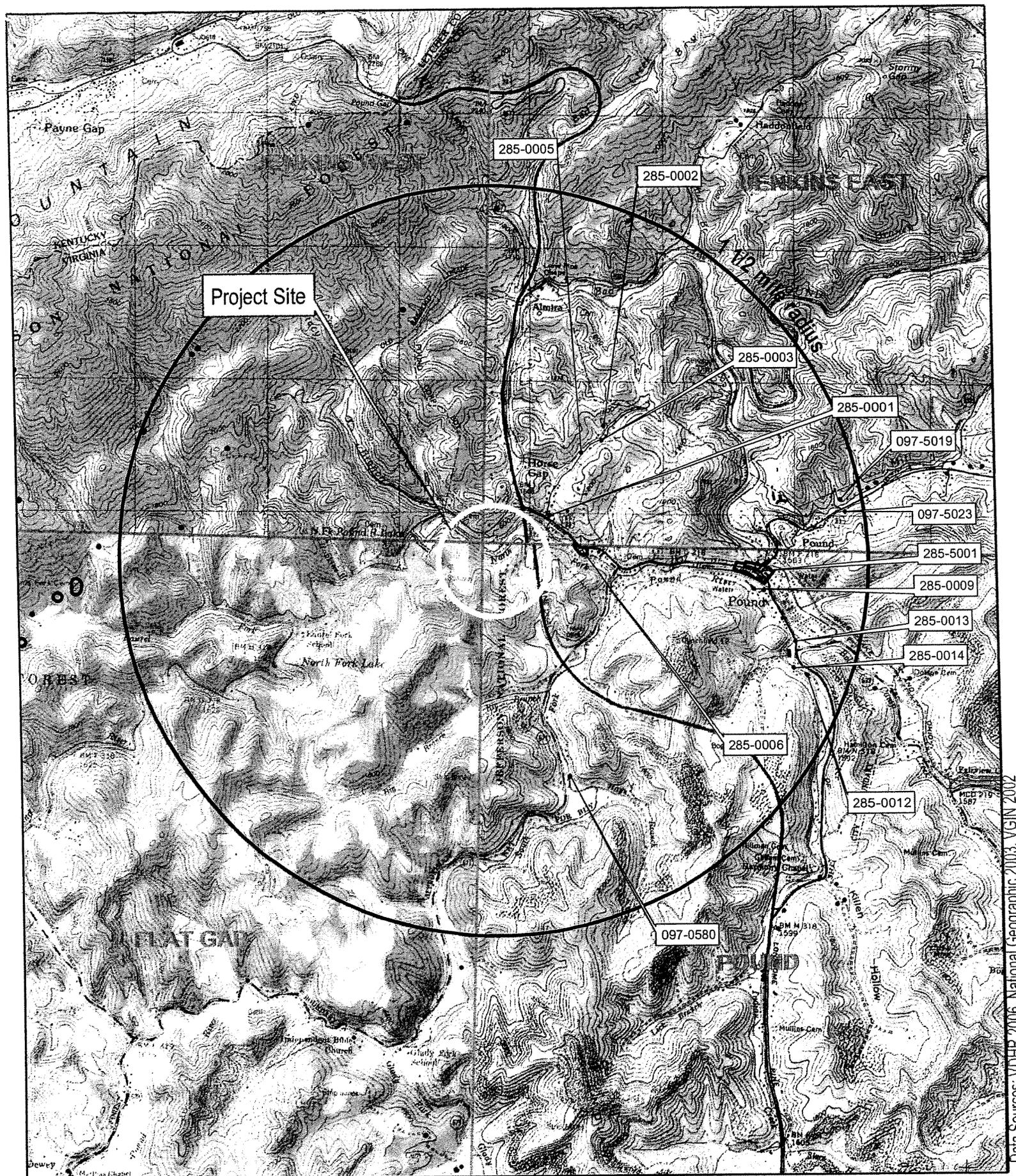
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Tel: (540) 722-3427  
Fax: (540) 722-7535



Lenowisco Planning District Water Supply Study  
 The LANE Group, Inc.  
 Jenkins East, Jenkins West, Flat Gap, Pound Quads/Wise County  
 01/09/2008  
 Drury Wellford/VDHR

0 0.1250.25 0.5 Miles



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle

Data Sources: VMAP 2006, National Geographic 2003, VGIN 2002



# COMMONWEALTH of VIRGINIA

## Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

L. Preston Bryant, Jr.  
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January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVirg Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Coeburn and Caney Ridge Quads

Dear Mr. McElroy:

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Archives - DHR

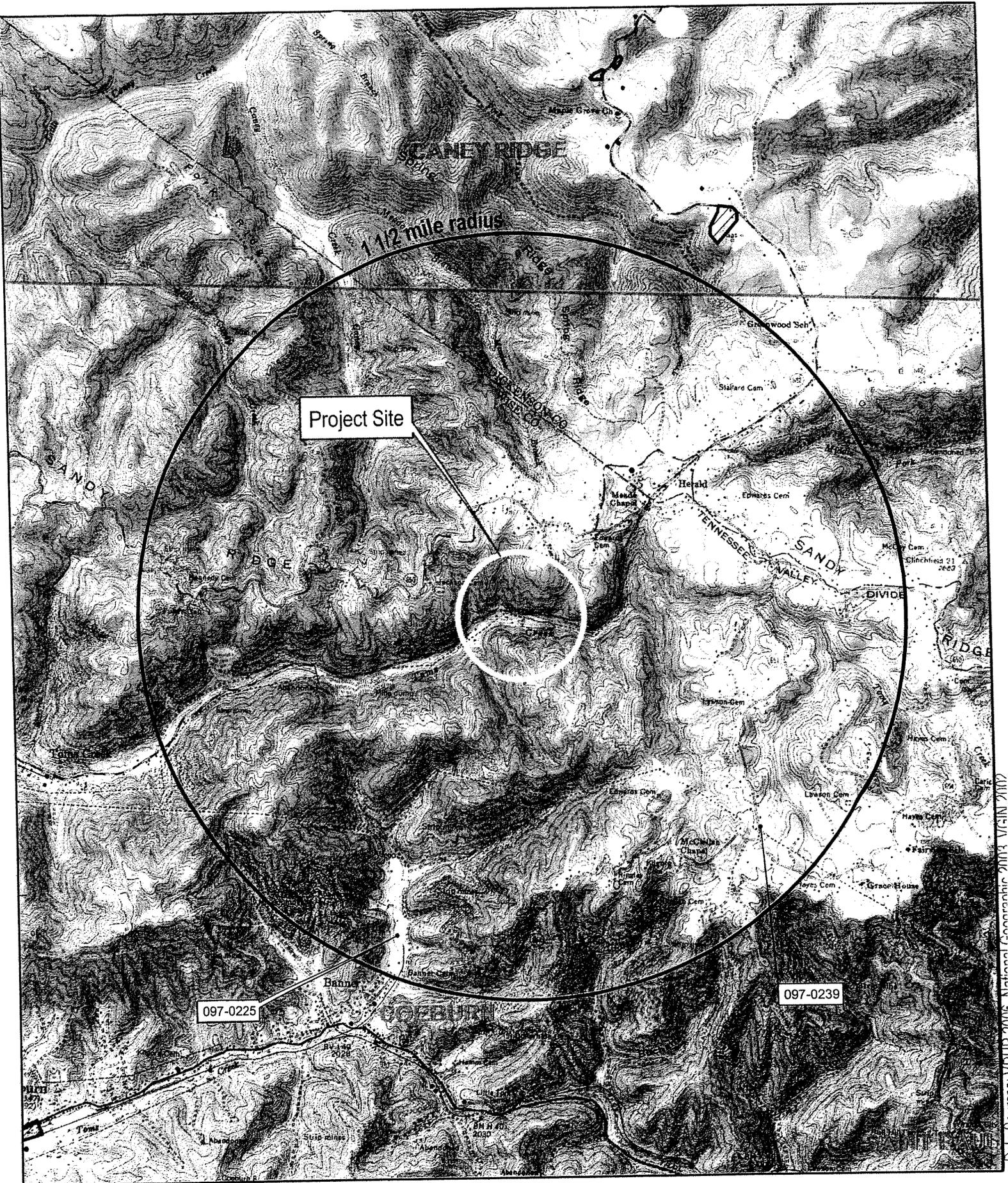
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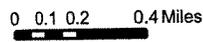
Tidewater Region Office  
14415 Old Courthouse Way  
2<sup>nd</sup> Floor  
Newport News, VA 23608  
Tel: (757) 886-2807  
Fax: (757) 886-2808

Roanoke Region Office  
1030 Penmar Avenue, SE  
Roanoke, VA 24013  
Tel: (540) 857-7585  
Fax: (540) 857-7588

Winchester Region Office  
107 N. Kent Street, Suite 203  
Winchester, VA 22601  
Tel: (540) 722-3427  
Fax: (540) 722-7535



Lenowisco Planning District Water Supply Study  
 The LANE Group, Inc.  
 Coeburn and Caney Ridge Quads/Wise County  
 01/09/2008  
 Drury Wellford/VDHR



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle

2008 National Geographic Society



# COMMONWEALTH of VIRGINIA

## Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

L. Preston Bryant, Jr.  
*Secretary of Natural Resources*

Kathleen S. Kilpatrick  
*Director*

Tel: (804) 367-2323  
Fax: (804) 367-2391  
TDD: (804) 367-2386  
[www.dhr.virginia.gov](http://www.dhr.virginia.gov)

January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVig Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/East Stone Gap Quad

Dear Mr. McElroy:

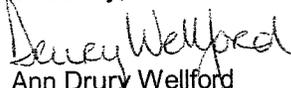
Thank you for your recent request for information from our archives on previously recorded archaeological and architectural resources within the area of potential effect, as delineated on your map, for the above-referenced project. Please note that your request for information from the Department of Historic Resources (DHR) Archives concerning the location of historic resources does not relieve you or your client from possible obligations under state or federal historic preservation regulations. I strongly recommend that you contact Dr. Ethel Eaton of the DHR's Resource Services and Review Division at (804) 367-2323, extension 112, if you have any questions concerning state and federal regulatory requirements.

Enclosed are the maps showing the location of any archaeological or architectural resources in or near the project area. If after examining the maps, you determine that you will require copies of files, those can be provided to you at the standard ten dollar per file charge. An invoice is enclosed for the charges incurred through your use of our archives search service.

DHR serves as the official state repository on historic resources. This information has been compiled primarily by independent cultural resource consultants. DHR makes no warranty as to the fitness of the data for any purpose. The absence of historic resources in DHR records does not necessarily mean that no historic properties are present. It is advisable to check with local government planning offices for information on any properties that may meet the age and significance tests of the National Register criteria and have not yet been recorded in the DHR archives. Also, the area in question may not have been systematically surveyed for resources, possibly necessitating a survey and submittal of that data with your Project Review application.

Please contact me at (804) 367-2323, extension 125, if I can be of further assistance.

Sincerely,

  
Ann Drury Wellford  
Archives - DHR

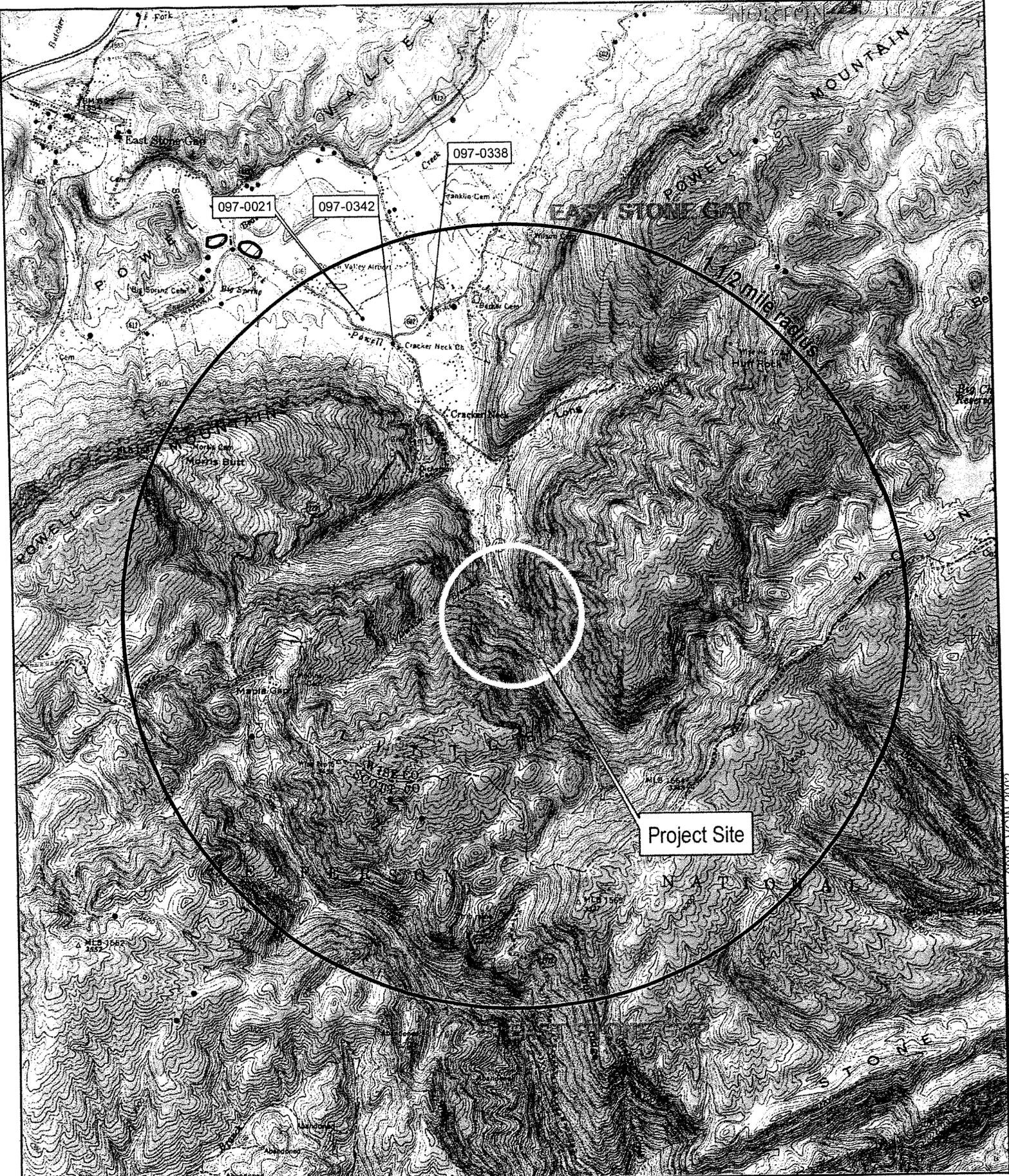
Administrative Services  
10 Courthouse Ave.  
Petersburg, VA 23803  
Tel: (804) 863-1624  
Fax: (804) 862-6196

Capital Region Office  
2801 Kensington Office  
Richmond, VA 23221  
Tel: (804) 367-2323  
Fax: (804) 367-2391

Tidewater Region Office  
14415 Old Courthouse Way  
2<sup>nd</sup> Floor  
Newport News, VA 23608  
Tel: (757) 886-2807  
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Roanoke Region Office  
1030 Penmar Avenue, SE  
Roanoke, VA 24013  
Tel: (540) 857-7585  
Fax: (540) 857-7588

Winchester Region Office  
107 N. Kent Street, Suite 203  
Winchester, VA 22601  
Tel: (540) 722-3427  
Fax: (540) 722-7535



Data Sources: VDHK 2016; National Geographic 2003; VGIN 2002

Lenowisco Planning District Water Supply Study  
 The LANE Group, Inc.  
 East Stone Gap Quad/Wise and Scott Counties  
 01/09/2008  
 Drury Wellford/VDHR

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-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle



# COMMONWEALTH of VIRGINIA

## Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

L. Preston Bryant, Jr.  
*Secretary of Natural Resources*

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Fax: (804) 367-2391  
TDD: (804) 367-2386  
[www.dhr.virginia.gov](http://www.dhr.virginia.gov)

January 14, 2008

Stephen McElroy  
The LANE Group, Inc.  
P.O. Box 452  
BVirg Stone Gap, VA 24219

RE: **Maps Only Archives Search**  
Lenowisco Planning District Water Supply Study/Wise Quads

Dear Mr. McElroy:

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Please contact me at (804) 367-2323, extension 125, if I can be of further assistance.

Sincerely,

  
Ann Drury Wellford  
Archives - DHR

Administrative Services  
10 Courthouse Ave.  
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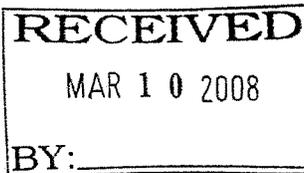
Lenowisco Planning District Water Supply Study  
 The LANE Group, Inc.  
 Wise Quad/Wise County  
 01/09/2008  
 Drury Wellford/VDHR

0 0.125 0.25 0.5 Miles



-  Archaeological Sites
-  Architectural Resources
-  USGS Quadrangle

Data Sources: VHR 2006, National Geographic 2003, VGIN 2002



# COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY  
SOUTHWEST REGIONAL OFFICE

L. Preston Bryant, Jr.  
Secretary of Natural Resources

Mailing Address: P.O. Box 1688, Abingdon, Virginia 24212-1688  
Street Address: 355 Deadmore Street, Abingdon, Virginia 24210  
(276) 676-4800 Fax (276) 676-4899  
[www.deq.virginia.gov](http://www.deq.virginia.gov)

David K. Paylor  
Director

Michael D. Overstreet  
Regional Director

March 6, 2008

Mr. Stephen C. McElroy  
THE LANE GROUP  
P. O. Box 452  
Big Stone Gap, Virginia 24219

Re: Lenowisco Regional Water Supply Study

Dear Mr. McElroy:

The following discussion is provided as a guideline of programs administered by the Department of Environmental Quality (DEQ) and other agencies of the Commonwealth, which could be applicable to the proposed action. Final determination concerning potential impacts on these programs rests with DEQ's Southwest Regional Office and the appropriate agency administering each program. It is the responsibility of the applicant to coordinate development with these agencies.

The proposed project primarily studies existing and future water supplies in the Lenowisco Planning District. The sixteen water treatment plants (WTP) in the study are discussed below:

- The Town of Appalachia WTP is in the Powell River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010206, VAS-P17R. The water intake is Ben's Branch, which is classified as Section 1b, Class IV, Special Standards Public Water Supply in Virginia's Water Quality Standards. No water quality impairments were identified in the immediate vicinity in the 2006 Water Quality Assessment.
- The Town of Big Stone Gap WTP is in the Powell River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010206, VAS-P18R. The water intake is the South Fork Powell River, which is classified as Section 1c, Class IV, Special Standards Public Water Supply in Virginia's Water Quality Standards. The South Fork Powell River is a 303(d) listed Total Maximum Daily Load (TMDL) water segment for bacteria impairment.
- The Town of Wise WTP is in the Clinch River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010205, VAS-P11R. The water intake is Bear Creek, which is classified as Section 2e, Class IV, Special Standards Public Water Supply in Virginia's Water Quality Standards. No water quality impairments were identified in the immediate vicinity in the 2006 Water Quality Assessment.
- The Town of Coeburn WTP is in the Clinch River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010205, VAS-P11R. The water intake is Tom's Creek, which is classified as Section 2f, Class IV, Special Standards Public Water Supply in Virginia's Water Quality Standards. Tom's Creek is a 303(d) listed Total Maximum Daily Load (TMDL) water segment for bacteria impairment.

- The Town of Pound WTP is in the Russell Fork Subbasin of the Big Sandy River Basin, Hydrologic Unit Code (HUC) 05070202, VAS-Q13R. The water intake is the North Fork Pound River, which is classified as Section 4b, Class V, Special Standards Public Water Supply in Virginia's Water Quality Standards. North Fork Pound River is a 303(d) listed Total Maximum Daily Load (TMDL) water segment for aquatic life impairment.
- The Town of St. Paul and the Wise County PSA Carfax WTPs are in the Clinch River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010205, VAS-P09R. The water intakes are the Clinch River, which is classified as Section 2a, Class IV, Special Standards Public Water Supply in Virginia's Water Quality Standards. No water quality impairments were identified in the immediate vicinity in the 2006 Water Quality Assessment.
- The Town of Jonesville WTP is in the Powell River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010206, VAS-P21R. The water intake is Fleenortown Creek, which is classified as Section 1f, Class IV, Special Standards Public Water Supply in Virginia's Water Quality Standards. No water quality impairments were identified in the immediate vicinity in the 2006 Water Quality Assessment.
- Lee County PSA Blue Spring WTP and the Harvest Baptist Childcare Ministries Well are in the Powell River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010206, VAS-P23R and VAS-P22R, respectively. These water intakes consist of a spring and a well. Surface water streams in these areas are classified as Section 1, Class V in Virginia's Water Quality Standards. No water quality impairments were identified in the immediate vicinities in the 2006 Water Quality Assessment.
- The Lee County PSA KVS Quarry WTP is in the Powell River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010206, VAS-P24R. The water intake is a groundwater source. Surface water streams in this area are classified as Section 1, Class IV in Virginia's Water Quality Standards. No water quality impairments were identified in the immediate vicinity in the 2006 Water Quality Assessment.
- The Town of Pennington Gap WTP is in the Powell River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010206, VAS-P19R. The water intake is the Powell River, which is classified as Section 1a, Class IV, Special Standards Public Water Supply in Virginia's Water Quality Standards. No water quality impairments were identified in the immediate vicinity in the 2006 Water Quality Assessment.
- The City of Norton WTP is in the Clinch River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010205, VAS-P17R. The water intake is Benges Branch, which is classified as Section 1d, Class IV, Special Standards Public Water Supply in Virginia's Water Quality Standards. No water quality impairments were identified in the immediate vicinity in the 2006 Water Quality Assessment.
- The Scott County PSA Duffield WTP is in the Clinch River Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010205, VAS-P15R. The water intake is the North Fork Clinch River, which is classified as Section 2d, Class IV, Special Standards: Public Water Supply in Virginia's Water Quality Standards. No water quality impairments were identified in the immediate vicinity in the 2006 Water Quality Assessment.

- The Town of Gate City WTP and Moccasin Gap WTP are in the Holston Subbasin of the Tennessee River Basin, Hydrologic Unit Code (HUC) 06010101, VAS-O14R. These water intakes are Big Moccasin Creek, which is classified as Section 1b, Class IV, Special Standards Public Water Supply in Virginia's Water Quality Standards. Big Moccasin Creek is a 303(d) listed Total Maximum Daily Load (TMDL) water segment for bacteria impairment in the vicinity of the Moccasin Gap WTP.

The DEQ has no objections to the project provided that the applicant abides by all applicable state, Federal, and local laws and regulations. Prior to construction, all permits and approvals must be obtained. In general, development must incorporate features which prevent significant adverse impacts on ambient air quality, water quality, wetlands, historic structures, fish wildlife, and species of plants, animals, or insects listed by state agencies as rare, threatened, or endangered.

**1. Water Quality and Wetlands.** Although no long-term adverse impacts to water quality are anticipated from this project, potential short-term adverse impacts resulting from surface runoff due to construction must be minimized. This can be achieved by using Best Management Practices (BMPs).

Federal and state governments regulate impacts to streams and wetlands. The Virginia Marine Resources Commission serves as the clearinghouse for the Joint Permit Application (JPA) used by: (1) U.S. Army Corps of Engineers for issuing permits pursuant to § 404 of the Clean Water Act and § 10 of the Rivers and Harbors Act; (2) Department of Environmental Quality for issuance of Virginia Water Protection Permit pursuant to § 401 of the Clean Water Act, Virginia Code § 62.1-44.2 et seq., Virginia Code § 62.1-44.15:5, and Virginia Administrative Code 9 VAC 25-210-10 et seq.; and (3) Virginia Marine Resources Commission regulates encroachments on or over state-owned subaqueous beds as well as tidal wetlands pursuant to Virginia Code §28.2-1200 through 1400. Contact VMRC at (757) 247-2200 to determine the need for a JPA for this project. VMRC will distribute the application to the appropriate agencies. Each agency will conduct its review and respond.

In general, DEQ recommends that the amount of stream and wetland impacts be avoided to the maximum extent practicable. For unavoidable impacts, DEQ encourages the following practices to minimize the impacts to wetlands and waterways: use of directional drilling from upland locations; operation of machinery and construction vehicles outside of stream-beds and wetlands; use of synthetic mats when in-stream work is unavoidable; stockpiling of material excavated from the trench for replacement if directional drilling is not feasible; and preservation of the top 12 inches of trench material removed from wetlands for use as wetland seed and root stock in the excavated area. The Southwest Regional contact is Clairise Shaheen at (276) 676-4809, email [crshaheen@deq.virginia.gov](mailto:crshaheen@deq.virginia.gov), if a permit is necessary for this project.

**2. Erosion and Sediment Control and Stormwater Management.** Non-point source pollution resulting from this project should be minimal provided that effective erosion and sediment control practices and structures are employed. Denuded areas should be vegetated. Erosion and sediment control measures must be implemented in accordance with the current edition of the Virginia Erosion and Sediment Control Handbook and the Virginia Erosion and Sediment Control Regulations, which are available online: <http://www.dcr.virginia.gov/sw/e&s.htm#pubs>. If the total land disturbance exceeds 10,000 square feet, an erosion and sediment control plan will be required. A stormwater management plan may also be required. If you would like assistance regarding the requirements for plan submittal and content, contact Phyllis Hinch at the Department of Conservation and Recreation's Abingdon Office at (276) 676-5528, email [phyllis.hinch@dcr.virginia.gov](mailto:phyllis.hinch@dcr.virginia.gov).

Furthermore, effective 29 January 2005, House Bill 1177 transferred regulatory authority of the Virginia Pollutant Discharge Elimination System (VPDES) programs related to municipal separate storm sewer systems (MS4s) and construction activities from State Water Control Board to the Soil and Water Conservation Board and transferred oversight of these programs from DEQ to the Virginia Department of Conservation and Recreation (DCR). As such, DCR is responsible for the issuance, denial, revocation, termination and enforcement of VPDES permits for the control of stormwater discharges from MS4s and land disturbing activities under the Virginia Stormwater Management Program. DEQ will continue to manage the remaining VPDES program. Therefore, for any land disturbing activities equal to one acre or more, the applicant is required to apply to DCR for registration coverage under the General Permit for Discharges of Stormwater from Construction Activities. Specific questions regarding the Stormwater Management Program requirements should be directed to Eric Capps, DCR, at (804) 786-3957, e-mail [eric.capps@dcr.virginia.gov](mailto:eric.capps@dcr.virginia.gov) or Elizabeth Abe, DCR, at (276) 676-5528, email [elizabeth.abe@dcr.virginia.gov](mailto:elizabeth.abe@dcr.virginia.gov).

**3. Air Quality.** This project is not likely to adversely affect air quality. However, during construction fugitive dust must be kept at a minimum. This requires, but is not limited to, measures such as application of water to suppress dust and washing down construction vehicles and paved roadways immediately adjacent to the construction site. The following sections of Virginia Administrative Code (VAC) may be applicable: *9 VAC 5-50-60 et. seq.*, governs abatement of visible emissions and fugitive dust emissions, and *9 VAC 5-40-5600 et. seq.* addresses open burning. The Southwest Regional contact is Crystal Bazyk at (276) 676-4829, email [ccbazyk@deq.virginia.gov](mailto:ccbazyk@deq.virginia.gov).

**4. Solid and Hazardous Wastes, and Hazardous Substances.** DEQ administers the Virginia Solid Waste Management Regulations and the Virginia Hazardous Waste Management Regulations. We recommend that all solid wastes generated at the site be reduced at the source, reused, or recycled. All hazardous wastes should be minimized. Otherwise, all solid waste, hazardous waste, and hazardous material must be managed in accordance with all applicable federal, state, and local environmental regulations. Please contact DEQ's Southwest Regional Office at (276) 676-4800 concerning location and availability of waste management facilities in the project area.

**5. Pesticides and Herbicides.** DEQ recommends that the use of herbicides or pesticides for construction or landscape maintenance should be in accordance with the principles of integrated pest management. The least toxic pesticides that are effective in controlling the target species should be used. Please contact the Department of Agriculture and Consumer Services at (804) 786-3501 for more information.

**6. Pollution Prevention.** DEQ recommends that construction projects incorporate the principles of pollution prevention including the following recommendations:

- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content and toxicity level should be considered.
- Consider contractors' commitments to the environment when choosing contractors. Also, specifications regarding raw material selection (alternative fuels and energy sources) and construction practices can be included in contract documents and requests for proposals.
- Choose sustainable practices and materials in infrastructure and construction and design. These could include asphalt and concrete containing recycled materials and integrated pest management in landscaping.
- Integrate pollution prevention techniques into maintenance and operation activities to include source reduction (fixing leaks, energy efficient products).

Pollution prevention measures are likely to reduce potential environmental impacts and reduce costs for material purchasing and waste disposal. For more information, contact Tom Griffin, DEQ's Office of Pollution Prevention, at (804) 698-4545.

**7. Energy Conservation.** The structure should be planned and designed to comply with state and federal guidelines and industry standards for energy conservation and efficiency. For example, energy efficiency of the structures can be enhanced by maximizing the use of the following:

- thermally-efficient building shell components (roof, wall, floor, and insulation);
- high efficiency heating, ventilation, air conditioning systems; and
- high efficiency lighting systems.

The Department of Mines, Minerals and Energy should be contacted, Gerald Wilkes at (434) 951-6364, for assistance in meeting this challenge.

**8. Natural Heritage Resources.** The Department of Conservation and Recreation's Division of Natural Heritage (DNH) can search its Biotics Data System (BDS) for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered animal and plant species, unique or exemplary natural communities, and significant geologic communities.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Department of Conservation and Recreation (DCR), DCR has the authority to report for VDACS on state-listed plant and insect species. We recommend that the DNH be contacted at (804) 786-7951, to secure updated information on natural heritage resources before the project is implemented.

**9. Wildlife Resources.** The Department of Game and Inland Fisheries (DGIF), as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state or federally listed endangered or threatened species, but excluding listed insects (*Virginia Code* Title 29.1). DGIF is a consulting agency under the U.S. Fish and Wildlife Coordination Act (16 U.S.C. sections 661 *et seq.*), and provides environmental analysis of projects or permit applications coordinated through DEQ and several other state and federal agencies. DGIF determines likely impacts upon fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce, or compensate for those impacts. For more information, see the DGIF website at [www.dgif.state.va.us](http://www.dgif.state.va.us) or contact Ray Fernald at (804) 367-6913.

**10. Historic and Archaeological Resources.** *Section 106 of the National Historic and Preservation Act of 1966*, as amended, requires that activities that receive federal funding must consider effects to properties that are listed or eligible for listing on the National Register of Historic Places. The Department of Historic Resources (DHR) conducts reviews of projects to determine their effect on historic structures or cultural resources. If applicable, contact DHR. In the event that archaeological resources are encountered during construction, immediately contact Ms. Ethel Eaton, DHR, at (804) 367-2323.

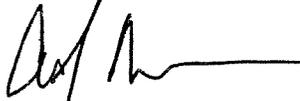
**11. Waterworks Operation.** Installation of new water lines and appurtenances must comply with the State's Waterworks Regulations. The Virginia Department of Health administers both federal and

Lenowisco Regional Water Supply Study  
March 6, 2008  
Page 6

state laws governing waterworks operation. For more information, contact Richard Puckett, Virginia Department of Health, at (276) 676-5650.

Thank you for your inquiry. We appreciate your interest in complying with Virginia's environmental legislation. If you have any further questions, please do not hesitate to call Alice Warren at (276) 676-4803.

Sincerely,

A handwritten signature in black ink, appearing to read "Allen J. Newman", with a long horizontal flourish extending to the right.

Allen J. Newman, P.E.  
Water Permit Manager

cc: File

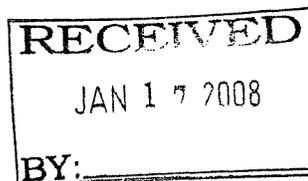
United States Department of Agriculture



Natural Resources Conservation Service  
75 Hampton Blvd  
Christiansburg, VA 24073  
(540)381-4221(ext. 3)

January 15, 2008

Stephen C. McElroy, EIT  
The Lane Group  
316 East Fifth Street, South  
Big Stone Gap, VA 24219



RE: Lenowisco Regional Water Supply Study  
Lenowisco Planning District

Dear Mr. McElroy:

This is in response to your letter of December 12, 2007 sent to Mr. Buddy Gilmore in our Gate City field office.

USDA NRCS will make an official determination in accordance with the Farmland Protection Policy act. The appropriate forms and instructions can be found on this website: <http://www.nrcs.usda.gov/programs/fppa/>. Your firm can send to me these forms with the acreage tabulation of any new areas acquired for this project with clear delineations of areas that are within existing right-of-ways. USDA NRCS is responsible for assigning the relative value to Prime and Statewide Important farmland.

There is a published soil survey report for Scott County and many of the soil properties you have requested can be found at this website: <http://websoilsurvey.nrcs.usda.gov/app/>.

You will have to contact the other appropriate agencies that have jurisdiction or pertinent information on wetlands, floodplains, geology or any other environmental concerns relevant to the NEPA laws.

If you need any assistance in understanding the NRCS web sites or the information contained in this letter please contact me. I look forward to working with your group on this project.

Sincerely,

A handwritten signature in cursive script that reads "Jeannine C. Freyman".

Jeannine C. Freyman  
Area Soil Resource Specialist

Cc: Buddy Gilmore, District Conservationist

*Helping People Help the Land*

An Equal Opportunity Provider and Employer



U.S. Department of Agriculture

## FARMLAND CONVERSION IMPACT RATING

<b>PART I (To be completed by Federal Agency)</b>		Date Of Land Evaluation Request <b>3/5/08</b>			
Name Of Project <b>Lenowisco Water Supply Study-Blue Spring</b>		Federal Agency Involved <b>VA Dept of Env. Quality</b>			
Proposed Land Use <b>Water Intakes (Existing &amp; Proposed)</b>		County And State <b>Lee County, Virginia</b>			
<b>PART II (To be completed by NRCS)</b>		Date Request Received By NRCS			
Does the site contain prime, unique, statewide or local important farmland? <i>(if no, the FPPA does not apply -- do not complete additional parts of this form).</i>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount Of Farmland As Defined in FPPA Acres: %		Date Land Evaluation Returned By NRCS	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System				
<b>PART III (To be completed by Federal Agency)</b>		<b>Alternative Site Rating</b>			
		Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly		10.0			
B. Total Acres To Be Converted Indirectly					
C. Total Acres In Site		10.0	0.0	0.0	0.0
<b>PART IV (To be completed by NRCS) Land Evaluation Information</b>					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value					
<b>PART V (To be completed by NRCS) Land Evaluation Criterion</b> Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)		0	0	0	0
<b>PART VI (To be completed by Federal Agency)</b> Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))		Maximum Points			
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
<b>TOTAL SITE ASSESSMENT POINTS</b>		160	0	0	0
<b>PART VII (To be completed by Federal Agency)</b>					
Relative Value Of Farmland (From Part V)		100	0	0	0
Total Site Assessment (From Part VI above or a local site assessment)		160	0	0	0
<b>TOTAL POINTS (Total of above 2 lines)</b>		260	0	0	0
Site Selected:		Date Of Selection		Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Reason For Selection:					

U.S. Department of Agriculture

## FARMLAND CONVERSION IMPACT RATING

<b>PART I</b> (To be completed by Federal Agency)		Date Of Land Evaluation Request 3/5/08			
Name Of Project Lenowisco Water Supply Study-Jonesville Supply		Federal Agency Involved VA Dept of Env. Quality			
Proposed Land Use Water Intakes (Existing & Proposed)		County And State Lee County, Virginia			
<b>PART II</b> (To be completed by NRCS)		Date Request Received By NRCS			
Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply -- do not complete additional parts of this form).		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount Of Farmland As Defined in FPPA Acres: %			
Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By NRCS			
<b>PART III</b> (To be completed by Federal Agency)		Alternative Site Rating			
		Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly		10.0			
B. Total Acres To Be Converted Indirectly					
C. Total Acres In Site		10.0	0.0	0.0	0.0
<b>PART IV</b> (To be completed by NRCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value					
<b>PART V</b> (To be completed by NRCS) Land Evaluation Criterion Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)		0	0	0	0
<b>PART VI</b> (To be completed by Federal Agency) Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))		Maximum Points			
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
<b>TOTAL SITE ASSESSMENT POINTS</b>		160	0	0	0
<b>PART VII</b> (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100	0	0	0
Total Site Assessment (From Part VI above or a local site assessment)		160	0	0	0
<b>TOTAL POINTS (Total of above 2 lines)</b>		260	0	0	0
Site Selected:		Date Of Selection		Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Reason For Selection:					

U.S. Department of Agriculture

## FARMLAND CONVERSION IMPACT RATING

<b>PART I (To be completed by Federal Agency)</b>		Date Of Land Evaluation Request 3/5/08			
Name Of Project Lenowisco Water Supply Study-KVS Quarry		Federal Agency Involved VA Dept of Env. Quality			
Proposed Land Use Water Intakes (Existing & Proposed)		County And State Lee County, Virginia			
<b>PART II (To be completed by NRCS)</b>		Date Request Received By NRCS			
Does the site contain prime, unique, statewide or local important farmland? <i>(If no, the FPPA does not apply -- do not complete additional parts of this form).</i>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount Of Farmland As Defined in FPPA Acres: %			
Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By NRCS			
<b>PART III (To be completed by Federal Agency)</b>		Alternative Site Rating			
		Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly		10.0			
B. Total Acres To Be Converted Indirectly					
C. Total Acres In Site		10.0	0.0	0.0	0.0
<b>PART IV (To be completed by NRCS) Land Evaluation Information</b>					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value					
<b>PART V (To be completed by NRCS) Land Evaluation Criterion</b> Relative Value Of Farmland To Be Converted <i>(Scale of 0 to 100 Points)</i>		0	0	0	0
<b>PART VI (To be completed by Federal Agency)</b> Site Assessment Criteria <i>(These criteria are explained in 7 CFR 658.5(b))</i>		Maximum Points			
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS		160	0	0	0
<b>PART VII (To be completed by Federal Agency)</b>					
Relative Value Of Farmland <i>(From Part V)</i>		100	0	0	0
Total Site Assessment <i>(From Part VI above or a local site assessment)</i>		160	0	0	0
TOTAL POINTS <i>(Total of above 2 lines)</i>		260	0	0	0
Site Selected:		Date Of Selection		Was A Local Site Assessment Used? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>	
Reason For Selection:					

**APPENDIX C**

**POPULATION PROJECTION INFORMATION**

WATER PURVEYOR	POPULATION PROJECTION FOR YEARS						
	2010	RATE	2020	RATE	2030	RATE	2040
Norton City	3800	99.95%	3798	100.08%	3801	100.82%	3832
Lee County	22498	97.79%	22001	97.72%	21500	97.72%	21010
Scott County	23400	99.99%	23398	100.43%	23500	104.43%	24545
Wise County	40999	97.81%	40100	98.01%	39303	98.01%	38520

Note: Source Virginia Employment Commission

$$G_{2040} = (\%GROWTH)^n : \text{City of Norton \& Scott County}$$

For Lee and Wise County the percentage of increase/decrease from 2020 to 2030 was duplicated for 2030 to 2040



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Population projections by age for Norton city.

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Age Group	Census 1990	Census 2000	2010	2020	2030
Under 5 years	265	201	230	215	213
5 to 9 years	312	261	256	256	240
10 to 14 years	325	239	197	241	231
15 to 19 years	352	250	187	199	201
20 to 24 years	289	299	251	212	270
25 to 29 years	279	242	279	221	231
30 to 34 years	374	267	256	221	195
35 to 39 years	345	240	196	235	195
40 to 44 years	285	317	236	234	208
45 to 49 years	217	302	245	207	245
50 to 54 years	203	278	308	239	237
55 to 59 years	173	212	299	254	214
60 to 64 years	232	200	277	321	253
65 to 69 years	200	155	171	253	219
70 to 74 years	147	161	136	204	244
75 to 79 years	131	119	91	109	152
80 to 84 years	85	85	90	84	133
85 years and over	33	76	95	93	120
<b>Total:</b>	<b>4247</b>	<b>3904</b>	<b>3800</b>	<b>3798</b>	<b>3801</b>

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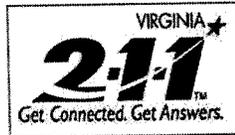
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**Population projections by age for Scott County.**

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Age Group	Census 1990	Census 2000	2010	2020	2030
Under 5 years	1217	1203	1304	1223	1270
5 to 9 years	1310	1354	1334	1271	1261
10 to 14 years	1536	1430	1213	1358	1298
15 to 19 years	1724	1381	1334	1358	1334
20 to 24 years	1532	1215	1133	1030	1234
25 to 29 years	1595	1373	1183	1184	1261
30 to 34 years	1662	1572	1424	1271	1142
35 to 39 years	1615	1687	1444	1242	1252
40 to 44 years	1726	1746	1554	1435	1298
45 to 49 years	1540	1696	1815	1550	1343
50 to 54 years	1360	1724	1785	1598	1508
55 to 59 years	1236	1516	1705	1858	1618
60 to 64 years	1273	1346	1805	1858	1691
65 to 69 years	1233	1158	1394	1598	1755
70 to 74 years	985	1081	1093	1492	1563
75 to 79 years	799	853	713	895	1145
80 to 84 years	488	544	568	565	810
85 years and over	373	524	599	612	717
<b>Total:</b>	<b>23204</b>	<b>23403</b>	<b>23400</b>	<b>23398</b>	<b>23500</b>

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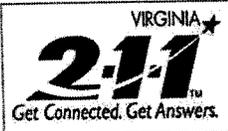
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**Population projections by age for Lee County.**

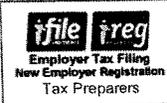
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Age Group	Census 1990	Census 2000	2010	2020	2030
Under 5 years	1521	1374	1293	1286	1179
5 to 9 years	1633	1438	1148	1263	1214
10 to 14 years	1962	1625	1225	1209	1262
15 to 19 years	1969	1487	1284	1093	1220
20 to 24 years	1446	1333	1310	1016	1082
25 to 29 years	1637	1458	1437	1263	1075
30 to 34 years	1935	1517	1548	1494	1165
35 to 39 years	1792	1654	1301	1363	1262
40 to 44 years	1721	1849	1284	1378	1401
45 to 49 years	1464	1789	1625	1317	1373
50 to 54 years	1286	1733	1744	1247	1352
55 to 59 years	1154	1429	1684	1571	1290
60 to 64 years	1143	1262	1650	1709	1255
65 to 69 years	1185	1034	1242	1501	1435
70 to 74 years	975	889	995	1347	1415
75 to 79 years	796	785	657	837	1080
80 to 84 years	494	501	522	530	764
85 years and over	383	432	549	577	676
<b>Total:</b>	<b>24496</b>	<b>23589</b>	<b>22498</b>	<b>22001</b>	<b>21500</b>

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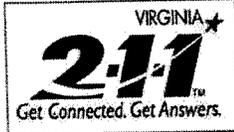
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**Population projections by age for Wise County.**

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Age Group	Census 1990	Census 2000	2010	2020	2030
Under 5 years	2406	2433	2895	2616	2527
5 to 9 years	2824	2690	2741	2681	2458
10 to 14 years	3232	2699	2179	2688	2532
15 to 19 years	3443	3336	2570	2677	2668
20 to 24 years	2733	2873	2444	1985	2525
25 to 29 years	2692	2714	2960	2342	2460
30 to 34 years	3137	2794	2624	2306	1913
35 to 39 years	3284	2905	2404	2722	2246
40 to 44 years	2830	3420	2557	2445	2200
45 to 49 years	2204	3353	2743	2267	2591
50 to 54 years	2012	2945	3213	2431	2349
55 to 59 years	1755	2242	3125	2604	2178
60 to 64 years	1834	1927	2699	3007	2332
65 to 69 years	1773	1627	1827	2631	2246
70 to 74 years	1286	1564	1346	1967	2268
75 to 79 years	1003	1311	1029	1191	1655
80 to 84 years	665	740	801	739	1143
85 years and over	460	636	842	801	1012
<b>Total:</b>	<b>39573</b>	<b>42209</b>	<b>40999</b>	<b>40100</b>	<b>39303</b>

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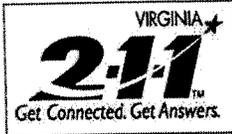
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**U.S. Census Bureau**

State &amp; County QuickFacts

**Wise County, Virginia**

<b>People QuickFacts</b>	<b>Wise County</b>	<b>Virginia</b>
Population, 2006 estimate	41,905	7,642,884
Population, percent change, April 1, 2000 to July 1, 2006	-0.7%	8.0%
Population, 2000	40,123	7,078,515
Persons under 5 years old, percent, 2006	5.9%	6.7%
Persons under 18 years old, percent, 2006	21.1%	23.6%
Persons 65 years old and over, percent, 2006	13.4%	11.6%
Female persons, percent, 2006	48.8%	50.8%
White persons, percent, 2006 (a)	93.3%	73.3%
Black persons, percent, 2006 (a)	5.4%	19.9%
American Indian and Alaska Native persons, percent, 2006 (a)	0.2%	0.3%
Asian persons, percent, 2006 (a)	0.4%	4.8%
Native Hawaiian and Other Pacific Islander, percent, 2006 (a)	Z	0.1%
Persons reporting two or more races, percent, 2006	0.6%	1.6%
Persons of Hispanic or Latino origin, percent, 2006 (b)	1.0%	6.3%
White persons not Hispanic, percent, 2006	92.5%	67.7%
Living in same house in 1995 and 2000, pct 5 yrs old & over	64.9%	52.2%
Foreign born persons, percent, 2000	0.5%	8.1%
Language other than English spoken at home, pct age 5+, 2000	2.1%	11.1%
High school graduates, percent of persons age 25+, 2000	62.5%	81.5%
Bachelor's degree or higher, pct of persons age 25+, 2000	10.8%	29.5%
Persons with a disability, age 5+, 2000	10,765	1,155,083
Mean travel time to work (minutes), workers age 16+, 2000	23.6	27.0
Housing units, 2006	18,243	3,230,803
Homeownership rate, 2000	75.3%	68.1%
Housing units in multi-unit structures, percent, 2000	7.9%	21.5%
Median value of owner-occupied housing units, 2000	\$65,700	\$125,400
Households, 2000	16,013	2,699,173
Persons per household, 2000	2.44	2.54
Median household income, 2004	\$30,203	\$51,103
Per capita money income, 1999	\$14,271	\$23,975
Persons below poverty, percent, 2004	19.2%	9.5%
<b>Business QuickFacts</b>	<b>Wise County</b>	<b>Virginia</b>

Private nonfarm establishments, 2005	904	193,067 <sup>1</sup>
Private nonfarm employment, 2005	10,256	3,060,127 <sup>1</sup>
Private nonfarm employment, percent change 2000-2005	8.4%	5.4% <sup>1</sup>
Nonemployer establishments, 2005	1,748	469,878
Total number of firms, 2002	2,385	529,520
Black-owned firms, percent, 2002	F	7.8%
American Indian and Alaska Native owned firms, percent, 2002	F	0.5%
Asian-owned firms, percent, 2002	F	5.8%
Native Hawaiian and Other Pacific Islander owned firms, percent, 2002	F	0.1%
Hispanic-owned firms, percent, 2002	F	3.6%
Women-owned firms, percent, 2002	24.5%	29.7%
<hr/>		
Manufacturers shipments, 2002 (\$1000)	NA	83,952,547
Wholesale trade sales, 2002 (\$1000)	163,199	69,267,796
Retail sales, 2002 (\$1000)	362,695	80,509,062
Retail sales per capita, 2002	\$8,671	\$11,069
Accommodation and foodservices sales, 2002 (\$1000)	26,371	10,929,429
Building permits, 2006	66	47,704
Federal spending, 2004 (\$1000)	362,503	90,637,946 <sup>1</sup>

<b>Geography QuickFacts</b>	<b>Wise County</b>	<b>Virginia</b>
Land area, 2000 (square miles)	404.04	39,594.07
Persons per square mile, 2000	99.3	178.8
FIPS Code	195	51
Metropolitan or Micropolitan Statistical Area	None	

1: Includes data not distributed by county.

(a) Includes persons reporting only one race.

(b) Hispanics may be of any race, so also are included in applicable race categories.

D: Suppressed to avoid disclosure of confidential information

F: Fewer than 100 firms

FN: Footnote on this item for this area in place of data

NA: Not available

S: Suppressed; does not meet publication standards

X: Not applicable

Z: Value greater than zero but less than half unit of measure shown

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, Census of Population and Housing, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report

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**U.S. Census Bureau**

State &amp; County QuickFacts

**Norton city, Virginia**

<b>People QuickFacts</b>	<b>Norton city</b>	<b>Virginia</b>
Population, 2006 estimate	3,643	7,642,884
Population, percent change, April 1, 2000 to July 1, 2006	-6.8%	8.0%
Population, 2000	3,904	7,078,515
Persons under 5 years old, percent, 2006	4.2%	6.7%
Persons under 18 years old, percent, 2006	20.1%	23.6%
Persons 65 years old and over, percent, 2006	16.4%	11.6%
Female persons, percent, 2006	55.5%	50.8%
White persons, percent, 2006 (a)	89.8%	73.3%
Black persons, percent, 2006 (a)	7.5%	19.9%
American Indian and Alaska Native persons, percent, 2006 (a)	0.1%	0.3%
Asian persons, percent, 2006 (a)	1.5%	4.8%
Native Hawaiian and Other Pacific Islander, percent, 2006 (a)	0.1%	0.1%
Persons reporting two or more races, percent, 2006	1.0%	1.6%
Persons of Hispanic or Latino origin, percent, 2006 (b)	1.1%	6.3%
White persons not Hispanic, percent, 2006	88.9%	67.7%
Living in same house in 1995 and 2000, pct 5 yrs old & over	49.5%	52.2%
Foreign born persons, percent, 2000	1.1%	8.1%
Language other than English spoken at home, pct age 5+, 2000	3.1%	11.1%
High school graduates, percent of persons age 25+, 2000	66.5%	81.5%
Bachelor's degree or higher, pct of persons age 25+, 2000	14.0%	29.5%
Persons with a disability, age 5+, 2000	1,256	1,155,083
Mean travel time to work (minutes), workers age 16+, 2000	18.8	27.0
Housing units, 2006	1,969	3,230,803
Homeownership rate, 2000	55.9%	68.1%
Housing units in multi-unit structures, percent, 2000	27.5%	21.5%
Median value of owner-occupied housing units, 2000	\$62,800	\$125,400
Households, 2000	1,730	2,699,173
Persons per household, 2000	2.23	2.54
Median household income, 2004	\$28,144	\$51,103
Per capita money income, 1999	\$16,024	\$23,975
Persons below poverty, percent, 2004	18.0%	9.5%
<b>Business QuickFacts</b>	<b>Norton city</b>	<b>Virginia</b>

Private nonfarm establishments, 2005	272	193,067 <sup>1</sup>
Private nonfarm employment, 2005	5,486	3,060,127 <sup>1</sup>
Private nonfarm employment, percent change 2000-2005	8.7%	5.4% <sup>1</sup>
Nonemployer establishments, 2005	213	469,878
Total number of firms, 2002	456	529,520
Black-owned firms, percent, 2002	F	7.8%
American Indian and Alaska Native owned firms, percent, 2002	F	0.5%
Asian-owned firms, percent, 2002	F	5.8%
Native Hawaiian and Other Pacific Islander owned firms, percent, 2002	F	0.1%
Hispanic-owned firms, percent, 2002	F	3.6%
Women-owned firms, percent, 2002	S	29.7%
<hr/>		
Manufacturers shipments, 2002 (\$1000)	NA	83,952,547
Wholesale trade sales, 2002 (\$1000)	130,729	69,267,796
Retail sales, 2002 (\$1000)	194,947	80,509,062
Retail sales per capita, 2002	\$49,643	\$11,069
Accommodation and foodservices sales, 2002 (\$1000)	11,953	10,929,429
Building permits, 2006	8	47,704
Federal spending, 2004 (\$1000)	54,960	90,637,946 <sup>1</sup>

**Geography QuickFacts****Norton city      Virginia**

Land area, 2000 (square miles)	7.53	39,594.07
Persons per square mile, 2000	488.0	178.8
FIPS Code	720	51
Metropolitan or Micropolitan Statistical Area	None	

1: Includes data not distributed by county.

(a) Includes persons reporting only one race.

(b) Hispanics may be of any race, so also are included in applicable race categories.

D: Suppressed to avoid disclosure of confidential information

F: Fewer than 100 firms

FN: Footnote on this item for this area in place of data

NA: Not available

S: Suppressed; does not meet publication standards

X: Not applicable

Z: Value greater than zero but less than half unit of measure shown

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, Census of Population and Housing, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report

Last Revised: Wednesday, 02-Jan-2008 15:08:47 EST

# U.S. Census Bureau

State & County QuickFacts

## Scott County, Virginia

People QuickFacts	Scott County	Virginia
Population, 2006 estimate	22,882	7,642,884
Population, percent change, April 1, 2000 to July 1, 2006	-2.2%	8.0%
Population, 2000	23,403	7,078,515
Persons under 5 years old, percent, 2006	4.8%	6.7%
Persons under 18 years old, percent, 2006	19.2%	23.6%
Persons 65 years old and over, percent, 2006	18.8%	11.6%
Female persons, percent, 2006	51.5%	50.8%
White persons, percent, 2006 (a)	98.4%	73.3%
Black persons, percent, 2006 (a)	0.8%	19.9%
American Indian and Alaska Native persons, percent, 2006 (a)	0.2%	0.3%
Asian persons, percent, 2006 (a)	0.1%	4.8%
Native Hawaiian and Other Pacific Islander, percent, 2006 (a)	Z	0.1%
Persons reporting two or more races, percent, 2006	0.5%	1.6%
Persons of Hispanic or Latino origin, percent, 2006 (b)	0.6%	6.3%
White persons not Hispanic, percent, 2006	97.8%	67.7%
Living in same house in 1995 and 2000, pct 5 yrs old & over	69.5%	52.2%
Foreign born persons, percent, 2000	0.3%	8.1%
Language other than English spoken at home, pct age 5+, 2000	1.2%	11.1%
High school graduates, percent of persons age 25+, 2000	64.4%	81.5%
Bachelor's degree or higher, pct of persons age 25+, 2000	8.3%	29.5%
Persons with a disability, age 5+, 2000	6,413	1,155,083
Mean travel time to work (minutes), workers age 16+, 2000	30.6	27.0
<hr/>		
Housing units, 2006	11,752	3,230,803
Homeownership rate, 2000	78.2%	68.1%
Housing units in multi-unit structures, percent, 2000	4.1%	21.5%
Median value of owner-occupied housing units, 2000	\$69,100	\$125,400
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Households, 2000	9,795	2,699,173
Persons per household, 2000	2.35	2.54
Median household income, 2004	\$31,450	\$51,103
Per capita money income, 1999	\$15,073	\$23,975
Persons below poverty, percent, 2004	14.9%	9.5%
<hr/>		
<b>Business QuickFacts</b>	<b>Scott County</b>	<b>Virginia</b>

Private nonfarm establishments, 2005	321	193,067 <sup>1</sup>
Private nonfarm employment, 2005	3,555	3,060,127 <sup>1</sup>
Private nonfarm employment, percent change 2000-2005	9.4%	5.4% <sup>1</sup>
Nonemployer establishments, 2005	1,158	469,878
Total number of firms, 2002	1,360	529,520
Black-owned firms, percent, 2002	F	7.8%
American Indian and Alaska Native owned firms, percent, 2002	F	0.5%
Asian-owned firms, percent, 2002	F	5.8%
Native Hawaiian and Other Pacific Islander owned firms, percent, 2002	F	0.1%
Hispanic-owned firms, percent, 2002	F	3.6%
Women-owned firms, percent, 2002	27.9%	29.7%
<hr/>		
Manufacturers shipments, 2002 (\$1000)	D	83,952,547
Wholesale trade sales, 2002 (\$1000)	D	69,267,796
Retail sales, 2002 (\$1000)	166,262	80,509,062
Retail sales per capita, 2002	\$7,199	\$11,069
Accommodation and foodservices sales, 2002 (\$1000)	8,904	10,929,429
Building permits, 2006	48	47,704
Federal spending, 2004 (\$1000)	168,365	90,637,946 <sup>1</sup>

<b>Geography QuickFacts</b>	<b>Scott County</b>	<b>Virginia</b>
Land area, 2000 (square miles)	536.58	39,594.07
Persons per square mile, 2000	43.6	178.8
FIPS Code	169	51
Metropolitan or Micropolitan Statistical Area	Kingsport-Bristol-Bristol, TN-VA Metro Area	

1: Includes data not distributed by county.

(a) Includes persons reporting only one race.

(b) Hispanics may be of any race, so also are included in applicable race categories.

D: Suppressed to avoid disclosure of confidential information

F: Fewer than 100 firms

FN: Footnote on this item for this area in place of data

NA: Not available

S: Suppressed; does not meet publication standards

X: Not applicable

Z: Value greater than zero but less than half unit of measure shown

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, Census of Population and Housing, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report

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**U.S. Census Bureau**

State &amp; County QuickFacts

**Lee County, Virginia**

<b>People QuickFacts</b>	<b>Lee County</b>	<b>Virginia</b>
Population, 2006 estimate	23,787	7,642,884
Population, percent change, April 1, 2000 to July 1, 2006	0.8%	8.0%
Population, 2000	23,589	7,078,515
Persons under 5 years old, percent, 2006	5.1%	6.7%
Persons under 18 years old, percent, 2006	21.1%	23.6%
Persons 65 years old and over, percent, 2006	15.3%	11.6%
Female persons, percent, 2006	51.1%	50.8%
White persons, percent, 2006 (a)	98.1%	73.3%
Black persons, percent, 2006 (a)	0.7%	19.9%
American Indian and Alaska Native persons, percent, 2006 (a)	0.2%	0.3%
Asian persons, percent, 2006 (a)	0.3%	4.8%
Native Hawaiian and Other Pacific Islander, percent, 2006 (a)	Z	0.1%
Persons reporting two or more races, percent, 2006	0.7%	1.6%
Persons of Hispanic or Latino origin, percent, 2006 (b)	0.5%	6.3%
White persons not Hispanic, percent, 2006	97.6%	67.7%
Living in same house in 1995 and 2000, pct 5 yrs old & over	64.8%	52.2%
Foreign born persons, percent, 2000	0.5%	8.1%
Language other than English spoken at home, pct age 5+, 2000	2.3%	11.1%
High school graduates, percent of persons age 25+, 2000	60.6%	81.5%
Bachelor's degree or higher, pct of persons age 25+, 2000	9.5%	29.5%
Persons with a disability, age 5+, 2000	7,234	1,155,083
Mean travel time to work (minutes), workers age 16+, 2000	29.5	27.0
Housing units, 2006	11,487	3,230,803
Homeownership rate, 2000	74.4%	68.1%
Housing units in multi-unit structures, percent, 2000	4.3%	21.5%
Median value of owner-occupied housing units, 2000	\$56,900	\$125,400
Households, 2000	9,706	2,699,173
Persons per household, 2000	2.41	2.54
Median household income, 2004	\$26,106	\$51,103
Per capita money income, 1999	\$13,625	\$23,975
Persons below poverty, percent, 2004	21.1%	9.5%
<b>Business QuickFacts</b>	<b>Lee County</b>	<b>Virginia</b>

Private nonfarm establishments, 2005	335	193,067 <sup>1</sup>
Private nonfarm employment, 2005	3,077	3,060,127 <sup>1</sup>
Private nonfarm employment, percent change 2000-2005	-11.7%	5.4% <sup>1</sup>
Nonemployer establishments, 2005	1,070	469,878
Total number of firms, 2002	1,259	529,520
Black-owned firms, percent, 2002	F	7.8%
American Indian and Alaska Native owned firms, percent, 2002	F	0.5%
Asian-owned firms, percent, 2002	F	5.8%
Native Hawaiian and Other Pacific Islander owned firms, percent, 2002	F	0.1%
Hispanic-owned firms, percent, 2002	F	3.6%
Women-owned firms, percent, 2002	44.4%	29.7%
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Manufacturers shipments, 2002 (\$1000)	NA	83,952,547
Wholesale trade sales, 2002 (\$1000)	18,855	69,267,796
Retail sales, 2002 (\$1000)	116,664	80,509,062
Retail sales per capita, 2002	\$4,944	\$11,069
Accommodation and foodservices sales, 2002 (\$1000)	5,456	10,929,429
Building permits, 2006	59	47,704
Federal spending, 2004 (\$1000)	403,744	90,637,946 <sup>1</sup>

**Geography QuickFacts**

	Lee County	Virginia
Land area, 2000 (square miles)	437.13	39,594.07
Persons per square mile, 2000	54.0	178.8
FIPS Code	105	51
Metropolitan or Micropolitan Statistical Area	None	

1: Includes data not distributed by county.

- (a) Includes persons reporting only one race.
- (b) Hispanics may be of any race, so also are included in applicable race categories.

- D: Suppressed to avoid disclosure of confidential information
- F: Fewer than 100 firms
- FN: Footnote on this item for this area in place of data
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Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, Census of Population and Housing, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report  
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**APPENDIX D**  
**ESTIMATED WATER USE WORKSHEETS**

SECTION 4A: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS (9 VAC 25-780-100 D1-3)

1 Community Water System	2 Population Served 2,010	3 Population Served 2,020	4 Population Served 2,030	5 Population Served 2,040	4 Water Usage (MG) 2010.00		5 Water Usage (MG) 2020.0		5 Water Usage (MG) 2030.0		5 Water Usage (MG) 2040.0	
					a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average
Town of Nickelsville	900	900	900	900	27.6	2.3	27.6	2.3	27.6	2.3	27.6	2.3
Town of Dungannon	598	598	598	598	22.8	1.9	14.4	1.2	14.4	1.2	14.4	1.2
Town of Clinchport	80	80	80	80	3.6	0.3	3.6	0.3	2.4	0.2	2.4	0.2
Town of Gate City	2,330	2,330	2,330	2,330	152.4	12.7	152.4	12.7	153.6	12.8	153.6	12.8
East Carters Valley (BUD)	393	393	393	393	18.0	1.5	18.0	1.5	18.0	1.5	18.0	1.5
Spring Valley Subdivision (BUD)	198	198	198	198	15.6	1.3	15.6	1.3	15.6	1.3	15.6	1.3
Duffield (SCPSA)	2,321	2,321	2,321	2,321	49.2	4.1	45.6	3.8	45.6	3.8	45.6	3.8
East Carters Valley (SCPSA)	162	162	162	162	16.8	1.4	16.8	1.4	16.8	1.4	16.8	1.4
Boozy Creek (SCPSA)	92	92	92	92	9.6	0.8	7.2	0.6	7.2	0.6	7.2	0.6
Cove Creek (SCPSA)	16	16	16	16	1.2	0.1	1.2	0.1	1.2	0.1	1.2	0.1
Daniel Boone (SCPSA)	669	669	669	669	20.4	1.7	20.4	1.7	20.4	1.7	20.4	1.7
Mocassin Gap (SCPSA)	4,777	4,777	4,777	4,777	97.2	8.1	103.2	8.6	102.0	8.5	102.0	8.5
City of Norton	4,680	4,680	4,680	4,680	412.8	34.4	321.6	26.8	300.0	25.0	300.0	25.0
Town of Appalachia	3,220	3,220	3,220	3,220	120.0	10.0	120.0	10.0	120.0	10.0	120.0	10.0
Town of Big Stone Gap	9,372	9,372	9,372	9,372	456.0	38.0	344.4	28.7	344.4	28.7	344.4	28.7
Town of Coeburn	4,630	4,630	4,630	4,630	206.4	17.2	206.4	17.2	206.4	17.2	206.4	17.2
Town of Pound	2,181	2,181	2,181	2,181	141.6	11.8	106.8	8.9	106.8	8.9	106.8	8.9
Town of St. Paul	1,607	1,607	1,607	1,607	55.2	4.6	69.6	5.8	69.6	5.8	69.6	5.8
Town of Wise	6,375	6,375	6,375	6,375	255.6	21.3	255.6	21.3	255.6	21.3	255.6	21.3
Dunbar (WCPSA)	94	94	94	94	5.6	0.5	4.2	0.4	4.2	0.4	4.2	0.4
Sandy Ridge (WCPSA)	2,216	2,216	2,216	2,216	42.0	3.5	42.1	3.5	42.0	3.5	42.1	3.5
Wise #2 (WCPSA)	476	476	476	476	21.2	1.8	21.2	1.8	21.2	1.8	21.2	1.8
Appalachia #1 (WCPSA)	350	350	350	350	16.8	1.4	16.8	1.4	16.8	1.4	16.8	1.4

SECTION 4A: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS (9 VAC 25-780-100 D1-3)

1 Community Water System	2 Population Served 2,010	3 Population Served 2,020	4 Population Served 2,030	5 Population Served 2,040	4 Water Usage (MG) 2010.00		5 Water Usage (MG) 2020.0		5 Water Usage (MG) 2030.0		5 Water Usage (MG) 2040.0	
					a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average
Flawoods (WCPSA)	80	80	80	80	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.3
Norton #1 (WCPSA)	828	828	828	828	29.8	2.5	34.8	2.9	34.8	2.9	34.8	2.9
Blackwood (WCPSA)	300	300	300	300	14.4	1.2	14.4	1.2	14.4	1.2	14.4	1.2
Wise County Regional (WCPSA)	3,965	3,965	3,965	3,965	238.8	19.9	238.8	19.9	238.8	19.9	238.8	19.9
Mill Branch (WCPSA)	104	104	104	104	4.7	0.4	4.7	0.4	4.7	0.4	4.7	0.4
South Mountain (WCPSA)	322	322	322	322	14.4	1.2	14.4	1.2	14.4	1.2	14.4	1.2
Town of Pennington Gap	3,277	3,277	3,277	3,277	570.8	47.6	574.2	47.9	574.2	47.9	574.2	47.9
Town of Jonesville	1,336	1,336	1,336	1,336	123.6	10.3	123.6	10.3	123.6	10.3	123.6	10.3
Dryden Water Authority	1,852	1,852	1,852	1,852	68.4	5.7	60.0	5.0	60.0	5.0	60.0	5.0
Woodway Water Authority	3,800	3,800	3,800	3,800	132.0	11.0	132.0	11.0	132.0	11.0	132.0	11.0
St. Charlies Water Authority	2,300	2,300	2,300	2,300	66.0	5.5	65.8	5.5	66.0	5.5	65.8	5.5
Harvest Baptist Childcare Ministries	40	40	40	40	1.8	0.2	1.8	0.2	1.8	0.2	1.8	0.2
Lee County (LCPSA)	3,400	3,400	3,400	3,400	203.6	17.0	172.6	14.4	172.6	14.4	172.6	14.4
Big Hill (LCPSA)	226	226	226	226	10.2	0.9	10.2	0.9	10.2	0.9	10.2	0.9
Old Woodway Road (LCPSA)	110	110	110	110	4.9	0.4	4.9	0.4	4.9	0.4	4.9	0.4
Fleerortown (LCPSA)	190	190	190	190	8.5	0.7	8.5	0.7	8.5	0.7	8.5	0.7
Puckett & Ely Creek (LCPSA)	172	172	172	172	7.8	0.7	7.8	0.7	7.8	0.7	7.8	0.7
Keekees (LCPSA)	375	375	375	375	16.8	1.4	16.8	1.4	16.8	1.4	16.8	1.4
Jasper (LCPSA)	650	650	650	650	30.0	2.5	30.0	2.5	30.0	2.5	30.0	2.5
Eastern Lee (LCPSA)	800	800	800	800	36.0	3.0	36.0	3.0	36.0	3.0	36.0	3.0
Miller/Smyth Chapel (LCPSA)	785	785	785	785	36.0	3.0	36.0	3.0	36.0	3.0	36.0	3.0
Robbins Chapel (LCPSA)	308	308	308	308	14.4	1.2	14.4	1.2	14.4	1.2	14.4	1.2
Silverleaf (LCPSA)	458	458	458	458	20.4	1.7	20.4	1.7	20.4	1.7	20.4	1.7

SECTION 4A: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS (9 VAC 25-780-100 D1-3)

1 Community Water System	2 Population Served 2,010		3 Population Served 2,030		4 Population Served 2,040		5 Water Usage (MG) 2010.00		5 Water Usage (MG) 2020.0		5 Water Usage (MG) 2030.0		5 Water Usage (MG) 2040.0	
	Population Served 2,010	Population Served 2,020	Population Served 2,030	Population Served 2,040	a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average	a. Annual Average	b. Monthly Average
Thompson Settlement (LCPSA)	205	205	205	205	-	-	9.4	0.8	9.4	0.8	9.4	0.8	9.4	0.8
Ingles Chapel/Baileystown (LCPSA)	157	157	157	157	-	-	9.5	0.8	9.5	0.8	9.5	0.8	9.5	0.8
Sickleyville (LCPSA)	699	699	699	699	32.4	2.7	32.4	2.7	32.4	2.7	32.4	2.7	32.4	2.7
Ocoonite (LCPSA)	940	940	940	940	43.2	3.6	43.2	3.6	43.2	3.6	43.2	3.6	43.2	3.6
Robbins Chapel Ph II & III (LCPSA)	84	84	84	84	3.8	0.3	3.8	0.3	3.8	0.3	3.8	0.3	3.8	0.3
Blackwater (LCPSA)	265	265	265	265	-	-	12.0	1.0	12.0	1.0	12.0	1.0	12.0	1.0
Old Woodway Rd Ph II (LCPSA)	51	51	51	51	-	-	2.3	0.2	2.3	0.2	2.3	0.2	2.3	0.2

**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2010**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
Town of Nickelsville	1.0	0.1	0.0	0.0	0.7	0.5	-	0.0	0.0	0.0	2.3
Town of Dungannon	0.7	0.0	0.0	0.0	0.2	1.1	-	0.0	0.0	0.0	1.9
Town of Clinchport	0.2	0.0	0.0	0.0	0.0	0.1	-	0.0	0.0	0.0	0.3
Town of Gate City	6.8	1.8	0.0	0.0	1.0	2.2	Daniel Boone (SCPSA)	0.9	0.0	0.0	12.7
East Carters Valley (BUD)	0.5	0.4	0.0	0.0	0.1	0.4	-	0.1	0.0	0.0	1.5
Spring Valley Subdivision (BUD)	0.3	0.2	0.0	0.0	0.1	0.3	-	0.4	0.0	0.0	1.3
Duffield (SCPSA)	1.7	0.8	0.0	0.0	0.1	1.3	-	0.3	0.0	0.0	4.1
East Carters Valley (SCPSA)	0.6	0.2	0.0	0.0	0.1	0.3	-	0.3	0.0	0.0	1.4
Boozy Creek (SCPSA)	0.1	0.2	0.0	0.0	0.1	0.4	-	0.1	0.0	0.0	0.8
Cove Creek (SCPSA)	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.1
Daniel Boone (SCPSA)	0.7	0.4	0.0	0.0	0.1	0.4	-	0.1	0.0	0.0	1.7
Moccasin Gap (SCPSA)	7.1	0.2	0.0	0.0	0.1	0.3	Gate City	0.4	0.0	0.0	8.1
City of Norton	6.5	5.4	1.1	0.0	2.3	15.6	Norton #1 (WCPSA) Blackwood (WCPSA) Big Stone Gap	1.7 1.6 0.0	0.0	0.0	34.4

**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2010**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
Town of Appalachia	5.2	1.3	0.0	0.0	0.5	2.0	LCPSA & WCPA	1.0	0.0	0.0	10
Town of Big Stone Gap	9.7	9.0	0.0	0.0	1.1	15.2	LCPSA	3.0	0.0	0.0	38.0
Town of Coeburn	7.6	1.9	0.0	0.0	0.8	3.4	WCPA	3.5	0.0	0.0	17.2
Town of Pound	3.3	2.2	0.0	0.0	0.7	4.7	WCPA	0.9	0.0	0.0	11.8
Town of St. Paul	3.3	1.1	0.0	0.0	0.2	0.0	-	0.0	0.0	0.0	4.6
Town of Wise	9.5	5.0	0.0	0.0	1.0	4.4	WCPA	1.4	0.0	0.0	21.3
Wise County Regional (WCPA)	7.5	2.5	0.0	0.0	1.3	4.1	Norton	4.5	0.0	0.0	19.9
WCPA (Purchased Water) Dunbar Sandy Ridge Wise #2 Appalachia #1 Flatwoods Norton #1 Blackwood Mill Branch South Mountain	7.3	1.8	0.0	0.0	0.0	2.3	-	0.0	0.0	0.0	11.4
Town of Pennington Gap	9.9	4.3	0.0	0.0	1.0	9.9	Woodway, Dryden LCPSA, & St. Charles Water Authorities	22.5	0.0	0.0	47.6
Town of Jonesville	2.7	1.1	0.0	0.0	0.5	2.1	LCPSA & Woodway Water Authority	3.9	0.0	0.0	10.3
Lee County (LCPSA) *Silverleaf	7.1	1.5	0.0	0.0	1.7	6.7	-	0.0	0.0	0.0	17.0

**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-730-100 D4) - YEAR 2010**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
LCPFA (Purchased Water) Big Hill Old Woodway Road Fleerortown Puckett & Ely Creek Keokee	8.6	0.8	0.0	0.0	0.0	2.4	-	0.0	0.0	0.0	11.8
Jasper Eastern Lee Miller/Smyth Chapel Robbins Chapel *Stickleyville *Ocoonilla *Robbins Chapel Ph. III											

\*Proposed Systems to be in service by 2010

Subtotal: (MG) (With Inter-Region Sales To Community Water Systems)	107.8	42.2	1.1	0.0	13.6	80.1	-	46.5	0.0	0.0	291.4
Subtotal: (MG) (Without Inter-Region Sales To Community Water Systems)	107.8	42.2	1.1	0.0	13.6	80.1	-	-	0.0	0.0	<u>244.9</u>

**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2020**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
Town of Nickelsville	1.0	0.1	0.0	0.0	0.7	0.5	-	0.0	0.0	0.0	2.3
Town of Dungannon	0.7	0.0	0.0	0.0	0.2	0.4	-	0.0	0.0	0.0	1.2
Town of Clinchport	0.2	0.0	0.0	0.0	0.0	0.1	-	0.0	0.0	0.0	0.3
Town of Gate City	6.8	1.8	0.0	0.0	1.0	2.2	Daniel Boone (SCPSA)	0.9	0.0	0.0	12.7
East Carters Valley (BUD)	0.5	0.4	0.0	0.0	0.1	0.4	-	0.1	0.0	0.0	1.5
Spring Valley Subdivision (BUD)	0.3	0.2	0.0	0.0	0.1	0.3	-	0.4	0.0	0.0	1.3
Duffield (SCPSA)	1.7	0.8	0.0	0.0	0.1	0.9	-	0.3	0.0	0.0	3.8
East Carters Valley (SCPSA)	0.6	0.2	0.0	0.0	0.1	0.3	-	0.3	0.0	0.0	1.4
Boozy Creek (SCPSA)	0.1	0.2	0.0	0.0	0.1	0.2	-	0.1	0.0	0.0	0.6
Cove Creek (SCPSA)	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.1
Daniel Boone (SCPSA)	0.7	0.4	0.0	0.0	0.1	0.4	-	0.1	0.0	0.0	1.7
Moccasin Gap (SCPSA)	7.1	0.2	0.0	0.0	0.1	0.9	Gate City	0.4	0.0	0.0	8.6
City of Norton	6.5	5.4	1.1	0.0	2.3	8.0	Norton #1 (WCPSA) Blackwood (WCPSA) Big Stone Gap	1.7 1.6 0.0	0.0	0.0	26.8

**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2020**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
Town of Appalachia	5.2	1.3	0.0	0.0	0.5	2.0	LCPSA & WCPSA	1.0	0.0	0.0	10
Town of Big Stone Gap	9.7	9.0	0.0	0.0	1.1	5.9	LCPSA	3.0	0.0	0.0	28.7
Town of Coeburn	7.6	1.9	0.0	0.0	0.8	3.4	WCPSA	3.5	0.0	0.0	17.2
Town of Pound	3.3	2.2	0.0	0.0	0.7	1.8	WCPSA	0.9	0.0	0.0	8.9
Town of St. Paul	3.3	1.1	0.0	0.0	0.2	1.2	-	0.0	0.0	0.0	5.8
Town of Wise	9.5	5.0	0.0	0.0	1.0	4.4	WCPSA	1.4	0.0	0.0	21.3
Wise County Regional (WCPSA)	7.5	2.5	0.0	0.0	1.3	4.1	Norton	4.5	0.0	0.0	19.9
WCPSA (Purchased Water) Dunbar Sandy Ridge Wise #2 Appalachia #1 Flatwoods Norton #1 Blackwood Mill Branch South Mountain	7.3	1.8	0.0	0.0	0.0	2.3	-	0.0	0.0	0.0	11.4
Town of Pennington Gap	9.9	4.3	0.0	0.0	1.0	10.0	Woodway, Dryden LCPSA, & St. Charles Water Authorities	22.7	0.0	0.0	47.9
Town of Jonesville	2.7	1.1	0.0	0.0	0.5	2.1	LCPSA & Woodway Water Authority	3.9	0.0	0.0	10.3
Lee County (LCPSA) Silverleaf * Thompson Settlement *Ingles Chapel/Baileytown	8.2	1.5	0.0	0.0	1.7	3.0	-	0.0	0.0	0.0	14.4

**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2030**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
Town of Nickelsville	1.0	0.1	0.0	0.0	0.7	0.5	-	0.0	0.0	0.0	2.3
Town of Dungannon	0.7	0.0	0.0	0.0	0.2	0.3	-	0.0	0.0	0.0	1.2
Town of Clinchport	0.2	0.0	0.0	0.0	0.0	0.1	-	0.0	0.0	0.0	0.2
Town of Gate City	6.8	1.8	0.0	0.0	1.0	2.3	Daniel Boone (SCPSA)	0.9	0.0	0.0	12.8
East Carters Valley (BUD)	0.5	0.4	0.0	0.0	0.1	0.4	-	0.1	0.0	0.0	1.5
Spring Valley Subdivision (BUD)	0.3	0.2	0.0	0.0	0.1	0.3	-	0.4	0.0	0.0	1.3
Duffield (SCPSA)	1.7	0.8	0.0	0.0	0.1	0.9	-	0.3	0.0	0.0	3.8
East Carters Valley (SCPSA)	0.6	0.2	0.0	0.0	0.1	0.3	-	0.3	0.0	0.0	1.4
Boozy Creek (SCPSA)	0.1	0.2	0.0	0.0	0.1	0.2	-	0.1	0.0	0.0	0.6
Cove Creek (SCPSA)	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.1
Daniel Boone (SCPSA)	0.7	0.4	0.0	0.0	0.1	0.4	-	0.1	0.0	0.0	1.7
Moccasin Gap (SCPSA)	7.1	0.2	0.0	0.0	0.1	0.7	Gate City	0.4	0.0	0.0	8.5
City of Norton	6.5	5.4	1.1	0.0	2.3	6.3	Norton #1 (WCPSA) Blackwood (WCPSA) Big Stone Gap	1.7 1.6 0.0	0.0	0.0	25.0

**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2020**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
LCP&A (Purchased Water) Big Hill Old Woodway Road Fleerortown Puckett & Ely Creek Keokee Jasper Eastern Lee Miller/Smyth Chapel Robbins Chapel Stickleyville Ocoonita Robbins Chapel Ph. III *Blackwater *Old Woodway Road PH II	9.6	0.8	0.0	0.0	0.0	2.6		0.0	0.0	0.0	13.0

\*\*Proposed Systems to be in service by 2020

Subtotal: (MG) (With Inter-Region Sales To Community Water Systems)	108.9	42.2	1.1	0.0	12.9	56.9	-	46.7	0.0	0.0	268.7
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Subtotal: (MG) (Without Inter-Region Sales To Community Water Systems)	108.9	42.2	1.1	0.0	12.9	56.9	-	-	0.0	0.0	<u>222.0</u>
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**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2030**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
Town of Appalachia	5.2	1.3	0.0	0.0	0.5	2.0	LCPSA & WCPSA	1.0	0.0	0.0	10
Town of Big Stone Gap	9.7	9.0	0.0	0.0	1.1	5.9	LCPSA	3.0	0.0	0.0	28.7
Town of Coeburn	7.6	1.9	0.0	0.0	0.8	3.4	WCPSA	3.5	0.0	0.0	17.2
Town of Pound	3.3	2.2	0.0	0.0	0.7	1.8	WCPSA	0.9	0.0	0.0	8.9
Town of St. Paul	3.3	1.1	0.0	0.0	0.2	1.2	-	0.0	0.0	0.0	5.8
Town of Wise	9.5	5.0	0.0	0.0	1.0	4.4	WCPSA	1.4	0.0	0.0	21.3
Wise County Regional (WCPSA)	7.5	2.5	0.0	0.0	1.3	4.1	Norton	4.5	0.0	0.0	19.9
WCPSA (Purchased Water) Dunbar Sandy Ridge Wise #2 Appalachia #1 Flatwoods Norton #1 Blackwood Mill Branch South Mountain	7.3	1.8	0.0	0.0	0.0	2.3	-	0.0	0.0	0.0	11.4
Town of Pennington Gap	9.9	4.3	0.0	0.0	1.0	10.0	Woodway, Dryden LCPSA, & St. Charles Water Authorities	22.7	0.0	0.0	47.9
Town of Jonesville	2.7	1.1	0.0	0.0	0.5	2.1	LCPSA & Woodway Water Authority	3.9	0.0	0.0	10.3
Lee County (LCPSA) Silverleaf Thompson Settlement Ingles Chapel/Baileytown	8.2	1.5	0.0	0.0	1.7	3.0	-	0.0	0.0	0.0	14.4



**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2040**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
Town of Nickelsville	1.0	0.1	0.0	0.0	0.7	0.5	-	0.0	0.0	0.0	2.3
Town of Dungannon	0.7	0.0	0.0	0.0	0.2	0.3	-	0.0	0.0	0.0	1.2
Town of Clinchport	0.2	0.0	0.0	0.0	0.0	0.1	-	0.0	0.0	0.0	0.2
Town of Gate City	6.8	1.8	0.0	0.0	1.0	2.3	Daniel Boone (SCPSA)	0.9	0.0	0.0	12.8
East Carters Valley (BUD)	0.5	0.4	0.0	0.0	0.1	0.4	-	0.1	0.0	0.0	1.5
Spring Valley Subdivision (BUD)	0.3	0.2	0.0	0.0	0.1	0.3	-	0.4	0.0	0.0	1.3
Duffield (SCPSA)	1.7	0.8	0.0	0.0	0.1	0.9	-	0.3	0.0	0.0	3.8
East Carters Valley (SCPSA)	0.6	0.2	0.0	0.0	0.1	0.3	-	0.3	0.0	0.0	1.4
Boozy Creek (SCPSA)	0.1	0.2	0.0	0.0	0.1	0.2	-	0.1	0.0	0.0	0.6
Cove Creek (SCPSA)	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.1
Daniel Boone (SCPSA)	0.7	0.4	0.0	0.0	0.1	0.4	-	0.1	0.0	0.0	1.7
Moccasin Gap (SCPSA)	7.1	0.2	0.0	0.0	0.1	0.7	Gate City	0.4	0.0	0.0	8.5
City of Norton	6.5	5.4	1.1	0.0	2.3	6.3	Norton #1 (WCPSA) Blackwood (WCPSA) Big Stone Gap	1.7 1.6 0.0	0.0	0.0	25.0

**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2040**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
Town of Appalachia	5.2	1.3	0.0	0.0	0.5	2.0	LCPSA & WCPSA	1.0	0.0	0.0	10
Town of Big Stone Gap	9.7	9.0	0.0	0.0	1.1	5.9	LCPSA	3.0	0.0	0.0	28.7
Town of Coeburn	7.6	1.9	0.0	0.0	0.8	3.4	WCPSA	3.5	0.0	0.0	17.2
Town of Pound	3.3	2.2	0.0	0.0	0.7	1.8	WCPSA	0.9	0.0	0.0	8.9
Town of St. Paul	3.3	1.1	0.0	0.0	0.2	1.2	-	0.0	0.0	0.0	5.8
Town of Wise	9.5	5.0	0.0	0.0	1.0	4.4	WCPSA	1.4	0.0	0.0	21.3
Wise County Regional (WCPSA)	7.5	2.5	0.0	0.0	1.3	4.1	Norton	4.5	0.0	0.0	19.9
WCPSA (Purchased Water) Dunbar Sandy Ridge Wise #2 Appalachia #1 Flatwoods Norton #1 Blackwood Mill Branch South Mountain	7.3	1.8	0.0	0.0	0.0	2.3	-	0.0	0.0	0.0	11.4
Town of Pennington Gap	9.9	4.3	0.0	0.0	1.0	10.0	Woodway, Dryden LCPSA, & St. Charles Water Authorities	22.7	0.0	0.0	47.9
Town of Jonesville	2.7	1.1	0.0	0.0	0.5	2.1	LCPSA & Woodway Water Authority	3.9	0.0	0.0	10.3

**SECTION 4B: ESTIMATED WATER USE INFORMATION - COMMUNITY WATER SYSTEMS,  
DISAGGREGATED WATER USE AMOUNTS (MONTHLY AVERAGE) (9 VAC 25-780-100 D4) - YEAR 2040**

1 Community Water System	2 Residential Use (MG)	3 Commercial, Institutional Light Industrial (MG)	4 Heavy Industrial (MG)	5 Military (MG)	6 Water Production Use (MG)	7 Unaccounted Water Loss (MG)	8 Sales to Community Systems (MG)		9 Other Use (MG)	10 Other Use (MG)	11 Subtotal: (MG)
							Name	Amount			
Lee County (LCFSA) Silverleaf Thompson Settlement Ingles Chapel/Baileytown	8.2	1.5	0.0	0.0	1.7	3.0	-	0.0	0.0	0.0	14.4
LCFSA (Purchased Water) Big Hill Old Woodway Road Fleenortown Puckett & Ely Creek Keokee Jasper Eastern Lee Miller/Smyth Chapel Robbins Chapel Stickleyville Ocoonita Robbins Chapel Ph. III Blackwater Old Woodway Road PH II	9.6	0.8	0.0	0.0	0.0	2.6	-	0.0	0.0	0.0	13.0
Subtotal: (MG) (With Inter-Region Sales To Community Water Systems)	108.9	42.2	1.1	0.0	12.9	54.9	-	46.7	0.0	0.0	266.8
Subtotal: (MG) (Without Inter-Region Sales To Community Water Systems)	108.9	42.2	1.1	0.0	12.9	54.9	-	-	0.0	0.0	220.1

**SECTION 4C: ESTIMATED WATER USE INFORMATION - ESTIMATED AVERAGE ANNUAL SURFACE AND GROUND WATER USE BY SELF-SUPPLIED, NON-AGRICULTURAL USERS OF MORE THAN 300,000 GALLONS/MONTH (OUTSIDE COMMUNITY WATER SYSTEM SERVICE AREAS) (9 VAC 25-780-100 E)**

1	2	3
Community Water System	Estimated Average Annual Surface Water Usage (MG)	Estimated Average Annual Ground Water Usage (MG)
No Known	-	-

**SECTION 4D: ESTIMATED WATER USE INFORMATION - ESTIMATED AVERAGE ANNUAL SURFACE AND GROUND WATER USE BY SELF-SUPPLIED, AGRICULTURAL USERS OF MORE THAN 300,000 GALLONS/MONTH (OUTSIDE COMMUNITY WATER SYSTEM SERVICE AREAS) (9 VAC 25-780-100 F) YEARS 2010-2040**

1	2	3
Community Water System	Estimated Average Annual Surface Water Usage (MG)	Estimated Average Annual Ground Water Usage (MG)
No Known		

Notes:

- A.
- B.

SECTION 2B: EXISTING WATER SOURCE INFORMATION - COMMUNITY WATER SOURCES USING SURFACE WATER RESERVOIRS (9 VAC 25-780-70 C)

1	2.00	3.00
Reservoir Name	Sub-Basin(s)	Drainage Area (miles <sup>2</sup> )
K/S Quarry	Powell River	Ground Water

SECTION 2B: EXISTING WATER SOURCE INFORMATION - COMMUNITY WATER SOURCES USING SURFACE WATER RESERVOIRS (9 VAC 25-780-70 C)

1	2.00	3.00
Reservoir Name	Sub-Basin(s)	Drainage Area (miles <sup>2</sup> )
Ben's Branch Big Cherry Wise Tom's Creek Pound	Powell River Powell River Clinch River Clinch River Pound River	0.60 8.10 1.44 3.20 -

**SECTION 4E: ESTIMATED WATER USE INFORMATION - ESTIMATED AVERAGE ANNUAL GROUND WATER USE BY SELF-SUPPLIED USERS OF LESS THAN 300,000 GALLONS/MONTH (OUTSIDE COMMUNITY WATER SYSTEM SERVICE AREAS) (9 VAC 25-780-100 G)-YEAR 2010**

<sup>1</sup> Locality	<sup>2</sup> Number of Self-Supplied Users	<sup>3</sup> Estimated Average Annual Ground Water Usage (MG)
City of Norton	0	-
Scott County	990	41.6
Wise County	2006	84.3
Lee County	475	20.0

**SECTION 4E: ESTIMATED WATER USE INFORMATION - ESTIMATED AVERAGE ANNUAL GROUND WATER USE BY SELF-SUPPLIED USERS OF LESS THAN 300,000 GALLONS/MONTH (OUTSIDE COMMUNITY WATER SYSTEM SERVICE AREAS) (9 VAC 25-780-100 G)-YEAR 2020**

<sup>1</sup> Locality	<sup>2</sup> Number of Self-Supplied Users	<sup>3</sup> Estimated Average Annual Ground Water Usage (MG)
City of Norton	0	-
Scott County	990	41.6
Wise County	2006	84.3
Lee County	475	20.0

**SECTION 4E: ESTIMATED WATER USE INFORMATION - ESTIMATED AVERAGE ANNUAL GROUND WATER USE BY SELF-SUPPLIED USERS OF LESS THAN 300,000 GALLONS/MONTH (OUTSIDE COMMUNITY WATER SYSTEM SERVICE AREAS) (9 VAC 25-780-100 G)-YEAR 2030**

<sup>1</sup> Locality	<sup>2</sup> Number of Self-Supplied Users	<sup>3</sup> Estimated Average Annual Ground Water Usage (MG)
City of Norton	0	-
Scott County	990	41.6
Wise County	2006	84.3
Lee County	475	20.0

**SECTION 4E: ESTIMATED WATER USE INFORMATION - ESTIMATED AVERAGE ANNUAL GROUND WATER USE BY SELF-SUPPLIED USERS OF LESS THAN 300,000 GALLONS/MONTH (OUTSIDE COMMUNITY WATER SYSTEM SERVICE AREAS) (9 VAC 25-780-100 G)-YEAR 2040**

<sup>1</sup> Locality	<sup>2</sup> Number of Self-Supplied Users	<sup>3</sup> Estimated Average Annual Ground Water Usage (MG)
City of Norton	0	-
Scott County	990	41.6
Wise County	2006	84.3
Lee County	475	20.0